ADVANCING SUSTAINABLE DEVELOPMENT IN NIGERIA THROUGH DIGITAL LITERACY AND THE DIGITAL ECONOMY

[*1]ABUBAKAR IBRAHIM

[*1]Department of Computer Science
Jigawa State College of Education Gumel.

*Corresponding Author Information:-
E-Mail: garbakainuwa@gmail.com
Phone: +2348034597856

ABSTRACT

In the 21st century, digital literacy has emerged as a critical foundation for national growth, innovation, and social inclusion. For Nigeria, the integration of digital literacy into economic activities represents a transformative opportunity to drive sustainable development and create employment. This paper explores the relationship between digital literacy, the digital economy, and sustainable development in Nigeria. It examines how digital skills enhance productivity, enable entrepreneurship, and strengthen participation in the global knowledge economy. The study also identifies major challenges such as digital inequality, inadequate infrastructure, and limited trust in online systems that constrain progress. It argues that achieving Nigeria's sustainable development goals (SDGs) requires targeted investment in digital education, inclusive policies, and gender-sensitive training initiatives. The paper concludes that bridging the digital divide and strengthening cybersecurity awareness will not only enhance economic resilience but also promote inclusive growth in the era of digital transformation.

Keywords: Digital literacy, Digital economy, Sustainable development, Job creation, Nigeria, Digital inclusion.

1. INTRODUCTION

Digital literacy has become a defining skill for national competitiveness in the global economy. It enables individuals to access, evaluate, and utilize information through digital technologies, thereby expanding opportunities for innovation and sustainable growth. For Nigeria Africa's most populous nation and one of its largest economies digital literacy serves as a gateway to achieving the United Nations Sustainable Development Goals (SDGs), including quality education, decent work, and economic growth.

Sustainable development refers to the process of meeting present needs without compromising the capacity of future generations to meet theirs (Awa et al., 2025). It requires

balancing economic progress with social equity and environmental protection. According to the International Telecommunication Union (ITU, 2017), any effective development policy must ensure that technological progress benefits both current and future populations. Thus, the advancement of digital literacy aligns with the long-term vision of sustainability by equipping citizens with the tools to adapt, innovate, and thrive in a rapidly changing world.

The influence of digital technology is already transforming the global economic landscape. As Goodwin (2015) observed, many of the world's largest companies such as Uber, Airbnb, and Alibaba operate primarily through digital platforms, redefining traditional business models without owning physical assets. This shift demonstrates how digital literacy and digital platforms together form the backbone of a new economy driven by knowledge, creativity, and connectivity.

In Nigeria, the government has recognized the central role of digital skills in national development. The Executive Vice-Chairman of the Nigerian Communications Commission (NCC), Prof. Umar Garba Danbatta, emphasized that digital literacy provides individuals with the confidence to create digital content and participate actively in the innovation ecosystem (NCC, 2021). Similarly, the Minister of Communications and Digital Economy, Dr. Isa Pantami, highlighted that investment in digital innovation centers and entrepreneurship programs will accelerate economic diversification and support sustainable growth (Babine, 2021).

Despite these positive developments, Nigeria continues to face significant challenges. The National Bureau of Statistics (NBS) reported persistent unemployment, while limited access to digital infrastructure and skills remains a barrier to inclusive participation. Emerging technologies such as blockchain and cryptocurrencies offer new opportunities for financial inclusion, trade, and remittance efficiency (United Nations, 2020). However, realizing these benefits requires a digitally literate population capable of leveraging these tools safely and productively.

This paper, therefore, examines the importance of digital literacy in driving Nigeria's digital economy toward sustainable development. It explores key concepts, evaluates the national context, highlights the roles of digital literacy in economic transformation, and identifies barriers that must be addressed to ensure inclusive digital growth.

2. CONCEPT OF DIGITAL LITERACY

Digital literacy extends beyond the ability to use computers or access the internet. It encompasses a broad set of cognitive, technical, and social skills that enable individuals to

navigate digital environments effectively. The American Library Association (ALA, 2013) defines digital literacy as the ability to use information and communication technologies to find, evaluate, create, and communicate information responsibly and efficiently. It involves critical thinking, creativity, collaboration, and digital safety.

UNESCO (2018) expands on this definition by describing digital literacy as the ability to access, manage, understand, integrate, and create information using digital technologies for employment, decent work, and entrepreneurship. It includes related competences such as ICT literacy, media literacy, and information literacy. Essentially, digital literacy equips individuals to participate meaningfully in digital societies and economies.

In practical terms, digital literacy enables people to live, learn, and work effectively in a technology-driven environment. It includes the capacity to identify reliable information, avoid misinformation, and communicate across digital platforms. Study Smart, (n.d.) notes that digital literacy is as much about critical thinking as it is about technical ability, as users must evaluate the quality and purpose of online information.

For Nigeria, promoting digital literacy means empowering citizens especially youth and women to acquire the skills necessary for digital participation. It also implies integrating digital competencies into the education system, workplace training, and community development programs. Without such efforts, large segments of the population risk exclusion from the benefits of the digital economy.

3. CONCEPT OF THE DIGITAL ECONOMY

The digital economy refers to all economic activities enabled by digital technologies, including e-commerce, digital finance, data-driven innovation, and online services. According to the European Commission (2019), the digital economy encompasses businesses that use the internet to sell goods and services or operate digital platforms that match supply and demand. Similarly, the World Economic Forum (WEF) defines it as a broad range of economic activities that involve digital jobs and digitally enabled occupations across all sectors.

The National Digital Economy Policy and Strategy (NDEPS, 2019) describe the digital economy as any aspect of economic activity driven by digital technologies. It highlights that digital innovation is a major driver of national competitiveness, productivity, and inclusive growth. The backbone of this economy is hyperconnectivity the growing interconnectedness among people, organizations, and devices through the Internet of Things (IoT), mobile technologies, and cloud computing (Damian & Ludwig, 2020).

Globally, the digital economy contributes significantly to GDP growth, job creation, and social transformation. For developing nations like Nigeria, it represents a pathway to leapfrog traditional development barriers and diversify the economy beyond resource dependence. However, this transformation can only be sustained through a digitally skilled workforce capable of managing and innovating within digital systems.

4. DIGITAL LITERACY AND THE DIGITAL ECONOMY IN NIGERIA

Nigeria stands at a crucial juncture in its pursuit of economic diversification and sustainable growth. As Africa's largest economy and most populous nation, it possesses significant potential to leverage digital innovation for social and economic transformation. The National Digital Economy Policy and Strategy (NDEPS, 2019) identifies digital literacy as one of eight strategic pillars essential for achieving a fully digital economy. Its mission statement *"Leveraging digital technologies for national economic development"* underscores the government's commitment to using technology as a catalyst for inclusive progress.

A digitally literate population is fundamental to this vision. Workers who can navigate online platforms, manage data, and engage in digital communication are better positioned to contribute to economic productivity. The Nigeria Digital Economy Diagnostic Report (World Bank, 2019) emphasizes that improvements in digital connectivity, skills, and financial services can unlock new economic opportunities, particularly for youth and small enterprises.

Nigeria's digital transformation is supported by emerging technologies such as artificial intelligence (AI), blockchain, big data analytics, and the Internet of Things (IoT). These tools have opened pathways for innovative business models and new employment sectors. However, their successful adoption depends largely on the nation's capacity to build human capital through education and training in digital skills.

According to Ibanga (2021), digital literacy has become a critical component of national development strategies since the COVID-19 pandemic, which highlighted the importance of remote work, e-learning, and digital commerce. Similarly, Abdullahi (2021), Director-General of the National Information Technology Development Agency (NITDA), stated that digital literacy lies at the heart of economic diversification and poverty reduction in Nigeria. By supporting innovation and entrepreneurship, digital skills empower citizens to create sustainable livelihoods rather than depend solely on formal employment.

The development of Nigeria's digital economy also aligns with global trends where technology serves as a primary source of wealth creation. As Abdullahi (2021) observed,

innovation transforms invention into commercial value. When supported by strong policies and infrastructure, digital literacy can propel Nigeria toward greater productivity, export competitiveness, and resilience in the face of global economic shifts.

5. ROLE OF DIGITAL LITERACY IN THE DIGITAL ECONOMY FOR SUSTAINABLE DEVELOPMENT

Digital literacy contributes to sustainable development through multiple pathways. It enhances employability, fosters innovation, strengthens governance, and promotes social inclusion. In Nigeria, where unemployment and inequality remain pressing issues, digital literacy provides practical tools for empowerment and participation in the modern economy.

a. Empowering Small and Medium Enterprises (SMEs)

Digital literacy enables entrepreneurs to establish and manage small-scale enterprises, such as web design, software development, computer maintenance, and data processing. These ventures contribute to job creation and economic self-reliance. When youths acquire digital competencies, they can participate in e-commerce and digital marketing, reducing unemployment and poverty levels. SMEs equipped with digital skills are also more resilient and capable of reaching broader markets, thereby supporting the Sustainable Development Goals (SDGs) related to decent work and economic growth.

b. Strengthening Cybersecurity Awareness and Safety

A digitally literate population is better equipped to recognize online threats and protect themselves from cybercrime. With Nigeria's increasing dependence on e-payment systems and online transactions, cybersecurity awareness is crucial to maintaining trust in the digital economy. Programs such as the National Adopted School for Smart Education (NASSE) and sectoral Computer Emergency Readiness and Response Teams (CERRTs) promote digital safety and resilience. As Nnabuife (2021) noted, technological tools like drones, artificial intelligence, and robotics are now being deployed to enhance national security. Cybersecurity knowledge not only safeguards economic transactions but also supports broader social stability—an essential condition for sustainable development.

c. Enhancing Economic Sustainability and Growth

Digital literacy serves as a catalyst for economic growth by boosting productivity and enabling participation in emerging sectors. Research indicates that a 10% increase in mobile broadband penetration can lead to a 0.6–2.8% increase in GDP (Ericsson, n.d.). In Nigeria, expanding mobile broadband access can transform rural communities by enabling access to services such as e-health, e-learning, and mobile banking. These digital solutions foster

inclusion, drive entrepreneurship, and promote sustainable livelihoods. The transition to e-government systems can further enhance efficiency, transparency, and social protection, especially for vulnerable populations (United Nations, 2020).

d. Addressing Climate Change through Digital Innovation

Digital literacy contributes to environmental sustainability by supporting the development of smart technologies that monitor and manage natural resources. According to Hughes (2020), digital transformation can help reduce carbon emissions through improved efficiency in production, logistics, and energy consumption. In Nigeria, digitally skilled professionals can leverage technologies like satellite monitoring, IoT sensors, and data analytics to enhance environmental management and disaster preparedness. This integration of technology into climate action strategies strengthens the resilience of communities and aligns with global sustainability commitments.

e. Promoting Digital Sustainable Production

Adoption of digital technologies in agriculture and manufacturing has the potential to enhance productivity, reduce costs, and minimize waste. Through initiatives led by NITDA and other agencies, digital educators are empowering farmers and rural entrepreneurs to adopt smart farming tools and digital marketplaces (Akintunde, 2021). These programs enable rural producers to access new markets, improve supply chains, and increase profitability. As digital literacy spreads, Nigeria's workforce becomes more adaptive to innovation-driven production systems that support both economic and environmental sustainability.

f. Promoting Social Inclusion and Gender Equity

One of the most powerful aspects of digital literacy is its potential to bridge social divides. Women and marginalized groups often face limited access to education and economic resources. Targeted digital literacy programs can help close the gender gap, empowering women to participate in digital entrepreneurship, online education, and governance. Promoting inclusive access to technology aligns with SDG 5 (Gender Equality) and contributes to overall national development.

6. Issues Associated with Digital Literacy in Nigeria's Digital Economy

Despite growing awareness and policy initiatives, Nigeria continues to face numerous challenges in its transition toward a digitally literate society. These obstacles hinder the effective implementation of digital literacy programs and the development of an inclusive digital economy.

a. Inadequate Infrastructure and Connectivity

A major barrier to digital literacy in Nigeria is the uneven distribution of ICT infrastructure, particularly in rural areas. Broadband penetration remains below the global average, and inconsistent power supply limits access to digital tools. According to the National Bureau of Statistics (2022), only a fraction of Nigerian households have reliable internet access. Without affordable connectivity and stable electricity, digital learning and innovation remain out of reach for many communities.

b. Limited Access to Digital Education and Skills Training

Although digital literacy has been introduced into Nigeria's education policy framework, implementation remains inconsistent. Many public schools lack computers, trained instructors, or internet facilities. Private institutions often offer better digital education, creating disparities in access. This digital divide perpetuates inequality between urban and rural populations and between socio-economic classes. Continuous professional development for teachers and standardized ICT curricula are necessary to bridge this gap.

c. Cost of Digital Devices and Services

The high cost of smartphones, computers, and data services poses a serious obstacle to widespread digital inclusion. Economic instability and inflation further reduce purchasing power. Without subsidies or local manufacturing of affordable devices, large portions of the population remain excluded from digital opportunities. Moreover, small enterprises face difficulty sustaining digital operations due to expensive internet subscriptions and limited local technical support.

d. Cybersecurity Threats and Misinformation

As Nigeria's digital economy expands, cybercrime and misinformation have become critical challenges. Individuals who lack digital literacy are more vulnerable to fraud, data breaches, and online scams. The absence of strong cybersecurity culture undermines confidence in digital systems and financial platforms. Programs that promote responsible online behavior, data privacy, and cyber ethics are therefore essential to safeguarding economic progress.

e. Policy Implementation Gaps

While Nigeria has developed commendable digital strategies such as NDEPS (2019**)** and the National Broadband Plan (2020–2025) their execution is often hampered by bureaucratic bottlenecks and inconsistent funding. Coordination among relevant agencies remains weak,

leading to duplication of efforts. For digital literacy to drive sustainable development, policies must be backed by measurable indicators, inter-agency collaboration, and sustained investment.

f. Socio-Cultural and Gender Barriers

Social norms and gender inequalities also affect digital participation. In many rural communities, cultural perceptions discourage women and girls from pursuing technology-related education. This limits their ability to benefit from the digital economy. Addressing these barriers requires culturally sensitive advocacy, mentorship programs, and inclusive training initiatives that prioritize women, youth, and persons with disabilities.

7. CONCLUSION

Digital literacy is a cornerstone of Nigeria's digital economy and a critical enabler of sustainable development. It empowers individuals to engage meaningfully in economic activities, enhances productivity, and supports innovation across all sectors. However, realizing its full potential requires addressing persistent barriers such as inadequate infrastructure, limited access to quality education, cybersecurity risks, and policy execution gaps.This paper concludes that without deliberate investment in digital literacy, Nigeria risks deepening socio-economic inequality and losing competitiveness in the global economy. To build a resilient and inclusive digital society,

8. RECOMMENDATIONS

Based on the above discussion, the following recommendations are proposed:

1. **Expand Digital Infrastructure:**
   The government and private sector should collaborate to improve broadband penetration, electricity supply, and access to affordable digital devices, particularly in rural areas.
2. **Integrate Digital Literacy into All Education Levels:**
   Curriculum reforms should prioritize digital competence from primary through tertiary education. Teachers should receive regular ICT training and access to digital teaching tools.
3. **Promote Inclusive Access and Gender Equality:**
   Special programs should target women, rural youth, and marginalized groups to ensure equitable participation in the digital economy.

4. **Strengthen Cybersecurity Awareness:**
   Nationwide campaigns and school programs should promote digital safety, data protection, and ethical use of technology to build public trust in online systems.
5. **Encourage Public-Private Partnerships (PPPs):**
   Collaboration between government, tech companies, and NGOs can accelerate capacity-building initiatives and create sustainable digital ecosystems.
6. **Monitor and Evaluate Policy Implementation:**
   Digital policies must include measurable indicators, transparent funding mechanisms, and regular progress assessments to ensure accountability and results.
7. **Support Local Innovation and Research:**
   Investment in research, startups, and digital innovation hubs can foster indigenous solutions to national challenges, creating new employment opportunities and promoting economic diversification.

In essence, a digitally literate Nigeria will be better positioned to achieve the Sustainable Development Goals by harnessing technology for inclusive, equitable, and resilient growth. Digital literacy is not merely a skill, it is a strategic asset for national development in the 21st century.

References:

Abdullahi, I. (2021). *Digital Literacy as a Driver of Economic Diversification in Nigeria.* National Information Technology Development Agency (NITDA).

Akintunde, O. (2021). *Digital Transformation in Agriculture: Nigeria's Path to Food Security.* Journal of Agritech Innovation, 5(3), 112–124.

American Library Association (ALA). (2013). *Digital Literacy Definition and Framework.*

Babine, F. (2021). *The Role of ICT in Nigeria's Sustainable Development Agenda.* Ministry of Communications and Digital Economy Report.

Awa, E. O., Augustina, O. N., & Okey, A. E. (2025). The Concept of Sustainable Development. In *Int. j. adv. multidisc. res. stud* (Vol. 5, Issue 1). https://www.researchgate.net/publication/394414441

Damian, A., & Ludwig, M. (2020). *Hyperconnectivity and the Future of Digital Economies.* OECD Digital Policy Review.

Ericsson. (n.d.). *How Connectivity Drives GDP Growth: Global Insights.* Ericsson Mobility Report.

Goodwin, T. (2015). *The Battle Is for the Customer Interface. TechCrunch.*

Hughes, J. (2020). *Digitalization and Climate Change: Opportunities for Sustainable Growth.* World Economic Forum.

Ibanga, E. (2021). *Digital Skills and the Post-COVID Economy in Nigeria.* African ICT Review, 9(2), 57–69.

International Telecommunication Union (ITU). (2017). *ICTs, LDCs and the SDGs: Achieving Universal and Affordable Internet Access for All.*

National Bureau of Statistics (NBS). (2022). *Household ICT Access and Usage Survey Report.*

National Digital Economy Policy and Strategy (NDEPS). (2019). *Federal Ministry of Communications and Digital Economy, Abuja.*

Nnabuife, A. (2021). *Digital Innovation for Security and Development in Nigeria.* Vanguard Technology Reports.

Study Smart. (n.d.). *What Is Digital Literacy and Why Does It Matter?* University Learning Support Series.

United Nations. (2020). *E-Government Survey 2020: Digital Government in the Decade of Action for Sustainable Development.*

World Bank. (2019). *Nigeria Digital Economy Diagnostic Report.* Washington, DC: The World Bank.

UNESCO. (2018). *Digital Literacy Global Framework.* UNESCO Institute for Statistics.