DELSU Journal of Educational Research and Development (DJERD), Vol. 22, No. 1, June, 2025. pp. 278-285
ISSN: Print - 0794-1447 Online — 2682-35X **DOI:** https://doi.org/10.61448/djerd22126

Unveiling Fourth Industrial Revolution (4IR) and Digital Literacy for Smart Economy in Nigeria

Efe Francis Ejedafiru Ph.D. (CLN)
Library and Information Science, Delta State University, Abraka, Nigeria
eejedafiru@delsu.edu.ng; **ejedafiruefe@yahoo.com**
08169195102; 08030898698

Lucky Oghenetega Urhiewhu Ph.D.
Dennis Osadebe University Library, Asaba, Delta State, Nigeria

Abstract

The fourth industrial revolution (4IR) is based on the digital revolution. Nigeria's smart economy rating is now placed 136th internationally, with Lagos, the country's economic engine, having a human Development Index (HDI) of 0.681. It has been shown that the smart economy is essentially the result of the acceleration of the nation's economic intellectualization process. The creation of new technology, products, and services increasingly implies the dissemination of entirely new concepts of economic activity and human life. As a result, global trends have demonstrated that digital literacy is a critical component of a smart economy, allowing citizens, businesses, and governments to effectively use digital technology to generate innovation, productivity, and economic growth. However, this study examines the goals of the smart economy, social economic indicators, digital literacy, and Nigeria's smart economy journey, as well as the use of digital literacy for the smart economy in Nigeria. The paper recommends that the Nigerian government invest in digital infrastructure, increase digital literacy rates, build the startup ecosystem, adopt e-government services, and increase GDP growth from the digital economy.

Keywords: Unveiling; Fourth Industrial Revolution; Digital; Literacy; Smart; Economy.

C**opyright @ 2021 DJERD. All Rights Reserved** (https://delsujerd.com)
DJERD is currently indexed in Crossref (21st March 2025-Date) https://ftp.crossref.org/titlelist/titleFile.csv

DELSU Journal of Educational Research and Development (DJERD), Vol. 22, No. 1, June, 2025. pp. 278-285
ISSN: Print - 0794-1447 Online — 2682-35X **DOI:** https://doi.org/10.61448/djerd22126

Introduction

Nigeria boasts Africa's largest population and one of the world's fastest growing populations. The spinal cord of any nation, regardless of population or geographical size, is the level at which technology is used to harness the trending smart economy. Digital literacy education should be at the forefront of national competitive objectives, particularly at all levels of education. Digital literacy refers to the basic knowledge and abilities required to use digital technology properly, safely, and appropriately. As a result, educational institutions in Nigeria should be viewed as providing graduates with the necessary skills to embrace and function in this technologically advanced culture. The Fourth Industrial Revolution (4IR) is here to stay since technological advancements have fundamentally altered how people live, work, and interact with one another. This revolution is based on the digital revolution, which has expanded into trends such as the Internet of Things (IoT), Virtual Reality (VR), Artificial Intelligence (AI), robotics, self-driving cars, 3D printing, nanotechnology, biotechnology, materials science, energy storage, quantum computing, and much more that will necessitate more technical skills than traditional career practices (National Digital Literacy Framework, 2023).

There is no well-established interpretation of the concepts of the Fourth Industrial Revolution (Industry 4.0) and the Fifth Industrial Revolution (5.0), as well as the peculiarities of applying them as separate technologies for a specific type of economic activity and with the general digital transformation of business during the transition of national economic systems into a smart economy. Smart economy inclusive adaptive economy, digital economy, information economy, behaviorist economics, and so on are required to classify notions Industry 4.0 and 5.0 (Suntsova, 2022). The smart economy represents constant and ubiquitous intellectualization, institutionalization, urbanization, socialization, and greening of the economy (Lryna & Lryna, 2020). As a result, every Nigerian citizen, regardless of age, gender, rural or urban status, should be able to operate, manipulate, and apply various technologies required for employment in small to large organizations across a wide range of sectors.

A smart economy is one that is high in productivity, promotes long-term economic growth, provides a high-quality environment, is energy efficient, has innovative infrastructure, and promotes social stability. According to some scientists, the main goals of the smart economy are to ensure high rates of economic growth, achieve high labor productivity, increase the participation of intellectual workers and produce innovations in production, create an effective business environment, form a "green" economy, ensure social stability, and so on (Brinkley, 2008). Investing in human and intellectual resources, as well as research and development and innovation, can help to build a smart economy. The emphasis here is that in this day and age, human and intellectual capital development is impossible without deliberate digital literacy abilities. It is therefore important to underline that librarians and educators in general have vital roles to play in realizing the smart economy because the knowledge triangle (integrating information, research, and innovation) is one of their primary tasks. This study is founded on the concept that building a smart economy in Nigeria can only be accomplished by solving "digital literacy" issues. This is especially true in the case of Nigeria, where social economic difficulties have been linked in part to the country's failure to handle the technology revolution that is propelling the economy of other industrialized countries while Nigeria lags behind in terms of economic development.

C**opyright @ 2021 DJERD. All Rights Reserved** (https://delsujerd.com)
DJERD is currently indexed in Crossref (21st March 2025-Date) https://ftp.crossref.org/titlelist/titleFile.csv

DELSU Journal of Educational Research and Development (DJERD), Vol. 22, No. 1, June, 2025. pp. 278-285
ISSN: Print - 0794-1447 Online — 2682-35X **DOI:** https://doi.org/10.61448/djerd22126

Digital Information and Smart Economy

Information is the most powerful energizer of the educational system and society in general. As one of the primary drivers of growth, there is a strong positive correlation between the level of skills assessed by the workforce's ability to manage digital information and the degree of wealth and economic development in nations. Productivity in today's smart economy is predicated on innovation, which necessitates a diverse workforce with specialized expertise and experience who can experiment, adjust to change, and work creatively in terms. These objectives can only be met by prioritizing digital literacy.

The main goals of smart economy can be described as follows:

Restore and sustain economic growth following the global crisis, provide high productivity; Create an innovative corporate environment; Generate new ideas for economic and social advancement. According to Tikhomirova et al. (2010), the goals include developing knowledge-intensive sectors and industries, creating a green economy and ICT, promoting social cohesion, creating an innovative environment, and implementing smart grids throughout all sectors of the economy.

It is therefore undeniable that nations compete in today's global globe; those economies that have invested in their citizens' human capital and digital skills are best poised to grow in line with the aforementioned primary aims in smart economy. Emerging economies and globalization place a high value on an educated, trained, and competent workforce and professionals to supply an expanding universe of public and commercial products and services to the benefit of humanity (Nwokocha & Chimah 2016). According to Green Templeton College (2012), the push for change is primarily driven by the growing demand for a more trained workforce in the global information economy. Global study trends show that a smart economy uses technology, innovation, and entrepreneurship to boost economic growth, create high-skilled jobs, enhance competitiveness, promote sustainable development, and raise living standards. As a result, there is a link between labour quality and smart economy performance. In the midst of fast technological growth, the importance of computer uses and technology applications in all aspects of a country's economic success cannot be overstated.

Social-economic indicators of Smart Economy

Knowledge facilitates new thinking, new ideas, the development of new products, and the adaptation and enhancement of existing ones (Ajibero, 2012). Knowledge is power, but if you do not have relevant information to empower your thinking and improve your understanding, you will remain knowledge-deficient. The smart economy is frequently associated with the Fourth Industrial Revolution (4IR) and the United Nations' Sustainable Development Goals (SDGs). The goal is to build a highly productive, inventive, and resilient economic system that benefits both firms and society as a whole. However, the social-economic indices of the smart economy are the following:

- Digitalization Index (e.g., internet penetration, digital payments)
  HDI (Human Development Index)
- Education levels (e.g. literacy rates, tertiary enrollment)
  Innovative index (e.g., patents, research and development expenditure)

- GDP per capita.

C**opyright @ 2021 DJERD. All Rights Reserved** (https://delsujerd.com)
DJERD is currently indexed in Crossref (21st March 2025-Date) https://ftp.crossref.org/titlelist/titleFile.csv

DELSU Journal of Educational Research and Development (DJERD), Vol. 22, No. 1, June, 2025. pp. 278-285
ISSN: Print - 0794-1447 Online — 2682-35X **DOI:** https://doi.org/10.61448/djerd22126

- Increased labour productivity and FDI inflows.
- Factors to consider include research and development, workforce digital skills, entrepreneurship rates, high-tech exports, and e-government advances.
- Access to capital for SMEs and startups.
- Quality of infrastructure (e.g., transportation, energy, communication)
- Social inclusion indices (e.g., poverty rates, income inequality)
- Healthcare results (e.g. life expectancy, healthcare access) etc. (National Digital Framework, 2023)

These metrics have proven to be effective in assessing smart economic performance around the world. In developed countries, they assist policy makers and stakeholders in assessing progress and identifying areas for improvement. Simply put, a smart economy is one that uses modern technology, innovations, and data-driven decision-making to promote long-term growth, productivity, and competitiveness.

Nigeria's Smart Economy Journey

Nigeria is aggressively creating a smart economy, with a number of programs aiming at transforming its major urban areas into modern, efficient, and responsive cities. Notable among them are:

i. National Digital Economy Policy Launched in 2019, aims to transform Nigeria into a digital economy,
ii. Smart Cities Initiative: Focus on developing Smart Cities in major urban centres like Lagos, Abuja and Port Harcourt.
iii. ICT Innovation Hubs, established in cities like Lagos, Abuja and Kano to foster entrepreneurship and innovation.
iv. Nigeria Startup Bill: Aims to support startups and entrepreneurship.
v. Digital Skills Training: Programmes like the National Information Technology Development Agency (NITDA) Digital Skills Training (National Digital Literacy Framework, 2023).

The benefits of the smart economy include job growth, innovation, a big market, diversification, and investment. As a result, while Nigeria's smart economy journey is moving quickly, tackling difficulties and capitalizing on possibilities will be critical to success. Corruption, instability, infrastructural shortfalls, skills gap, and regulatory framework are just a few of the obstacles that Nigeria's smart economy faces.

Harnessing Digital Literacy for Smart Economy in Nigeria

Digital literacy is critical to our population's immediate empowerment, allowing Nigerians to develop the skills required to achieve more, stand out and advance in the digital era, and truly solve the conundrum of education, unemployment, low productivity, and economic diversification (NDLF, 2023). Countries that have embraced digital literacy have seen more economic and social progress than those that have not. Unfortunately, Nigeria currently falls into the latter category. The Federal Government sees the technology revolution as a reliable tool for economic development, but it has failed to capitalize on its promise. The administration and its allies remain dedicated to improving the level of economic growth in line with global trends. Building a digitally trained workforce will boost Nigeria's economic growth and development, therefore the need for technology skills is increasing across all sectors of the Nigerian digital economy. Many countries are seeing the

C**opyright @ 2021 DJERD. All Rights Reserved** (https://delsujerd.com)
DJERD is currently indexed in Crossref (21st March 2025-Date) https://ftp.crossref.org/titlelist/titleFile.csv

DELSU Journal of Educational Research and Development (DJERD), Vol. 22, No. 1, June, 2025. pp. 278-285
ISSN: Print - 0794-1447 Online — 2682-35X **DOI:** https://doi.org/10.61448/djerd22126

most significant economic and social upheaval in history; the transition is being driven by the impact of digital literacy and, in recent decades, abilities in the digital world. A digital literacy standard for Nigeria will prepare the country to face the challenge of inadequate digital literacy and skill acquisition (NDLF, 2023).

Digital literacy is important for several interconnected reasons, such as the following:

i. Nigerians, current workforce, students, graduates, and professionals need to be prepared for successful adulthood in a world increasingly saturated with digital technologies:
ii. Nigerians are already engaging with digital technologies and digital media and using them to find information and communicate meaning in different modes and formats, which provides significant opportunities and challenges that are important to address:
iii. Not all Nigerians are equally equipped with the skills, knowledge and understanding that will allow them to critically engage with technology and to use it well:
iv. Developing digital literacy can help students to access subject knowledge at a time when digital technologies are changing the way knowledge is created and communicated:
v. Digital literacy will help schools to engage with students lived experiences and existing knowledge as well as extending and diverting these experiences and knowledge to make learning more relevant and purposeful: and
vi. There is need to create a pool of knowledgeable and skilful manpower that will facilitate technology acquisition, assimilation, diffusion, mobility and raise productivity (NDLF, 2023).

It is prudent to envision that the centre stage of navigating through a recessed economy is to have a well-informed society; functional education could convey the skills, competencies, and information required by society to attain social-political, economic, and technical Eldorado. Recognizing the need of a functional smart economy in this age of knowledge-based economies, knowledge has emerged as the most crucial resource for societal economic growth. As a result, the educational system should generate graduates with the necessary knowledge and skills for the changing landscape of sustainable economic growth through technology, preparing them to become knowledge managers and navigators.

The importance of having a well-trained and digitally literate population at all levels of Nigerian society cannot be overstated. There is widespread concern that educational standards are declining and morale is deteriorating. Though there is a wealth of literature demonstrating the dropped standard, this can be effectively replaced with a shift in educational emphasis. It is thus acceptable to conclude that the shift in educational systems can be attributed to the dynamic character of the digital skills necessary in the global landscape. According to Ifelunni (2013), "education is the sum total of experiences made available both within and outside of a typical school context to make the individual live a well-adjusted life. Living an adjusted existence entails being at peace with society, which includes being able to operate in employed labour, enjoying our democratic rights, and adhering to societal moral norms.

We are looking at a population that is technologically literate and well-informed. A society that recognizes the role of technology in national development is likely to see rapid and significant progress. It is true that information technology creates, drives, and supports

C**opyright @ 2021 DJERD. All Rights Reserved** (https://delsujerd.com)
DJERD is currently indexed in Crossref (21st March 2025-Date) https://ftp.crossref.org/titlelist/titleFile.csv

DELSU Journal of Educational Research and Development (DJERD), Vol. 22, No. 1, June, 2025. pp. 278-285
ISSN: Print - 0794-1447 Online — 2682-35X **DOI:** https://doi.org/10.61448/djerd22126

progress in any culture. As a result, educators at all levels must recognize the need of preparing children for success in today's complicated and linked world. It is important to emphasize that an educated person is an informed person, therefore global education is a crucial development in our fast-changing world; as Education Week points out, there is:

> "Widespread understanding around the world of the need of educating for global competency. Different countries and organizations may use different phrases, but they all eventually advocate for the acquisition of the same knowledge, skills, and dispositions essential for success in the global twenty-first century (Hanover Research, 2015)."

Conclusion

Global pressure has established that the smart economy is essentially the result of the acceleration of the nation's economic intellectualization process. The creation of new technology, products, and services increasingly implies the dissemination of entirely new concepts of economic activity and human life. Digital literacy reduces the digital divide and social inequality, raises cyber security awareness, develops skills for emerging industries, supports digital commerce and e-commerce, boosts productivity and efficiency, encourages innovation and entrepreneurship, improves access to information and services, and enables data-driven decision-making.

Recommendations

- Massive development of digital infrastructures
- Digital literacy, through curriculum development at all level of education
- Enhanced startup ecosystem growth
- E-government services adoption and
- GDP growth from digital economy.

C**opyright @ 2021 DJERD. All Rights Reserved** (https://delsujerd.com)
DJERD is currently indexed in Crossref (21st March 2025-Date) https://ftp.crossref.org/titlelist/titleFile.csv

DELSU Journal of Educational Research and Development (DJERD), Vol. 22, No. 1, June, 2025. pp. 278-285
ISSN: Print - 0794-1447 Online — 2682-35X **DOI:** https://doi.org/10.61448/djerd22126

References

Ajibero, M. I. (2012). *Toward a Nigerian knowlwdge society: The role of information and communication technology (ICT) In Trends in Library & Information Science in Nigeria:* Festchrift in Honour of Prof. Sam E. Ifidon. 51-62.

Balaceanu, C., Apostol, D., & Zaharia, V. (2015). The concept of entrepreneurship in Smart economy. *International Journal of Academic Research in Economics and Management Sciences,* 4(1), 160-165.

Brinkley, L. A. (2008). *Knowledge economy: How knowledge is Reshaping the Economic life in Nations.* New York Foundation.

Buari, N. A. (2011). Teacher education: Challenges and prospects in innovation in Nigeria educational System. *Knowledge Review*, 22(2), 129-132.

Chukwu, C. L. (2009). *Capacity-building of teacher's challenges and opportunities: Implication for educational sustainable development.* A paper presented at the University of Ibadan,

Egbo, B. (2011). *Teacher capacity building and effective teaching and learning: A seamless connection.* A key note speech delivered at the International Conference on Teaching and Learning organizedby Africa Association for Teaching and Learning (AATL). Held at the Federal College Education (Technical) Omoku, River state. September5-8

Federal Government of Nigeria (2004). *National Policy on Education* (4th Edition). Lagos: NERDC Press

Green Templeton College. (2024). *Welcome to the 2024/2025 academic year*. https://www.gtc.ox.ac.UK/news-and-events/news/welcome-to-the-2024-25-academic-year/

Ifeluni, C. S. I. (2015). *Emerging issues and educational developments in Nigeria in the 21st century* . Lead paper presented at International Conference and Workshop of Faculty of Education Delta State University, Abraka. 16th-19th, 2015.

Lryna, K., & Lryna, U. (2020). Factors and features of the smart economy development. *Economics and Education,* 5(2), 42-47 Https://doi.org/10.30525/2500-946X/20202-6.

National Digital Literacy Framework (2023). *Leveraging digital technology for National Economy Development.* National Information Technology Development Agency (NITDA) https://nitda.gov.ng

Nwokocha, U., & Chimah, J. N. (2016). *Library an information services for rural community development in Africa: Problems and prospects.* International Federation of Library Associations and Institutions. https://library. Ifla.org/2081

Oyekan, S. O. (2006). *Foundations of teacher's education.* Ibadan: Ben Quality Prints.

Suntsova, O. (2022). *The definition of smart economy and digital transformation of business in the concepts of Industry 4.0 and 5.0. In Technology Audit and Production Reserves.* 4 (4/66/), s.. 18-23.

C**opyright @ 2021 DJERD. All Rights Reserved** (https://delsujerd.com)
DJERD is currently indexed in Crossref (21st March 2025-Date) https://ftp.crossref.org/titlelist/titleFile.csv

ISSN: Print - 0794-1447 Online — 2682-35X **DOI:** https://doi.org/10.61448/djerd22126

http://jou.nals.uran.valtarplarticle/download/265105/261223/611114.doi;10.15587/2706-5448.2022.265105

Tikhomirova, N., Tikhomirov, V., Makisimova, V., & Telnov, Y. (2014). *The competence approach to the creation and updating of academic knowledge in the smart economy.*

C**opyright @ 2021 DJERD. All Rights Reserved** (https://delsujerd.com)
DJERD is currently indexed in Crossref (21st March 2025-Date) https://ftp.crossref.org/titlelist/titleFile.csv