

**DIGITAL ECONOMY: HARNESSING THE BENEFITS AND TACKLING THE
CHALLENGES FOR SUSTAINABLE DEVELOPMENT IN NIGERIA**

S. J. UDOUDOH (PhD)

Associate Professor,
Department of Library and Information Technology,
Federal University of Technology, P.M.B. 65, Minna, Nigeria.
sam.udoudoh@futminna.edu.ng

&

OMAME, ISAIAH MICHAEL (CLN)

E-Services Department, University Library,
Federal University Lafia, P.M.B 146, Lafia, Nasarawa State.
omameazy@yahoo.com, +234(0)7060812940

&

ADAMU, ABBAS LAMIDO GORA (CLN)

Department of Library and Information Science,
Modibbo Adama University of Technology, Yola, Adamawa State.
swiss04@live.com, +234(0)8032095914.

&

ISAAC, ABU UMARU

Ph.D. Student, Department of Library and Information Science,
University of Nigeria, Nsukka, Nigeria.
isaacabu57@yahoo.com

&

TIJANI, SOLOMON ANIBE

Computer Science Department, Southwestern University Lagos, Nigeria
tijanisolomon@gmail.com

Abstract

This paper titled "Digital Economy: Harnessing the Benefits and Tackling the Challenges for Sustainable Development in Nigeria" focused on the core concept of digital economy, x-rayed its benefits and suggested ways to tackle the inevitable challenges posed by digital economy itself. Historical antecedents of various nations revealed that business economies of different countries were reshaped and restructured from time to time through the application of revolutionary inventions, beginning from the inventions of ABACUS, the first mechanised calculating apparatus in Asia Minor, 5000 years ago which was mostly used for the accounting of business transactions. However, in this 21st century, the application of Information and Communication Technology (ICT) to business transactions and economic activities stimulated the emergence of e-commerce which brought about buying and selling of products over the Internet between sellers and buyers. Digital Economy is thus defined as the use of ICT to interact and communicate in a globalised, high-tech economy. The benefits of digital economy cannot be overemphasised as it provides a global market platform upon which people and organisations worldwide interact, communicate, collaborate, search and share

information on various topics. This economy as well, enhances rapid business turnover through easy, cheap and direct advertisement of goods on social media - this benefits thus prompts rapid business opportunities as it synergises companies and individuals to quickly adapt to the Internet which offers them business opportunities. Harnessing this benefits and tackling inevitable challenges of digital economy is therefore a necessity for a developing country like Nigeria in this 21st century.

Keywords: Digital Economy, Digital Economy Utilisation Potential (DEUP), Benefits, Challenges, Harness, Nigeria, Sustainable Development

Introduction

Historical antecedents of nations worldwide, revealed that economies of different countries have been reshaped and restructured through application of revolutionary technological inventions (Oxford Economics, 2011). The spark could be traced from the invention of ABACUS, the first mechanical calculating apparatus which emerged about 5000 years ago in Asia Minor allowed users to make computations using a system of sliding beads arranged on a rack, mostly used to keep trading business transactions, to the evolution to the modern day computers (Abdullahi & Ojerinde, 2017). These revolutions in economies was harnessed through the invention and development of telegraphs, railroads and the automobile; each of these inventions triggered a virtuous circle of growth for the economies which different countries took full advantage of them to maximise their economies for national development (Oxford Economics, 2011). In the 1990s, economic changes were associated mainly with emergence of the Internet, and this remains a foundation for growth of the digital economy (Bukht & Heeks, 2017). In this 21st century, achieving digital economy status is imperative and necessary to bridge the digital divide (inequality of opportunities and access to information technology across different countries) as espoused in the Millennium Development Goals (MDGs). Out of the 48 indicators used to benchmark progress towards the MDGs, the last three were: (i) to increase the percentage of the population with access to telephone lines and cellular subscribers; (ii) to increase the number of personal computers; and (iii) lastly to increase the number of Internet users (Multala & Moahi, n.d.). Digital economy denotes an economy that is based on digital technologies. This implies the use of information technology to maximise business growth on the Internet and World Wide Web (www) (Strange & Bayley, 2008). It should be added that economic growth and technology are inextricably linked together. In emerging markets, industrial expansion, rising wealth and increasing populations have ramped up the demand for technology (Oxford Economics, 2011). The developments of the digital economy will have an elementary impact on economic systems and how economic values will be created (Zimmermann, 2018).

The Concept of Digital Economy

According to Lee (2017), digital economy embodies those products and services that are bought from the Internet. Gumah and Jamaluddin (n.d.) viewed it as the type of economy characterised with the increase use of information technology for a lot of activities such as planning, management, and marketing. Furthermore, digital economy is "the use of information to interact and communicate in a globalised, high-tech economy. Digital economy is also perceived as conducting business transactions through markets using the Internet or World Wide Web (WWW) platform (Gumah & Jamaluddin, n.d.). Similarly, digital economy is characterised by the digitisation (process of converting information into a digital (i.e. computer readable) format, in which the information is organised into bits) of many products and services and the use of the Internet and other networks to support economic activities. It is an economy based on digital technologies (Bukht & Heeks, 2017). This new type of an economy implies not only technological, but also and especially structural and process-related challenges and opportunities. (Zimmermann, 2018). Interchangeably, the term digital economy is also used to denote Internet Economy, the New Economy, or Web Economy (Sciencedaily, 2017); closely related to this is the knowledge economy, in which the creation of wealth and economic development is achieved through the economic exploitation of intelligence and understanding. According to Zimmermann (2018), the development of businesses supported by information and communication technologies (ICT) can be viewed from two different perspectives. Electronic commerce (e-

Commerce) is perceived as the utilisation of the 'Net', and its services for additional communication, marketing, and sales channels, based on only very moderately changed business models, indicates an evolutionary path for sustainable development. In summary, digital technologies are the foundation of digital economy, which is the core of the digital economy often referred to as the 'digital sector' or 'IT sector'; moreover, the digital economy is broader than simply the digital sector. (Bukht & Heeks, 2017). At the broadest sense, overall definitions of the digital economy cover all digitally-enabled economic activities, although not all digitised activities are part of the digital economy as observed by Bukht and Heeks (2017). It embodies both the core digital sector and the broader range of extensive digital activity respectively; and is in fact a convergence of computing and communication technologies through the Internet and the flow of information and technology stimulates e-commerce as posted by Unold (2003). Figure 1.0 gives a holistic scope of the digital economy. Thus, we can explain that the digital economy holistically is one that includes the digital sector, and part of economic output derived majorly from digital technologies with a business model based on digital goods or services. (Bukht & Heeks, 2017).

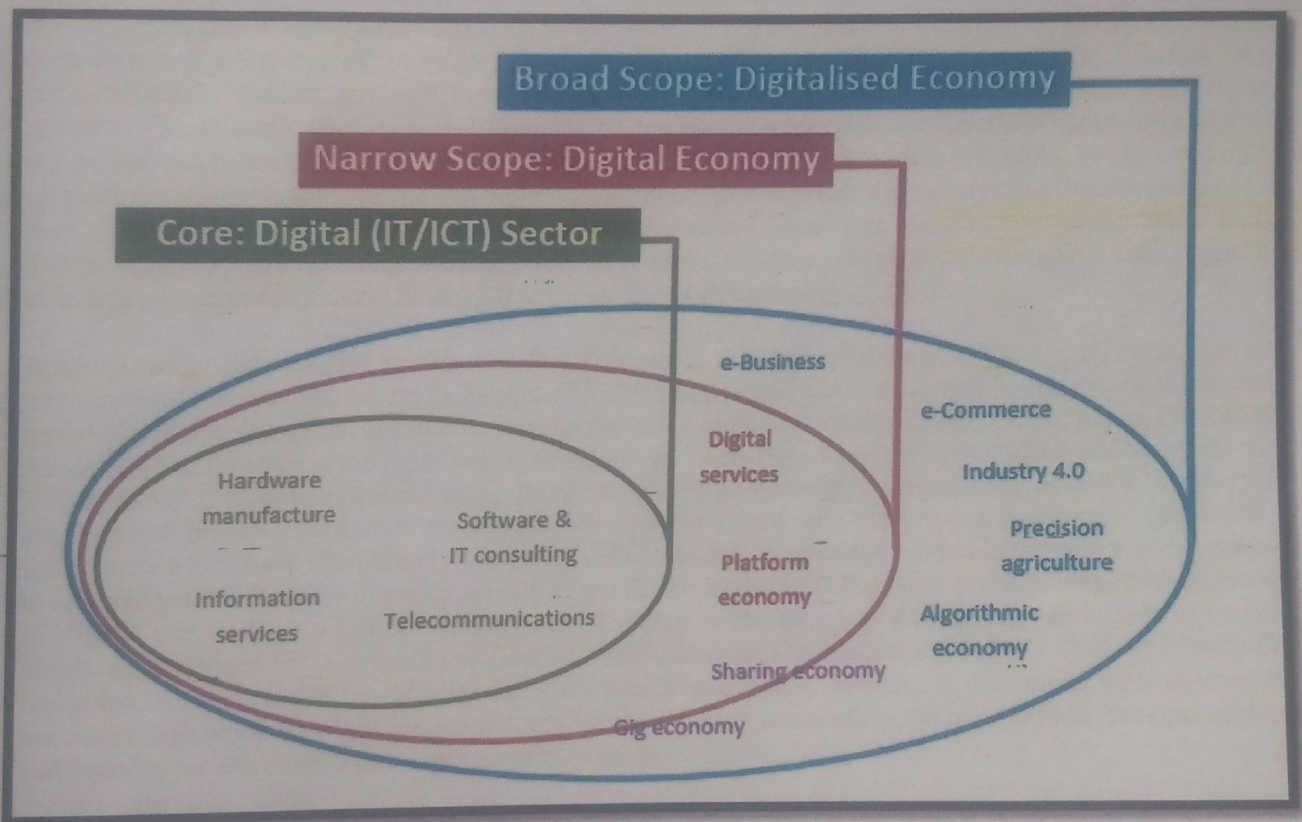


Fig. 1.0. Scope of the Digital Economy
Source: Bukht & Heeks (2017)

Other Models of Economy that Pre-dated Digital Economy

Earlier models of digital economy include the agricultural economy, in which a country's Gross Domestic Product (GDP) is totally dependent on the quantity of food crops and animals they produce. Following this was the industrial economy or revolution, and now the information revolution which is an integral part of digital economy. The previous traditional economy involves the direct trade or purchase of goods and services, while the latter is an economy primarily based on digital technology to conduct economic activities. According to Encarta Premium (2009), after the decolonisation of most African counties, the African economy was divided into two distinct sectors: (a) traditional rural sector (or agricultural economy), which featured subsistence production of food, and (2) simple manufactured products (mini industrial economy). The remainder was involved in a relatively modern sector, based in cities and mining and plantation centres. Regardless of economic development in the modern sector, the traditional subsistence sector is constant in

the African economy. In general, the majority of African people farm, herd livestock, fish, make handcrafted products, and trade their goods much as they have for hundreds of years. It should be added that despite these economic revolutions, the current digital economy has become increasingly blurred and intertwined with the traditional (physical) economy that have predated the digital economy (Bukht & Heeks, 2017).

What is Sustainable Development?

The word development implies the process of change in a progressive, impressive, successful or more advanced manner, the act or process of developing, growth or progress (Strange & Bayley, 2008). Literally, sustainable development refers to the maintaining of development over time (Elliott, 2006). This development goes beyond the common definition of sustainability as maintaining balance in the environment and conserving the natural resources for future generations (Emas, 2015). This also involves the social, economic and institutional processes (Kolukisa & Uğurlu, 2016; Adejumo & Adejumo, 2014; Strange & Bayley, 2008; Elliott, 2006). The Brundtland Commission's definition of sustainable development denotes the "ability to make development sustainable that is to ensure that it meets the needs of the present without compromising the ability of future generations to meet their own needs". There is no single definition of sustainable development, however, there are substantial debate and contestation concerning the meaning and practice of sustainable development (Elliott, 2006), but the main idea concerns resource exploitation at a rate that would not prove detrimental to future incoming generations (Adejumo & Adejumo, 2014) – not using up resources faster than the planet can replenish, or re-stock. It also denotes maintaining better quality of life now and for incoming generations to come. Sustainable development also involves intergenerational equity, that is, equity to share resources with the poor – is required to sustain them; and that equity is encouraged by effective citizen participation (Emas, 2015; Kates, Parris & Leiserowitz, 2005).

Adejumo and Adejumo (2014) observed that changes in the integrated approach to social, economic and environmental issues have not really facilitated the developmental goals in Nigeria. Furthermore, the authors reported that problems such as poverty, low per capital income, inequitable distribution of home, low capital formation, inefficiency in the mobilisation of resources, over-dependence on a singular commodity oil-as a major source of income, unemployment, inflation, flooding, ethnicity, environmental pollution. Corruption and lopsided income distribution have been ever on the increase. The most recent is economic recession in the country which have significantly worsened and continue to worsen the economic situations of the masses in terms of generic increase of prices, quality of goods. To achieve a sustainable development of the economy in Nigeria will involve to achieve a balance in all sectors of the economy through the production of several goods and services be it agriculture, finance, manufacturing, health, education and ICT etc. From the foregoing, it is imperative for the Nigerian government to create an enabling environment, by providing all necessary legislation for digital economy to thrive unimpeded successfully, so as to exploit its opportunities and benefits for sustainable development of the nation.

Digital Economy from the Global Perspective

According to Zimmermann (2018), the Information Communication Technology (ICT) infrastructure is the building block for digital economy that will have more impact extensively on business transactions than mere channel enhancements. Furthermore, this development will radically alter processes and structures within and between industries across the world, and subsequently lead to a global digital economy. The emerging characteristics (digital) of this economy will include: structures, processes, products, and infrastructures and services.

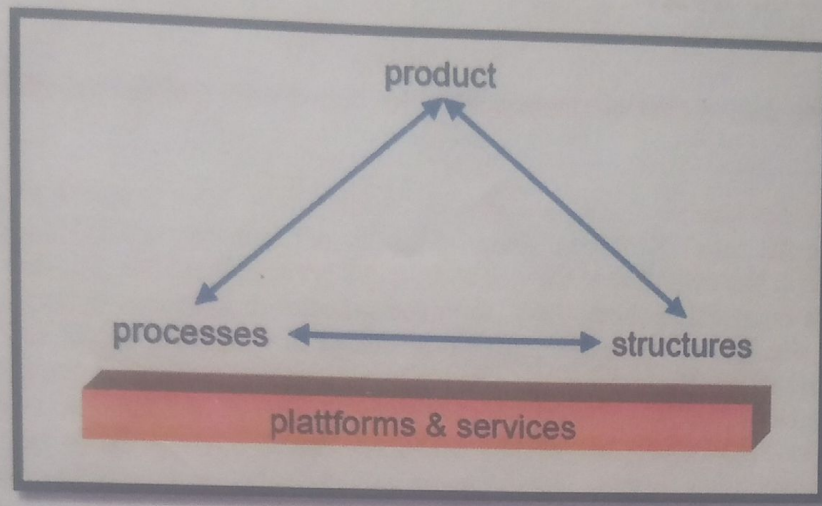


Fig. 2.0. Main characteristic of the digital economy
Source: Zimmermann (2018)

From the above model, the first issue covers changing structures stemming from the utilisation of new ICT infrastructures like the Internet or WWW (World Wide Web). Secondly, it becomes more evident, that the way companies interact with the market and especially with customers (buyers, sellers etc.) has to change – process. This inevitable changing processes in the digital economy are the emerging market-like coordination mechanisms. Web-auctions are the most prominent ones today. Thirdly, based on the new ICT infrastructure platforms, the products (goods and services) are changed, especially information intensive products, the content can be separated from its respective context and infrastructure. Lastly, in order to capture new kinds of value creation processes and structures enabling new type of products, technical platforms in the sense of an infrastructure are necessary. These platforms provide the technical means that enable the realisation of the business model of a distinct business community (Zimmermann, 2018). It was opined that the impact of digital economy can be understood as a disruption of existing economic processes, systems and sectors, re-shaping existing consumer behaviour, business interactions and business models; or it can also be understood as the emergence of new economic processes, systems and sectors (Bukht & Heeks, 2017).

Components of the Digital Economy

The digital economy is increasingly interwoven with the traditional or offline economy making it more and more difficult to clearly delineate the digital economy (European Parliament, 2015). The components of digital economy model as outlined by Bukht and Heeks (2017) and Unold (2003) were:

- i. Goods: Production of ICT consumer goods (Bukht & Heeks, 2017) and wide area of products made of digital bits (Unold, 2003) such as computer hardware and digital telecommunications, home appliance, automobile embedded with microprocessors and networking capabilities, plus ICT producer goods: both capital goods (e.g. automated machinery for manufacturing PCs) and intermediate goods (chips, motherboards, hard disk drives, DVD drives, etc., used in computer manufacture).
- ii. Software: Design, production, marketing, etc. of packaged and customised software (Bukht & Heeks, 2017), including databases, electronic games, TV and radio programming, musical CDs (Unold, 2003).
- iii. Infrastructure: Development and operation of enabling network infrastructure; both foundational telecommunications plus value added networking services.
- iv. Services: Professional services not covered in other categories such as consulting, training and technical services
- v. Retail: Sale, re-sale and distribution of ICT goods, software and infrastructure and related services (Bukht & Heeks, 2017). Consumers and firms are conducting financial transactions digitally through digital currencies or financial tokens downloaded and carried on smart cards via networked computers and mobile devices (Unold, 2003).

- vi. Content: Production and distribution of data content, including back-office processing and digitisation.

Digital Economy in Africa

Bukht and Heeks (2017) reported that the digital economy growth is faster, especially in developing countries, yet the meaning and metrics of the digital economy are both limited and divergent. Alongside the opportunities of digital economy in developing countries, there abound challenges and issues that needs urgent attention. The first is the danger of exclusion from opportunities, for example due to low levels of digital literacy skill and technology penetration in developing countries (Bukht & Heeks, 2017). Another problem is the lack of adequate resources, capabilities, institutions, relations which may marginalise developing countries to tab into the wealth associated with digital economy. There are also observable dangers associated with growth in vulnerabilities around digital security and privacy. Most research and policy formulation have focused on high income countries.

Benefits of Digital Economy for Sustainable Development

Digital Economy has brought about digital networking and communication infrastructures which provide a global platform over which people and organisations devise strategies, interact, communicate, collaborate and search for information (Sciencedaily, 2017). There has been a significant change in consumer behaviour due to digital connectivity. This in turn, has led to increase in growth opportunity for business that trades online (Lee, 2017). Earlier estimated that information technology (IT) accounted for 25% of Gross Domestic Product (GDP) growth in United States in 2001. The author added that average salary for IT jobs was about \$46,000.00 per annum compared to \$28,000.00 per annum for other non-IT jobs. Furthermore, from 1996 – 1997, IT contributed to the drop in inflation from 3.1% to 2.0% in the United State (Unold, 2003; Multala & Moahi, n.d.).

Furthermore, Unold (2003) maintained that the impact of digital economy on small and large scale enterprise can be identified on three basic levels: improving direct marketing; transforming organisations; and redefining organisations. In other words, digital economy stimulates increase and growth for businesses but transforms how businesses are conducted, thus shifting the traditional marketplace to a virtual marketplace in cyberspace. Another benefit of digital economy is online advertisement, which is mostly done through social media. Raman (2015) opined that the social media is slowly emerging as one of the most favorite highlighted effective communication channels in the online world across different industry verticals. Moreau (2018) also submitted that social media has brought about real-time news, information discovery and quick advertisement medium for business owners. The old methods of placing adverts through posters, newspapers, notice boards are not as fast moving like the posts on social networking sites. Both small and large scale enterprises now take advantage of social media to advertise their products and services to the general market. The most popular of some social networking sites used for business advertisement include Facebook, Twitter, Intagram, blogs, etc.

Digital Economy: Imperative for Sustainable Development in Nigeria

Sciencedaily (2017) asserted that the growth of the digital economy has widespread impact on the whole economy globally. The impetus towards the actualisation of digital economy in any nation is the fact that such a nation is by and large characterised by increase productivity and lower costs (Multala & Moahi, n.d.). Nigeria is the most populated country in Africa, with a population of about 191,835,936 in year 2017 (World Atlas, 2018; United States Embassy in Nigeria, 2012), with high rate of unemployment (National Bureau of Statistics (NBS) in Vanguard Newspaper of December 23rd, 2017). Actualising digital economy in Nigeria, will not only create more job opportunities and increase the Gross Domestic Product (GDP) of the nation, it will also reduce the rate of social violence and other criminal activities that come as a result of poverty. In a nut shell, if Nigeria achieves a digital economy status, the premise will be associated largely with job creation for the unemployed, high profits for businesses both large scale and small scale enterprises, exportation of IT products and services, increase in the GDP of the nation, poverty reduction, increase in ICT literacy skills and enhanced good quality of life.

Benefits of Digital Economy in Nigeria: Individual, Organisational and National Perspective

Digital Economy (DE) as a result of digital connectivity in the business world has brought about significant changes in the economy through the ever increase of the use of digital gadgets and the internet among consumers of goods and services. The development in turn led to a significant growth opportunity for private businesses that trades online (Lee, 2017). The impact of Digital Economy to organisations prompts rapid progress by companies and organisation to quickly adapt these new technologies by offering them opportunities to experiment with new products, services and business models (Unold, 2003). This will foster product promotion, emergence of new sales channels, direct savings, efficient customer services, brand royalty, creation of corporate image, customisation, advertising, ordering systems, markets and reduction of cycle time of business turnover. Digital economy shall have great influence on manufacturing of goods and services in various industries across and by extension globally. It also affects the financial and accounting and human resource management of organisations.

Model of Digital Economy Utilisation Potential of a Nation

Digital Economy Utilisation Potential (DEUP) is defined as the relative present and future strengths and weaknesses of digital economy activates of a given organisation or nation (Grigorovici, Schement & Taylor, 2003). Digital economy relates closely to information society or knowledge economy. Multala and Moahi (2008) defined information society as one in which the quality of life and economic development (progress and growth), depend largely on information generation, sharing and exploitation; it also includes increase use of computers, commoditisation of information, convergence of computing and telecommunication, e-commerce (the activity of buying or selling of products and services online or over the internet), universal access to phones, Internet and use of technology for community development, use of information technology in management of public utilities. All these activities are associated with the digital economy.

Grigorovici, Schement and Taylor (2003) in Multala and Moahi (n.d.) derived a formula which stands for Information Utilisation Potential (IUP), and it represents the information society model of a nation. These authors submit that the (IUP) model had two composite indices: the structural and functional. The (IUP) model attempts to use the information situation or context as a unit of analysis and it is recommended as the most appropriate for providing the theoretical measurement for constructing an information society. Information Society Index (ISI) is the measure of the free and rapid flow of information across the world or country. The (IUP) model is expressed by the following equation:

$$IUP = (A + B + C + D)$$

Where:

- A = Information resources and services (activities);
- B = Information needs and uses;
- C= Physical, social, administrative environmental variables; and
- D = Dynamics of (A + B + C)

Source: Grigorovici, Schement and Taylor (2003)

Following the above equation derived by Grigorovici, Schement and Taylor (2003), the Digital Economy Utilisation Potential (DEUP) will be measured by the equation below:

$$DEUP = (A + B + C + D)$$

Where:

- A = Information technology resources and services (activities);
- B = Demand for goods and services via the use of (A);
- C= Physical, social, administrative environmental variables; and
- D = Dynamics of (A + B + C)

Moreover, the Digital Economy Utilisation Potential (DEUP) is defined as the relative present and future strengths and weaknesses of digital economy activities of a given organisation or nation. (Grigorovici, Schement and Taylor, 2003).

Challenges of Implementing Digital Economy in Nigeria

From the focus of this study, it has been observed that despite the widespread, adoption and increasing use of wireless and mobile networks, devices and middle-ware, Point of Sales (POS) machines, Internet and mobile-fund transactions, there is still a gap (divide) in the implementation of digital economy in Nigeria (Unold, 2003). Nigeria has a lot to do to catch up with other nations, in order to actualise digital economy and begin to reap the benefits accruing to it. The following are however, the challenges of implementing digital economy in Nigeria:

- i. Inefficient public institutions which limit the absorptive and adaptive capacity to explore and exploit ICT to the fullest.
- ii. Stagnant or decline economic growth, due to heavy debts and unfavourable internal trade terms.
- iii. High currency exchange rate. The current exchange rate of dollar (\$) to naira (NGN) is about 1 to 400. This makes it difficult for local businesses to easily thrive in international online market.
- iv. Closed opportunities and lack of government support. The lack of opportunities, government support has forced our best intellectuals and highly skilled ICT personnel into diaspora, they resort to countries, where the economic atmosphere is highly appreciating and good reward to their skills handsomely.
- v. Low bandwidth and limited Internet connectivity, makes it difficult for private business owner to tap into the global resources.
- vi. Low ICT literacy rate, especially in remote areas of the country is an impediment.
- vii. Erratic power supply. The chief source of energy to power information technology equipment is electric power. The constant electricity fluctuation, seizure of electric power in Nigeria makes it difficult for business owners to operate optimally or thrive in such an atmosphere.
- viii. Diversion of public funds meant for developing the ICT sector.

Conclusion

Digital economy is characterised by the digitisation of many commercial products and services through the use of the Internet and other telecommunication networks to drive business economic activities. Such computerisation changes the manner in which business is currently done and considerably improves economic activities and competition worldwide. Digital economy provides enormous business opportunities for small and large scale enterprises to deal, advertise and trade online. As mentioned earlier, it facilitates and stimulates product promotion, new sales channels, direct savings, efficient customer services, brand royalty, creation of corporate image, customisation, advertising, ordering systems, markets and reduction of cycle time for businesses. Digital economy is the sine qua non for any country that wants to thrive in this 21st century contemporary era. It is essential for establishing sustainable development through the provision of new business models. Practically, all functional sectors of life are impacted by the digital economy. Nigerian will no doubt be a huge market for a prosperous digital economy implementation if all the necessary supporting infrastructure are put in place. However, to thrive in this vision, the stake holders must create strong and enabling technological platform and necessary legislation for digital economy to blossom.

REFERENCES

- Abdullahi, M. B. & Ojerinde, O. A. (2017). *Fundamentals of Computer Science*. CPT 711 Course Material. Department of Computer Science, Federal University of Technology, Minna, Nigeria.
- Adejumo, V. A. & Adejumo, O. (2014). Prospects for achieving sustainable development through the millennium development goals in Nigeria. *European Journal of Sustainable Development*. 3(1), 33-46. Accessed from: <https://ecsdev.org/images/V3N1/adejumo%2033-46.pdf>, Doi: 10.14207/ejsd.2014.v3n1p33
- Bukht, R. & Heeks, R. (2017). Defining, conceptualising and measuring the digital economy. *Manchester Centre for Development Informatics Working Paper 68 University of Manchester, UK*. Accessed from: <https://diodeweb.files.wordpress.com/2017/08/diwkppr68-diode.pdf>
- Elliott, A. J. (2006). *An introduction to sustainable development*. London: Routledge Taylor & Francis Group. 3rd ed. Accessed from: <http://www.researchkh.org/userfiles/image/upload/1454164020676.pdf>
- Emas, R. (2015). *The concept of sustainable development: definition and defining principles*. Florida International University. Accessed from: [https://sustainabledevelopment.un.org/content/documents/5839GSDR%202015 SD concept definiton rev.pdf](https://sustainabledevelopment.un.org/content/documents/5839GSDR%202015%20SD%20concept%20definiton%20rev.pdf)
- European Parliament (2015). *Challenges for competition policy in a digitalised economy*. European Parliament, Brussels. Accessed from: [http://www.europarl.europa.eu/RegData/etudes/STUD/2015/542235/IPOL_STU\(2015\)542235_EN.pdf](http://www.europarl.europa.eu/RegData/etudes/STUD/2015/542235/IPOL_STU(2015)542235_EN.pdf)
- Grigorovici, D. M.; Schement, J. R. & Taylor, R. D. (2003), *Weighing the intangible: towards a framework for information society indices*. Pennsylvania: University Park, USA. Institute for Information Policy, Pennsylvania State University.
- Gumah, M. E. & Jamaluddin, Z. (n.d.). *What is the digital economy and how to measure it*. Accessed from: <http://www.kmice.cms.net.my/ProcKMICE/KMICE2006/Pdf/378.pdf>
- Kates, W. R., Parris, M. T., & Leiserowitz, A. A (2005). Sustainable development? Goals, indicators, values, and practice. *Issue of Environment: Science and Policy for Sustainable Development*. 47 (3), 8–21. Accessed from: https://sites.hks.harvard.edu/sustsci/ists/docs/whatisSD_env_kates_0504.pdf
- Kolukisa, A. E. & Ugurlu, B. N. (2016). *The importance of sustainable development in the field of education*. Accessed from: [https://www.researchgate.net/profile/Nihal_Ugurlu/publication/265030253 THE IMPORTANCE OF SUSTAINABLE DEVELOPMENT IN THE FIELD OF EDUCATION Introduction/links/56b097ba08ae9ea7c3b0cd8c/Introduction.pdf?origin=publication_detail](https://www.researchgate.net/profile/Nihal_Ugurlu/publication/265030253_THE_IMPORTANCE_OF_SUSTAINABLE_DEVELOPMENT_IN_THE_FIELD_OF_EDUCATION_Introduction/links/56b097ba08ae9ea7c3b0cd8c/Introduction.pdf?origin=publication_detail)
- Lee, M. (2017). *The benefits of digital economy to the overall economic growth and prosperity in Ireland*. Toolbox. Accessed from: <https://it.toolbox.com/blogs/michelle-lee/the-benefits-of-digital-economy-to-the-overall-economic-growth-and-prosperity-in-ireland-072117>
- Microsoft Encarta Premium (2009). *Development*. Microsoft Corporation.
- Moreau, E. (2018). *The pros and cons of social networking: A look at the ups and downs of being so digitally connected to people*. Accessed from: <https://www.lifewire.com/advantages-and-disadvantages-of-social-networking-3486020>
- Multala, S. & Moahi, K. H. (n.d.). *Institutional framework for the information society in Africa*. In *Information and Knowledge Management in the Digital Age*. pp. 179-203.
- Unold, J. (2003). *Basic aspects of the digital economy*. Acta universitatis lodziensis folia oeconomica. Accessed from: <http://dSPACE.uni.lodz.pl:8080/xmlui/bitstream/handle/11089/7061/41-49.pdf;sequence=1>
- OECD (2013). *The digital economy*. OECD, Paris. <http://www.oecd.org/daf/competition/The-Digital-Economy-2012.pdf>
- Oxford Economics (2011). *The new digital economy: How it will transform business*. Oxford Economics. Accessed from: http://www.citibank.com/transactionservices/home/docs/the_new_digital_economy.pdf

- Raman, V. (2015). *5 key benefits of social media for higher education institutions*. Posted in LinkedIn. Accessed from: <https://www.linkedin.com/pulse/5-key-benefits-social-media-higher-education-venkatesh-raman>
- Sciencedaily (2017). *Digital economy*. Accessed from: https://www.sciencedaily.com/terms/digital_economy.htm
- Strange, T. & Bayley, A. (2008). *Sustainable development: linking economy, society, environment*. Corrigenda of OECD Publications. Accessed from: <http://www.sjalbfaerni.is/media/frodleikur/OECD-skyrsla.pdf>
- United States Embassy in Nigeria (2012). Nigeria Fact Sheet. Accessed from: <https://photos.state.gov/libraries/nigeria/487468/pdfs/Nigeria%20overview%20Fact%20Sheet>
- Vanguard Newspaper of December 23rd, 2017 at 12:46 AM. Nigeria's unemployment rate rises from 14.2% to 18.8%. Accessed from: <https://www.vanguardngr.com/2017/12/nigerias-unemployment-rate-rises-14-2-18-8/>
- World Atlas (2018). *The most populated countries in Africa*. Accessed from: <https://www.worldatlas.com/articles/the-most-populated-countries-in-africa.html>
- Zimmermann, H. (2018). *Understanding the digital economy: challenges for new business models*. Accessed from: https://www.researchgate.net/publication/241675515_Understanding_the_Digital_Economy_Challenges_for_New_Business_Models