The anathema of digital divide in the Nigerian higher education: Lessons from the pandemic

AJONBADI, Hakeem, OLAWOYIN, Femi Stephen and ADEKOYA, Olatunji <http://orcid.org/0000-0003-4785-4129>

The Anathema of Digital Divide in the Nigerian Higher Education: Lessons from the Pandemic

Hakeem Adeniyi Ajonbadi

Department of Management, Birmingham City Business School, Birmingham City University, Birmingham, UK

Hakeem.Ajonbadi@bcu.ac.uk

Femi Stephen Olawoyin

College of Business, Technology and Engineering, Sheffield Hallam University, UK

Fem_olawoyin@yahoo.com

Olatunji David Adekoya

College of Business, Technology and Engineering, Sheffield Hallam University, UK

O.Adekoya@shu.ac.uk

Abstract

Nigeria, Africa's most populous country, is in the grip of an education lethargy. Academic freedom and excellent delivery have never been more challenging than witnessed during the pandemic. The low budget and inadequate infrastructural development, especially for the education sector, particularly higher education (HE), become more obvious with devastating effects on all the stakeholders. This chapter will examine extant literature on the extent of the digital divide that became more pronounced due to the pandemic, thereby provoking urgent discussions on the need to address the challenges witnessed in teaching, research, and other scholarly activities. We investigated and contextualised the degree to which the digital divide in the Nigerian HE has exacerbated the marginalisation of students, staff and institutions since the pandemic, bring to the spotlight the implications of such a divide in digital learning, demystify how this has beclouded academic freedom, excellent delivery, and knowledge dissemination. Ultimately, we hope for a paradigm shift from the current vulnerability and to explore new ways of thinking and conducting HE academic activities.

Keywords: Digital Divide, Higher Education, Nigeria, COVID-19 Pandemic.

Introduction

The impetuous and widespread emergence of the COVID-19 pandemic has drastically impacted every aspect of human life (Correia, 2020). The COVID-19 pandemic brought unprecedented challenges across different sectors, forcing most of them to adapt rapidly to various changes in the delivery of goods and services (Laufer et al., 2021; Modeme and Adeogun, 2021). According to Van de Werfhorst, Kessenich and Geven (2022), one of the most affected sectors was education, particularly higher education, as educational institutions had to resort to online platforms to mitigate the impact of the pandemic on academic activities. As a result, there has been a global disruption and abrupt shift in the educational sphere, with conventional modes of learning transcending into virtual settings. While several institutions across the globe have adapted seamlessly to this transformation due to their advanced digital infrastructure, Nigerian higher education has confronted significant challenges. The tenacious issue of the digital divide in Nigeria has been amplified, revealing the stark disparities between learners who can access digital resources and those who lack this capability - an anathema that must be vigorously addressed (Odularu et al., 2023).

The concept of the digital divide refers to the inequality in accessing technology, digital resources, and the internet among social groups based on various factors such as income, geography, and education (Laufer et al., 2021). Although this digital gap is detectable in diverse nations and regions, Nigeria's issue remains significantly acute and entrenched, especially in the education sector. The sudden shift to digital learning revealed the significant disparities in the access and utilisation of digital resources in different countries, with Nigeria experiencing a considerable digital divide (Mordi et al., 2023). The COVID-19 pandemic led to paradigm shifts in most sectors globally, including higher education. Learning institutions were forced to use online-based methods to facilitate and continue academic activities (Adeleke, 2021; Van de Werfhorst, Kessenich and Geven, 2022). The shift strained the existing infrastructure and exposed the existing digital divide in many countries, including Nigeria. According to Correia (2020), the digital divide refers to the unequal distribution of access to information and communication technologies (ICTs) among users (Pick and Siriyuvasak, 2018). This situation is especially prevalent in developing countries, where ICTs deployment within higher education institutions (HEIs) has yet to reach universally acceptable levels (Murgor, 2015).

Against the above backdrop, through a literature review, this chapter discusses the anathema of the digital divide in Nigerian higher education inspired by the lessons from the COVID-19

pandemic. The chapter highlights the effects of the pandemic on the digital divide among HEIs. It stresses the implications of the divide for the continued growth and development of Nigeria's educational sector. This chapter intends to contribute to the broader discourse around digital literacy and the integration of technology in higher education in Nigeria, exploring the challenges experienced during the pandemic and proposing recommendations gleaned from various scholarly sources that could facilitate the process of bridging the digital divide in higher education. This chapter uncovers both infrastructural and socio-economic challenges experienced in the adoption of online-based platforms and suggests strategies that can be employed to bridge the digital divide.

Literature Review

The Digital Divide: A Global Perspective

The phrase 'digital divide' was coined in the 1990s to represent the rising disparity in access to and usage of ICT between individuals, households, businesses, and geographical regions (Martens et al., 2020; Odularu et al., 2023). The idea arose in response to the realisation that the benefits of digital technology were not being dispersed evenly, resulting in discrepancies between areas, countries, and socio-economic groups (Jaggars et al., 2021). Since then, the notion has expanded to include not just variations in fundamental information and communication technologies (ICTs) access but also differences in digital skills, ICT usage patterns, and the ability to use digital resources for socio-economic development (Choudrie et al., 2020; Hussain, 2020; Eli-Chukwu et al., 2023).

The concept of the digital divide pertains to the uneven distribution and varying levels of proficiency in utilising ICTs across individuals, households, and geographical areas (Gladkova et al., 2020; Laufer et al., 2021; Odularu et al., 2023). Various factors can contribute to the digital divide, including the disparities pertaining to income, education, age, gender, and geographic location. For instance, in a study of five developed countries (New Zealand, Sweden, the United States, the United Kingdom and Switzerland), sociodemographics alone accounted for up to half of the variance in the usage of the internet, with age being the strongest predictor (Büchi et al., 2016). Their study suggests that despite having physical access to the internet, low-usage groups like older adults and those with less education and internet experience risk being more cut off from the economic, social, cultural, and human capital that may be attained through internet use. In another study that examined the digital divide in 108 countries, Park et al. (2015, p.92) found that factors such as "per capita GDP, tertiary education entrance rate, the ratio of the urban population, and the share of service trade in GDP" were factors leading to the global digital divide. Furthermore, in a study of 110 countries that examined the determinants of technology usage, Pick

and Nishida (2015) found that judicial independence and innovation capacity are significant determinants for ICT utilisation in Europe, while in Asia, tertiary education, foreign direct investment, and innovation capacity were the most important determinants. Additionally, higher education, press freedom, and foreign direct investment played a significant role in ICT utilisation in Africa - Latin America.

The proliferation of ICTs, including the advent of smartphones and high-speed internet, offers numerous prospects for enhancing education and fostering human development (Correia, 2020; Lythreatis et al., 2022). Modeme and Adeogun (2021) opined that the paradox lies in that instead of promoting universal progress, these technologies are unintentionally exacerbating social inequality by being underutilised or inaccessible to a significant portion of the population. For instance, by examining the digital divide between urban and rural distance learning students in South Africa, Lembani et al. (2020) found that urban students' educational experiences differ greatly from those of students in rural, peri-urban, and metropolitan settings with limited access to ICT. Another study that investigated the digital divide in Pakistan's education sector discovered a greater digital divide between faculty from public and private universities in terms of access to skills, physical level, usage level, and usage level in terms of age and gender. This digital divide was also found to be more pronounced regarding university type (Soomro et al., 2020).

Since the advent of the digital age, access to and usage of ICT has become increasingly critical in shaping economic, social, cultural, and political landscapes globally. Without question, the widespread use of digital technology and the internet has enabled millions of individuals to engage in new forms of communication, gain access to information, and participate in the global knowledge economy (Gladkova et al., 2020; Eli-Chukwu et al., 2023). According to research, the digital divide highlighted the differences between those with access to ICT and the necessary abilities to use it successfully and those without. This disparity, known colloquially as the digital divide, offers substantial obstacles to social equity, economic progress, and global inclusivity (Correia, 2020; Gladkova et al., 2020; Choudrie et al., 2020; Esteban-Navarro et al., 2020; Hass et al., 2023), which has been further exacerbated since the COVID-19 pandemic.

According to Odularu et al. (2023), the COVID-19 pandemic has upended the traditional educational paradigm, prompting widespread adoption of the "emergency remote teaching" technique. The implementation of measures to safeguard public health, while essential, has had the unintended consequence of exacerbating the pre-existing digital divide that exists among

various countries and socio-economic groups (Correia, 2020; Modeme and Adeogun, 2021). In contrast to developed nations that have seamlessly adopted digital learning and welcomed advancements in educational technology, several developing countries, such as Nigeria, have encountered challenges related to insufficient infrastructure, restricted digital proficiencies, and a dearth of reasonably priced information and communication technologies (Adeleke, 2021; Mordi et al., 2023; Odularu et al., 2023).

Dimensions of the Digital Divide

Based on the review of existing literature, this chapter identifies various dimensions of the digital divide, which can be broadly categorised into three layers: access, usage, and socio-economic benefits (Gladkova et al., 2020; Choudrie et al., 2020; Eli-Chukwu et al., 2023; Loglo and Zawacki-Richter, 2023). The following subsections offer a brief overview of these dimensions.

Access

The digital divide's access dimension pertains to the inequality in fundamental access to information and communication technology (ICT) infrastructure, encompassing computers, mobile phones, and internet connectivity, whether in personal, professional, or communal settings (Modeme and Adeogun, 2021; Lythreatis et al., 2022). According to Abah (2019), the access gap in the Global North has been decreasing as a result of extensive infrastructure expansion and the widespread adoption of ICT services. On the other hand, within the regions commonly referred to as the Global South, the issue of unequal access to information and communication technology (ICT) persists. This is largely attributed to insufficient infrastructure, restricted affordability of ICT services, and various socio-cultural factors, as noted by Lythreatis et al. (2022).

Usage

According to Reddick et al. (2020), the digital divide's usage dimension pertains to the discrepancies in the frequency, types, and intensity of ICT usage among various individuals and groups. Azubuike et al. (2021) argue that the usage divide holds greater significance than the access divide, as it pertains to the capacity of users to effectively utilise ICT for a range of objectives, including communication, education, commerce, and civic participation. Jaggars et al. (2021) have identified several factors that contribute to the usage divide, including an individual's socio-economic status, level of education, age, gender, cultural background, and availability of social support.

Socio-economic Benefits

The digital divide's socio-economic benefits dimension pertains to disparities in individuals' and communities' capacity to attain concrete advantages from ICT, such as increased productivity, income, and general welfare (Azubuike et al., 2021). Similarly, Trotter et al. (2022) assert that the effective utilisation of digital resources is contingent upon certain prerequisites, including sufficient accessibility, pertinent competencies, accessible materials, and communal backing. The act of bridging the digital divide is perceived as a strategy to attain more extensive development goals, including but not limited to poverty alleviation, social integration, and economic advancement (Esteban-Navarro et al., 2020; Modeme and Adeogun, 2021; Odularu et al., 2023).

According to Adeleke (2021), the digital divide manifests at various levels across geographical, socio-economic, and demographic divides. Geographically, disparities can be observed between urban and rural areas and between developed and developing countries (Azubuike et al., 2021; Jaggars et al., 2021 Eli-Chukwu et al., 2023). Socio-economically, the digital divide disproportionately affects disadvantaged groups, such as the poor, the elderly, the disabled, and marginalised communities (Hussain, 2020; Lembani et al., 2020). Demographically, gender- and ethnicity-related digital divides have been observed, both within and across countries (Modeme and Adeogun, 2021; Eli-Chukwu et al., 2023).

Digital Divide and its Impact on Higher Education System

Although the digital divide has been extensively discussed in the context of social and economic disparities, it is also worth exploring how this divide manifests within higher education. The digital divide in higher education is the unequal access to and use of technology, digital resources, and connectivity among students, educators, and institutions (Correia, 2020; van de Werfhorst, Kessenich and Geven, 2022). This inequality not only refers to the possession of digital devices but also to the skills, knowledge, and attitudes towards technology, which are necessary for effective participation in today's digital society (Correia, 2020; Lembani et al., 2020; Adeleke, 2021; Odularu et al., 2023).

The term digital divide has become increasingly significant in higher education, a phenomenon highlighting the widening gap between populations with access to digital technologies and those lacking it. As technology evolves rapidly, it is becoming an essential component of education systems worldwide. Digital tools and resources are widely used to deliver courses, enhance learning experiences, and enable communication among students, faculty, and staff. However, such

advances have also had consequences, with a distinct digital divide emerging in higher education, leading to educational disparities and challenges in teaching and learning processes (Cruz-Jesus et al., 2016; Lai and Widmar, 2021).

A primary aspect of the digital divide in higher education is hardware accessibility. Students need devices such as smartphones, laptops, and tablets to access course materials, collaborate with peers, and engage in e-learning activities (Correia, 2020). However, financial constraints and socio-economic factors can limit the availability of these devices for certain groups. Consequently, those with access to these devices have more opportunities for academic success (Hussain, 2020; Adeleke, 2021).

According to Correia (2020), internet connectivity also contributes to the digital divide. Internet access is essential for performing online research, accessing digital libraries or course materials, and participating in virtual classrooms (Hussain, 2020). In this regard, disparities in internet access can result in an uneven playing field among students. Digital infrastructure greatly affects the level and quality of internet connectivity. Students living in rural or underdeveloped regions are more likely to experience slower internet speeds and unreliable connections, impeding effective online learning (Laufer et al., 2021).

Beyond hardware and connectivity, digital literacy has become essential to higher education (Van de Werfhorst, Kessenich and Geven, 2022). Acquiring digital literacy skills helps individuals effectively use digital tools, interpret online materials, and communicate in online settings (Choudrie et al., 2020; Jaggars et al., 2021). The digital divide in higher education encapsulates the disparities in digital literacy skills among students, where some might lack the skills required to successfully navigate online educational resources, placing them at a significant disadvantage (Odularu et al., 2023).

The digital divide in higher education has wide-ranging impacts on teaching and learning outcomes. Firstly, unequal access to technology and connectivity can hinder students' ability to engage with course content, participate in lectures or discussions, and collaborate with peers (Abah, 2019). This disparity can lead to decreased academic performance and reduced overall satisfaction with the educational experience (Reddick et al., 2020; Loglo and Zawacki-Richter, 2023).

Moreover, the digital divide can exacerbate existing socio-economic inequalities among students. According to Hussain (2020), students from lower socio-economic backgrounds often have limited access to digital resources, which can affect their academic success and limit their opportunities for high-quality education. Similarly, Eli-Chukwu et al. (2023) opined that digital exclusion can result in students falling behind in their studies and struggling to match the pace of their peers who possess the necessary digital resources and skills.

The rapid shift to remote learning during the COVID-19 pandemic has thrown the digital divide in higher education into sharp relief. As educators around the world raced to adopt digital teaching methods, students lacking technological access or digital literacy faced significant barriers to educational opportunities (Martens et al., 2020; 2021). Trotter et al. (2022) concluded that without urgent action to address these disparities, the digital divide will continue to widen and deepen educational inequality.

Digital Divide in Nigeria's Higher Education System

Nigeria, the most populous country in Africa, is currently contending with various economic, political, and social obstacles that have significant implications for its educational sector. The tertiary education industry, which encompasses more than 170 institutions such as universities, polytechnics, and colleges, confronts many complex challenges, such as insufficient financial support, obsolete course content, and inadequate educational materials (Adeleke, 2021). The digital divide hinders the integration of ICTs into Nigeria's higher education system, resulting in a significant gap between Nigeria and other countries worldwide (Azubuike et al. 2021).

The COVID-19 pandemic has brought to the fore the discrepancies between individuals who have access to digital learning resources and those who do not, thereby underscoring the digital divide in Nigeria. The temporary cessation of higher education institutions posed a challenge for numerous students, particularly those from rural and low-income backgrounds, who had difficulty accessing consistent and high-quality learning opportunities (Aworanti, 2016). Furthermore, a considerable number of educators lacked the necessary resources and skills to effectively conduct remote learning, significantly impacting the quality of pedagogy (Mordi et al., 2023).

To better understand the context, it is crucial to explore the origins and manifestations of Nigeria's digital divide. Abah (2019) assert that the initial digital divide emerged from a lack of ICT

infrastructure, inadequate funding and investment, and insufficient literacy among higher education stakeholders. Several authors have analysed these digital divide manifestations within Nigeria's universities. Jaggars et al. (2021) contend that many students and academic staff lack access to the online teaching platforms needed for distance learning. Azubuike et al. (2021) added that students living in rural areas may face even more significant barriers due to geographical isolation, low levels of ICT infrastructure, and socio-economic factors. In addition to infrastructure issues, Odularu et al. (2023) highlight the low levels of digital literacy among students and the faculty's resistance to adopting e-learning systems.

COVID-19 Pandemic and Impact on Digital Divide in Nigeria

COVID-19 and the subsequent measures to curtail its spread exacerbated the digital divide across Nigerian higher education institutions, as universities were compelled to pivot swiftly to online learning. Professors and students needed access to the internet and necessary digital devices for effective teaching and learning, which illuminated a significant gap in access and resources. Several researchers have attempted to quantify the impacts of the COVID-19 pandemic on Nigeria's digital divide (Gladkova et al., 2020; Choudrie et al., 2020; Hussain, 2020; Modeme and Adeogun, 2021; Zawacki-Richter, 2023). Adeleke (2021) conducted a survey on the readiness of Nigerian universities for e-learning during the pandemic; through this survey, the researchers found that only 19% of respondents considered themselves well-prepared for online learning. Likewise, Odularu et al. (2023) demonstrated that 78% of Nigerian students faced difficulties adopting e-learning systems. These studies highlight the urgent need to address the digital divide in Nigeria's higher education sector, given the potentially lasting effects of the COVID-19 pandemic on teaching and learning methodologies.

A growing digital divide has exacerbated pre-existing disparities in Nigeria's higher education system. These implications resonate across students' access to quality education, reduced opportunities for growth and development, and hindered socio-economic progress. Students who lack access to digital infrastructures are disadvantaged regarding effective learning and growth (Eli-Chukwu et al., 2023). As many HEIs in Nigeria have transitioned to remote learning, the digital divide effectively means that a significant proportion of the student population cannot engage with their coursework, hindering their academic performance and development (Sulaimon, Adebisi and Odiachi, 2020).

Furthermore, this widening digital divide could reinforce the socio-economic disparities within Nigeria. Researchers have argued that access to quality higher education is vital for socio-economic growth and development (Choudrie et al., 2020; Soomro et al., 2020). According to Lai and Widmar (2021), if the digital divide perpetuates, it could exacerbate the country's socio-economic issues, contributing to a vicious cycle of poverty and underdevelopment.

Challenges in the Digital Divide during the COVID-19 Pandemic

Infrastructural Challenges

The COVID-19 pandemic necessitated the rapid transition to online learning for educational institutions worldwide. In Nigeria, however, institutional capacities have proven to be inadequate in providing such an environment (Adeleke, 2021). Many higher education institutions have outdated ICT systems, unequipped personnel, insufficient bandwidth, and limited accessibility to essential digital tools for remote learning (Abah, 2019; Modeme and Adeogun, 2021; Odularu et al., 2023). Furthermore, Nigeria faces ongoing power supply challenges, where frequent outages and unstable connections exacerbate students' and educators' difficulties as they attempt to access online platforms. Furthermore, unreliable internet connectivity was identified as a crucial infrastructural factor that affected the effectiveness of online delivery for the few higher education institutions that were forced to react to the unprecedented impact of the pandemic (Mordi et al., 2023). Adebisi and Odiachi (2020) reported that Nigeria experienced significant inconsistency in internet connectivity, particularly in rural areas, during the pandemic. This affected higher institutions' efforts to transition to online learning platforms, raising concerns about the effectiveness of e-learning in the Nigerian context. In addition, the pandemic also exposed the limited access to digital resources across the Nigerian education sector. During the pandemic, the inadequate number of computers, laptops, and other digital devices limited students' and lecturers' access to online learning resources (Azubuike et al., 2021). This was a significant challenge, especially for students and lecturers in rural settings where access to digital tools is much more limited.

Socio-Economic Challenges

Closely related to infrastructure deficiencies, socio-economic inequality plays a significant part in Nigeria's digital divide. The burden of obtaining technological devices and maintaining internet connectivity primarily falls on students and educators. Considering Nigeria's soaring poverty rates,

acquiring personal devices such as laptops, tablets, and reliable internet connectivity remains a luxury for many learners and instructors (Mordi et al., 2023).

Notwithstanding the availability of digital infrastructure, the lack of digital literacy among students and educators further complicates the prospects of remote learning during the pandemic. Many individuals have limited experience navigating and exploiting digital platforms effectively. The insufficiency of digital skills has perpetuated disparities in students' learning experience and advancement across the nation (Onwuagboke et al., 2015; Ukwoma et al., 2016). A significant challenge experienced during the pandemic involves the limited digital literacy levels among students and lecturers in Nigerian higher institutions (Modeme and Adeogun, 2021; Odularu et al., 2023). Insufficient digital skills have had a negative impact on online learning, as students struggle to navigate e-learning platforms, and lecturers face challenges in delivering course content and assessments effectively.

Furthermore, the poor socio-economic situation in Nigeria, leading to financial constraints, impacts the digital divide experienced in Nigeria's higher education. For instance, Sulaimon, Adebisi and Odiachi (2020) stated that low-income households had been disproportionately affected by the economic hardship resulting from the pandemic. As a result, these households were less likely to afford laptops, smartphones, or internet packages needed for online learning.

Proposed Solutions to Bridge the Digital Divide

Infrastructural Solutions

The provision of widespread, high-speed, and affordable internet services is vital in alleviating Nigeria's digital divide. The Nigerian government and other relevant stakeholders need to prioritise the execution of the National Broadband Plan and facilitate an environment encouraging extensive network coverage, competition, and affordability. In addition, investing in affordable and reliable internet connectivity across the country, particularly in rural areas, is crucial in bridging the digital divide (Trotter et al., 2022; Eli-Chukwu et al., 2023). It is essential to encourage collaborations between the government and private sectors, aiming to extend telecommunication networks across Nigeria to facilitate seamless access to online learning resources.

Furthermore, the Nigerian government, in collaboration with higher institutions, should launch initiatives aimed at increasing the availability of digital tools for students and lecturers (Adeleke, 2021; Loglo and Zawacki-Richter, 2023). This could involve developing schemes for the provision

of laptops, computers, and other digital gadgets at favourable prices or creating computer labs on campus with adequate devices and internet access for all students.

Socio-Economic Solutions

Investment in digital infrastructure within higher education institutions is imperative to encourage online learning and research in these trying times. Nigerian universities and colleges should consider multi-modal options encompassing digital and non-digital platforms. For instance, institutions can adopt a blended learning approach or facilitate collaborations with community radio and television stations to ensure academic continuity (Sulaimon, Adebisi and Odiachi, 2020; Adeleke, 2021; Azubuike et al., 2021; Jaggars et al., 2021 Eli-Chukwu et al., 2023; Hass et al., 2023). The promotion of digital literacy through capacity-building programmes is significant in closing Nigeria's digital divide. Higher education institutions can integrate digital literacy training sessions into their curricula, supporting students and educators in developing essential skills pertinent to this digital age.

Given public institutions' capacity and resource constraints, forging collaborations with private sectors can potentially accelerate digital transformation in higher education. By partnering with private tech companies and telecom operators, institutions can access vital resources and expertise that facilitate digital access for students and educators.

Furthermore, to mitigate the economic barriers to digital learning, it is essential to provide funding support and scholarships to students from low-income households (Modeme and Adeogun, 2021). This will empower economically disadvantaged students to acquire the necessary tools for online learning and ensure that no student is left behind.

Ultimately, Nigerian higher institutions should prioritise the development of digital literacy among students and lecturers (Odularu et al., 2023). This can be achieved by incorporating digital skills training into the curriculum, providing workshops and training sessions for teaching staff on digital learning tools, and supporting students with the necessary technical support to navigate online learning environments effectively.

Managerial Implications in Addressing the Digital Divide In Nigeria Higher Education: Policies and Initiatives

The digital divide in higher education is a matter of great urgency that demands collaborative action from governmental bodies, academic institutions, educators, and students alike. The provision of hardware, connectivity, digital literacy training, and the establishment of inclusive digital learning environments can reduce the disparity between individuals who derive educational benefits from technology and those who do not. Addressing the digital divide in higher education is a moral and societal obligation and a crucial factor in securing a just and lasting future for all.

A comprehensive strategy is necessary to tackle the issue of the digital divide in higher education. Initially, guaranteeing accessibility to reasonably priced and dependable hardware and connectivity is paramount. It is recommended that governments and institutions allocate resources towards enhancing the digital infrastructure and offering subsidies or affordable devices to students who face economic challenges, as suggested by Trotter et al. (2022). According to Azubuike et al. (2021), the provision of essential learning tools to students can be facilitated through the implementation of initiatives such as 'One Laptop per Child' and public-private partnerships.

Furthermore, it is imperative to introduce digital literacy initiatives and instruction across all tiers of the educational framework. Lythreatis et al. (2022) suggest that educational institutions can offer workshops and resources to assist students in enhancing their digital literacy abilities and to aid educators in adjusting their pedagogical approaches to digital contexts. According to Hass et al. (2023), the integration of digital literacy into academic curricula and accreditation standards will guarantee that graduates acquire the necessary competencies to thrive in a swiftly digitising society.

Finally, creating inclusive digital learning environments is crucial to addressing the digital divide. Educational institutions should prioritise accessible digital content and support services for students with disabilities or special needs. Implementing Universal Design principles in the development of online materials and offering alternative means of assessment can promote equitable learning experiences for all students, regardless of their background or level of digital knowledge (Martens et al., 2020; Soomro et al., 2020; Sulaimon, Odularu et al., 2023; Loglo and Zawacki-Richter, 2023).

Conclusion

The digital divide in Nigerian higher education is a multifaceted issue that requires urgent and extensive redress. The lessons from the COVID-19 pandemic have underscored the need for a comprehensive and concrete action plan to ameliorate this schism in access to quality education. To bridge the digital divide, it is essential for stakeholders in Nigerian higher education to develop robust strategies that address these challenges. The COVID-19 pandemic has exposed the sharp divides in Nigerian higher education, accentuating the need for earnest and comprehensive solutions tailored to address the country's extensive digital divide. Guided by lessons from the pandemic, stakeholders must commit to fostering a holistic and sustainable educational environment via investment in digital infrastructure, broadband connectivity, capacity building, and public-private partnerships. Ultimately, the responsibility of bridging the digital divide in Nigeria extends beyond higher educational institutions; it requires the collective efforts of policymakers, civil society, private corporations, and communities. By addressing the current limitations and fostering digital inclusion, Nigeria can assure that, notwithstanding any crises, its learners continue to receive a consistent education in a world that increasingly depends on digital proficiency and connectivity.

This chapter suggests improving internet connectivity and digital resource access, providing financial support for low-income households, and enhancing digital literacy. Developing robust ICT infrastructure, investing in digital literacy training, fostering public-private partnerships, and leveraging local content is paramount in narrowing the gap between students, communities, and institutions. Through the collaborative efforts of various stakeholders, Nigeria can construct a post-pandemic educational landscape which aligns with global standards of digital equitability and accessibility. Furthermore, the government and higher education institutions must work collaboratively to build an inclusive digital learning environment and ensure that Nigerian higher education can benefit from digital advancements in today's globalised world.

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Authors' Short Bio

Hakeem Adeniyi Ajonbadi is a seasoned lecturer and expert in International Human Resource Management and Organisational Development at Birmingham City University, UK. He has taught in several countries, including the UK, UAE, Belgium and Nigeria, in the last two and half decades. He has a background in Economics and Law and has bagged four master's degrees in various Business Management fields and a PhD in Management at the University of Wales. As an apt researcher, he has authored four books and over fifty articles in peer-reviewed journals on various aspects of HRM and Entrepreneurship.

Femi Stephen Olawoyin is an expert in Business and Entrepreneurship. Following his Bachelor's and Master's degrees in business and entrepreneurship, he is currently completing a second master's degree in International Business. Femi has published in relevant international journals on trending issues in the fields of Management, Business Administration and Entrepreneurship.

Olatunji David Adekoya is a Senior Lecturer of Organisational Behaviour and Human Resource Management (OBHRM) at Sheffield Hallam University, UK. He has also lectured at the University of East London and the University of West London. His key research examines HRM in local and international contexts, with a strong focus on work-life balance, organisational flexibility, employee wellbeing, employment relations and economic growth and development. He has published in high-impact journals, including the British Journal of Management, Information Technology and People, Gender, Work & Organisation, Personal Review and Employee Relations. He is a fellow of several professional bodies, both locally and internationally.