



Ethical Implications of Digital Technologies on Socioeconomically Disadvantaged Communities in Nigeria

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Abstract

Digital technologies have the potential to revolutionize a nation's socioeconomic system. The Nigerian experience buttresses the influence of these innovative tools. Although the penetration and prevalence of digital transformation are a welcome development, it raises ethical concerns, especially as regards the underprivileged within the nation. This paper explores the ethical considerations of digital technologies on these vulnerable groups. Issues discussed include low smartphone penetration, high cost of data, limited digital literacy, and infrastructural challenges. Recommendations were given, which include regular monitoring and evaluation of current practices, and designing of digital transformation initiatives with inclusive policies that address systemic inequalities, and collaborative efforts between the government, private sector, and non-governmental organisations.

Keywords: Digital Technologies, Socioeconomically Disadvantaged Communities, Nigeria, Digital Divide.

Introduction

Nigeria's digital landscape has arguably undergone rapid transformation over the years. This is attested by technological advancements and increasing internet penetration experienced by the country. Nigeria has an Internet penetration rate of around 55 percent, with the number of Internet users estimated to be around 123 million (Sasu, 2024). This shows that more than 40 percent of the nation's population lacks access to the internet. Considering the population of Nigeria, the most populous in Africa, this can be regarded as one of the widest digital divides in Africa, a divide that has significant ethical considerations. Today, mobile internet is observed to be the primary means of connectivity in the nation, largely due to the prevalence and adoption of smartphones by the inhabitants. Mobile telephony became the preferred means of telecommunication over the traditional landline since its adoption and prevalence around the beginning of the millennium. This trend, which has continued with increasing density, not only revolutionized communication but also connectivity and the services that come with it. For instance, the digital revolution has enabled global broadcasters to enhance their services with the widespread utilisation of mobile technologies, facilitating their expansion as exemplified by the expansion of the British Broadcasting Service (BBC) World Service expanded offerings worldwide, including Nigeria (Abubakar, 2024). As good as Nigeria's performance concerning digital technologies and connectivity may seem, the nation still has a long way to go when compared with other nations globally.

In Nigeria, digital payment platforms have emerged, revolutionizing the way financial transactions are made. These service providers have facilitated financial transactions for those who do not have accounts in conventional banks. Thus, innovations in digital banking, propelled by emerging technologies, offer a revolutionary pathway to address financial exclusion by connecting underserved groups and promoting a more inclusive financial environment (Nnaomah et al., 2024). In addition, electronic commerce has emerged, opening doors for traders and consumers alike. Electronic learning has received a boost among teachers and learners in Nigeria. Digital platforms are utilised for remote learning, skill acquisition, and certification programmes. Many institutions of learning within and outside the country have adopted this mode of knowledge and skill acquisition to reach a wider audience. By expanding access to education and training, e-learning has become a major accelerator of human capital development and socioeconomic advancement in developing countries (Bubou & Job, 2021), of which Nigeria is one.

In the agricultural sector, productivity and income have improved. Digital tools and services have enabled farmers to access information regarding market insights, weather forecasts, and financial services. By reviewing

selected studies, Choruma et al. (2024) brought to the fore some opportunities available to farmers in Sub-Saharan Africa (including Nigeria); they include better access to information and market opportunities, improved productivity and resources management, adaptation to climate change via digital technologies, and the possibility of higher income and better living.

Healthcare and delivery have been enhanced through telemedicine, health apps, digital tools and services, and electronic health information management. According to Ugwu et al. (2023), Nigeria is poised for a significant shift in its healthcare landscape as digital technology emerges to offer unprecedented opportunities to transform healthcare delivery, access, and outcomes for the country's vast and diverse population. For instance, Olukorode et al. (2024) conducted a systematic review through which they asserted that the introduction of electronic medical records (EMR) in Nigeria has significantly brought about improvement in data quality. Despite the successes highlighted above, some challenges exist. A considerable portion of the population does not have access to quality information. Many are digitally illiterate. As regards electronic commerce, logistical and infrastructural challenges still exist, especially in rural communities. Many learners from disadvantaged backgrounds lack access to online educational resources, which invariably limits the educational experiences they can acquire. Confronting these challenges towards mitigating their effects is considered necessary to reduce the digital gap within the country and ensure an inclusive, digital ecosystem.

The adoption of digital technology has transformed societies worldwide, driving innovation, improving connectivity, and reshaping economies. Globally, the rapid integration of technologies such as the internet, artificial intelligence (AI), cloud computing, and the Internet of Things (IoT) has spurred advancements in industries ranging from healthcare to education (Elfaki & Ahmed, 2024). As of 2024, more than 66% of the global population has access to the internet, showcasing the widespread reach of digital tools and platforms. High-income countries, mostly in North America, Europe, and parts of Asia, have leveraged these technologies to foster productivity, bridge communication gaps, and build robust digital economies (Kumar et al., 2024). In developing regions, however, the pace of digital adoption varies significantly due to disparities in infrastructure, policy support, and affordability (Salemink et al., 2017; West, 2015). Many countries in Sub-Saharan Africa, Latin America, and South Asia are grappling with challenges such as inadequate broadband penetration, high costs of digital devices, and limited digital literacy. Despite these hurdles, there has been steady progress in these regions. Mobile phone penetration, for example, has been a major driver of digital transformation, enabling millions of people in remote areas to access financial services, healthcare information, and educational resources. Nigeria, has made notable progress in the adoption of digital technology, influenced by a blend of policy initiatives and private sector investments. In 2023, Nigeria recorded over 154 million active internet users, making it one of the largest internet user populations in Africa, as reported by the Nigerian Communications Commission (NCC) (Oloyede et al., 2023). The extensive adoption of smartphones, alongside advancements in fintech, e-commerce, and digital entertainment, underscores the expansion of Nigeria's digital ecosystem. Platforms like Flutterwave, Jumia, and Nollywood streaming services exemplify the transformative impact of technology on business and cultural environments (Osimen, 2024).

Despite these advancements, Nigeria still faces barriers that hinder full digital inclusion. Challenges such as unreliable power supply, limited broadband coverage in rural areas, and high data costs continue to impact the equitable adoption of digital technologies. Moreover, digital literacy remains a critical issue, particularly in underserved communities where access to technology and related skills training is limited (Sose et al., 2023). Addressing these challenges is vital to ensuring that the benefits of digital transformation are inclusive and sustainable. However, the global digital technology adoption landscape highlights immense progress and opportunities, it also underscores disparities between developed and developing regions. For Nigeria, the growing adoption of digital tools presents significant potential for economic growth, improved governance, and societal advancement. However, strategic investments in infrastructure, education, and policy reforms are essential to bridge the digital divide and unlock the full potential of technology for all citizens.

Disadvantaged communities in Nigeria encounter numerous socio-economic challenges that impede their development and sustain cycles of poverty. The challenges stem from systemic inequalities, ineffective governance, and insufficient access to critical resources, including quality education, healthcare, and infrastructure. The absence of clean water, electricity, and basic sanitation significantly impacts rural and underserved urban regions, intensifying poverty and diminishing overall quality of life. High levels of unemployment and underemployment exacerbate socio-economic disparities, resulting in many families in these communities remaining in economic hardship. Education serves as a vital instrument for socio-economic advancement; however, it remains predominantly inaccessible or of substandard quality for numerous

disadvantaged communities in Nigeria. Insufficient schools, unqualified teachers, and the high cost of education, especially for girls and children from low-income households, restrict educational attainment. The absence of education sustains a cycle of illiteracy and diminished earning potential, thereby further marginalizing these communities. Moreover, healthcare services frequently remain inaccessible or prohibitively expensive, resulting in increased susceptibility to preventable diseases and elevated maternal and child mortality rates among residents. The deficiencies in social infrastructure considerably hinder the capacity of individuals in these communities to escape poverty. The pervasive digital divide exacerbates these issues by excluding disadvantaged communities from engagement in the expanding digital economy. Restricted access to affordable internet services, digital devices, and technological skills hinders many individuals from leveraging opportunities in education, employment, and entrepreneurship enabled by digital technology. The growing dependence on technology for socio-economic advancement exacerbates the exclusion of certain communities, thereby widening existing inequalities. Addressing these complex challenges is essential for developing inclusive strategies that enhance the well-being of disadvantaged communities and foster equitable growth in Nigeria.

In this discourse, an attempt shall be made to examine two questions. First, as regards digital technologies, what are the ethical considerations that are bringing about socioeconomic inequalities in Nigeria? Second, what can be done to mitigate the digital divide arising from the penetration of digital technologies in Nigeria? This study is significant as it seeks to address the persistent socio-economic challenges faced by disadvantaged communities in Nigeria, contributing to a deeper understanding of systemic inequities and their impacts. By identifying the root causes of these challenges, the research provides valuable insights for policymakers, development agencies, and stakeholders to design targeted interventions that promote inclusive development. It highlights critical areas such as education, healthcare, and digital inclusion, offering evidence-based recommendations to bridge gaps and uplift marginalized populations. Additionally, the study's focus on disadvantaged communities underscores the importance of equity-driven strategies, fostering sustainable development and reducing societal disparities. This study may contribute to international development initiatives by providing a localized perspective on global challenges, including poverty, inequality, and the digital divide. The findings may advance academic discourse and establish a basis for subsequent research in related contexts, thereby enriching the knowledge base in socio-economic development and social justice. The study aligns with the global commitment to the United Nations Sustainable Development Goals (SDGs), specifically those focused on poverty alleviation, quality education, reduction of inequalities, and the promotion of sustainable communities.

Impact of Digital Technologies: Review of Existing Studies

Digital technologies have increasingly influenced the socio-economic landscape of disadvantaged communities in Nigeria, offering both transformative opportunities and highlighting persistent barriers. Existing studies reveal that the impact of digital technologies on these communities spans various sectors, including education, healthcare, financial inclusion, and entrepreneurship.

Education

Digital technologies have facilitated access to educational resources for socioeconomically disadvantaged communities, particularly through mobile phones and online platforms. According to a study by Olaniyi (2022), e-learning platforms such as uLesson and Edmodo have provided students in remote areas with access to quality educational content. However, challenges such as high data costs, unreliable internet connectivity, and limited digital literacy often restrict their widespread adoption. The study emphasizes that while digital tools can bridge educational gaps, infrastructural deficits must be addressed to maximize their potential impact.

Healthcare

In healthcare, digital technologies have improved access to information and services in underserved areas. For instance, mobile health (mHealth) applications and telemedicine platforms have enabled communities to consult healthcare professionals remotely (Widjaja et al., 2024). A report by the World Health Organization (WHO) in 2023 highlights the success of mobile health interventions in reducing maternal mortality rates in rural areas of Northern Nigeria. However, the same study notes that digital health solutions face barriers such as poor power supply, low smartphone penetration, and resistance to new technologies (López et al., 2011).

Financial Inclusion

The proliferation of fintech solutions has significantly impacted financial inclusion in Nigeria. Services like Paga, OPay, and Flutterwave have provided unbanked populations with access to financial services, enabling savings, credit, and digital payments. A study by the Central Bank of Nigeria (2023) found that mobile money adoption increased household income and facilitated small business growth in rural areas (Agbelade, 2023).

Trust issues, limited digital literacy, and infrastructural challenges persist as barriers to broader adoption, especially in marginalized communities.

Ethical Implications of the Study

Ethical implications of digital technologies on socioeconomically disadvantaged communities in Nigeria have to do with the potential effects or consequences of the utilisation of these innovative tools based on moral principles and societal values. It involves analyzing how the adoption of these technologies aligns with concepts of right and wrong, fairness, justice, and respect for others. In this paper, the ethical implications will help in assessing the importance of embracing these devices for these vulnerable groups. Some of the ethical concerns are discussed below.

Low smartphone penetration

With the exorbitant cost of smartphone nowadays, acquiring one by low income earners appears to be a mirage. Unfortunately, smartphones are considered a necessity in this information age considering that they provide opportunities for health information, electronic learning, electronic commerce, and social and community networking and participation.

High cost of data

For low-income communities in Nigeria, the cost of data is of concern. In this information age, much of the essential information is delivered online. Inability to load data for connectivity restricts the socioeconomically vulnerable groups from accessing this information and acquiring knowledge that bothers on educational experiences, healthcare, economics, etc.

Limited digital literacy

In order not to be ostracized in the scheme of things locally and globally, twenty-first-century citizens are to be digitally literate. It is worth mentioning that digital literacy goes beyond the frivolity of social media addiction. Digital literacy here involves the ability to manipulate digital tools acceptably and independently, utilize these devices to access and acquire valuable information, and effectively mobilize them to solve problems that arise at various fronts. Socioeconomically vulnerable populations are susceptible to limited digital literacy due to their level of engagement with digital technologies.

Infrastructural challenges

Infrastructural challenges here imply low broadband connectivity, poor power supply, inadequate information and communication technology (ICT) facilities, e.t.c. Typically, such challenges are felt the more at rural settlements, where the underprivileged abound, more than in urban areas. Such rural-urban difference bring to the fore the digital gap.

Resistance to new technologies

The resistance mentioned here usually arises due to such issues as lack of awareness, cultural beliefs, fear of change, or lack of trust in new technology. As digital technologies become more and more valuable as the days go by, these challenges increase the digital gap if not properly addressed.

Case Studies and Examples

Makoko Community, Lagos State

Makoko, an informal settlement in Lagos State, exemplifies the socio-economic challenges encountered by marginalized communities in Nigeria. The area is referred to as a "floating slum," characterized by residents' inadequate access to essential services, including clean water, sanitation, and healthcare. The educational infrastructure within the community is insufficient, characterized by makeshift schools that face challenges in delivering quality education. Innovative projects such as the Makoko Floating School demonstrate the potential of localized and sustainable interventions, despite existing challenges. This example illustrates the capacity of community-driven initiatives, when bolstered by external funding and expertise, to tackle systemic barriers (Ajayi et al., 2014).

Kano's Almajiri System and Educational Disparities

The Almajiri system represents a traditional form of Islamic education that highlights the complexities of educational challenges faced by disadvantaged communities. Children participating in this system frequently encounter neglect, coerced labor, and insufficient access to formal education. The integration of the Almajiri system into Nigeria's formal educational framework, exemplified by the establishment of Almajiri Model Schools, signifies efforts to address this issue. These initiatives frequently encounter opposition from cultural and religious stakeholders, highlighting the necessity for culturally sensitive solutions (Hoechner, 2015).

Digital Inclusion in Rural Areas: The Case of Ekiti State

Digital inclusion in rural areas, particularly in Ekiti State, is hindered by limited access to digital technology, which poses a significant challenge. In Ekiti State, initiatives such as the Digital Learning Program seek to address this disparity by supplying schools with computers and offering digital literacy training for educators and students. This program emphasizes the significance of technology in enhancing educational access for underprivileged communities. Nonetheless, challenges like unreliable electricity and internet connectivity persist, constraining the program's effectiveness and highlighting the necessity for comprehensive infrastructural advancement.

Healthcare Access in Rural Communities: The Example of Ebonyi State

Ebonyi State illustrates the healthcare challenges encountered by rural and marginalized communities. A significant number of residents experience inadequate access to primary healthcare facilities, resulting in elevated rates of preventable diseases and maternal mortality. Community health insurance schemes and mobile clinics have enhanced access to healthcare services. These initiatives underscore the significance of context-specific solutions that tackle financial and geographical obstacles to healthcare access.

The Way Forward

1. Regular monitoring and evaluation of current practices, including tracking key performance indicators, are crucial for ensuring the effectiveness and sustainability of digital technology initiatives, particularly in assessing their socio-economic impact on marginalized communities and enabling necessary adjustments to strategies.
2. Digital transformation initiatives must be designed with inclusive policies that address systemic inequalities. These policies should include targeted interventions to ensure equitable access for marginalized groups, such as women, persons with disabilities, and those in remote areas.
3. Collaborative efforts between the government, private sector, and non-governmental organisations (NGOs) are crucial for driving innovation and mobilizing resources to achieve digital inclusion.
4. Policies and programs should prioritize the affordability of digital technologies, including smartphones, internet data, and educational platforms.
5. Programs specifically targeting women, youth, and other vulnerable groups should prioritize skill-building in areas such as education, entrepreneurship, and employment within the digital economy.
6. The government and private sector must prioritize investments in digital infrastructure, particularly in rural and underserved areas.

Conclusion

This study underscores the transformative potential of digital technologies in addressing the socio-economic challenges faced by disadvantaged communities in Nigeria. While these tools offer significant opportunities to improve education, healthcare, financial inclusion, and entrepreneurship, their equitable distribution is hindered by the persistent digital divide. Addressing this is paramount. For instance, in agriculture, Choruma et al. (2024) asserted that to achieve digital inclusivity in Sub-Saharan Africa (Nigeria inclusive), it is pertinent to resolve the interconnected challenges of digital literacy, infrastructure, and gender equality so that all farmers may leverage available digital opportunities irrespective of their socioeconomic status or gender. Doing this requires strategic investments in infrastructure, affordable access, and capacity-building initiatives. Nigeria can leverage digital technologies to elevate marginalized populations and advance sustainable development through the implementation of inclusive policies and the (“the” should not be underlined. The underline feature should be removed) promotion of public-private collaborations. Enhancing digital inclusion for disadvantaged communities will mitigate inequalities and enable them to contribute significantly to national development. The effective execution of these recommendations will foster a more inclusive, equitable, and digitally empowered society.

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