

Assessing the E-readiness of Nigeria for Digital Economy

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Received date: May 19, 2020; Accepted date: June 03, 2020; Published date: June 09, 2020

Citation: Zubairu HA, Oyefolahan IO, Babakano FJ, Etuk SO, Mohammed IK (2020) Assessing the E-readiness of Nigeria for Digital Economy. Am J Compt Sci Inform Technol Vol.8 No.2: 50

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Abstract

Digital innovation in the field of Information and communication and Technology is creating a new growth opportunities and enhancing economic growth and development. However, ICT Infrastructure availability is a major determinant for a country to meet future requirements for the purposes of being efficient and productive. ICT Infrastructure is a great force that drives digital economy. This paper assessed the level of preparedness of Nigeria for digital economy using e-readiness indices and secondary data from Nigerian Communications Commission (NCC), International Telecommunications Union (ITU) report, Economics Intelligent Unit (EIU) report, Alliance for Affordable Internet (A4AI), report, Nigeria Ministry of Communication Technology and Digital Economy, Research ICT Africa, United Nations report, World Economic Forum (WEF) report and other related literatures. Analysis reveals that, available ICT facilities and infrastructures are not enough to reap the full potentials of the digital economy in Nigeria. Therefore, the paper recommend that the proposed national broadband plan should be faithfully pursue as it holds the key to the successful digital economy policy and digital Nigeria.

Keywords: Digital economy; Internet; Cashless economy; Internet economy; Information Technology

Introduction

The 21st century is witnessing the tremendous use of internet, making almost everything to be remotely done. The increasing use of Internet and web in the last two decades has cause lots of positive change and transformation in business world and governance all over the world. Information and Communication technology is becoming a vital tool to improve information delivery and exchange. ICT is becoming an essential tool to improve social and economic development of any nation [1]

Globally, awareness is on the rise about the usefulness of Information and Communication Technology (ICT) to promote

and enhance growth and development. Business and economic experts have realize that no nation can have competitive advantage in terms of trade, industry, manufacturing and services among others without adopting, deploying, integrating and utilizing ICT in various sectors in the 21st century [2]. The developed nations; United State (US), United Kingdom(UK), Germany and Japan were able to attain present level of development through the deployment of high technology, especially in the industrial sectors. In addition, Brazil, China, Russia, India and other Asian Tigers economy are rising due the high adoption and integration of innovative technology [3]. Consequently, developing nations are beginning to realize that any development efforts that is not technological based is likely to fail. The African nations, have also recognized that local and global competitiveness depends largely how they deploy technology to transform different sectors of their economies, especially the industrial sector. ICT integration in economy in Africa started in Cape Town, South Africa, in the mid-90s, specifically in 1995 when Mark Shuttleworth built Thawte, a leading certificate authority, and sold it to Verisign when Vodacom championed prepaid airtime [3]. Since then, most African nations are paying much attention on the ICT infrastructural development in their policies and programmes.

Nigeria government have realized that its local and global competitiveness depends on how they deploy technology to transform different sectors of their economies. Technology will play a key role in enhancing human dignity and lifting people out of poverty (Nigeria Digital Economy Diagnostic Report, 2018). The government recognizes the need to reorient its economy and the role of ICT and digital technology to restructure the economy. Thus, Nigeria as a country is paying attention and emphasis on the integration of ICT infrastructures in their policies and programmes. To this end, Nigeria economic policies and investments are currently geared towards the development of ICT capacity and infrastructure that could facilitate digital economy among local and international trade partners [4].

The current Nigeria's digital economy policy, spearheaded by the Federal Ministry of Communications and Digital Economy (FMoCDE) is targeted at mobilizing other sectors and align with the Economic Recovery and Growth Plan (ERGP) of the Federal

Government in order to achieve economic growth and diversification. The policy is aimed at having every Nigerian to be connected with the Internet and expressed the goal of digital Nigeria by being computer literate, owning a digital device, having access to the Internet, owning a bank account that can be accessed and operated digitally and online. Above all, digital economy policy of the Federal Government hopes to see majority of the citizens undertake many activities electronically. Digital economy policy of the Federal Government of Nigeria is in line with global trend in business transactions, strengthen the economy and increase transparency, competitiveness and integration framework into the global economy. The current administration is putting measures and policies in place, both economic and Information Technology, to drive digital economy policy implementations in Nigeria. It is worthy of note, that the success of digital economy implementation in Nigeria depends largely on the availability ICT infrastructure, development, upgrading, deployment and utilization [5]. The current drive by the Government of Nigeria for a digital economy is no doubt for economic development and increased global competitiveness. However, while it appears that Federal Government is set for the implementation of this policy, many citizens are asking whether the country is really ready, given the ICT infrastructure requirement for the implementation.

ICT infrastructure plays a key role in the socio-economic and technological development of a digital economy. There is lack of adequate ICT infrastructure (Computers, Internet and broadband) in Nigeria [6]. Although United Nation (UN) ranks Nigeria high in the Online Services Index (OSI) and e-government Development Index (EGDI), it does not feature among the top ten in Africa (UNO, 2016). In addition, Nigeria ranks 75th in Global connection index (GCI) in 2019. Most GCI indicators place Nigeria below the global average. The country has fallen behind others in terms of broadband penetration [7]. However despite infrastructural deficiencies, the Federal Government of Nigeria is embarking on digital economy starting from 2019. But, digital economy can only go as far as the underlying infrastructures that enable it to function.

E-readiness measures the quality of a country's ICT infrastructure and the ability of its consumers, businesses and governments to use ICT to their benefit [8]. Harvard University defined e-readiness as the degree to which a community is prepared to participate in the Networked World. It is gauged by assessing a community's relative advancement in the areas that are most critical for ICT adoption and the most important applications of ICTs.

No doubt, ICT can be a strong drive for economic growth and development. However, transforming vision into reality that fit Nigeria local context is not an easy task. Since, there is no even level of economic and social development within Nigeria, there is the need to have a realistic Nigeria's e-readiness to participate in the digital economy. This paper evaluates the e-readiness of Nigeria for digital economy towards widen access to digital infrastructures for all Nigeria's citizens.

ICT policy in Nigeria

Information and Communication Technology (ICT) is an essential tool for developing nations's economic success (Kehinde and Muiyiwa, 2016). Developing nations, especially African countries are beginning to understand that, for their countries or region to make meaningful progress in the global economy, attention and priority must be given to their ICT policy [9]. The purpose of an ICT policy is to guide and provide strategic direction for sustainable national development through the systematic integration and adoption of ICTs in a country (Adomi and Igun, 2008). Nigeria as a country has undertaken ICT policy in the last two decades.

The Federal Executive Council (FEC), the highest decision maker in Nigeria, approved a national Information and Communication Technology policy in the year 2001. The implementation of the policy started with establishment of the National Information Technology Development Agency (NITDA) [10]. NITDA is an agency under Federal Ministry of Communications and Digital Economy. This agency is created to ensure the achievement of the articulated National Information Technology vision of the country, foster and co-ordinate the accelerated development of information technology (IT) in Nigeria and promote the efficiency and international competitiveness of the IT industry in Nigeria [11].

The core vision of the policy statement is to make Nigeria an IT capable country in Africa and a key player in the Information society by using IT as the engine for sustainable development and global competitiveness. The policy aims to address a host of vital socio-economic issues such as reliable infrastructure, skilled human resources, open government and other essential issues of capacity building in order to transform the Nigerian economy from being agrarian to information-rich knowledge-based economy [11].

ICT and Economic development in Nigeria

The birth of General System for Mobile (GSM) in Nigeria in the year 2000 has resulted to significant transformation in the telecommunications sector and consequently an increase in the number of telephone lines, subscribers and services providers. ICT sector has created a good employment opportunity within the country. As at the year 2019, the number of active mobile telephone lines in Nigeria has increased to 180.12 million as of October last year, the Nigerian Communications Commission has maintained [12].

ICT innovation and adoption, through increased Internet and mobile cellular phone subscriptions, can positively affect economic growth [13]. ICT affect economy positively in the following ways; it can assist economy-wide technology diffusion and innovation, it can improve the quality of decision making by economic agents and it can raise the output level by creating demand for goods and services and by lowering costs of production [14]. According to Waverman et al. [15] for every 10 additional mobile phones per 100 people, it would increase per capita GDP growth by approximately 0.59 percent in the low income countries. Though the development of ICT infrastructure

in Nigeria has been a serious challenge, there is a considerable rise in the number of Internet and mobile users in Nigeria.

In line with these changes, Nigeria as a developing and emerging country in term of ICT is experiencing remarkable economic performance in recent years due to growth and investment in ICT. According to (World Bank, 2014), average growth rates of the developing countries including Nigeria in term of ICT is 8.8 percent. Lots of literatures provides evidence on the positive contribution of the ICT in enhancing economic growth in developed countries [16].

In monetary terms, the ICT sector contributed N500 billion to the Nigerian economy in 2014 and created about 2.5 million jobs in 10 years and attracted \$30 billion foreign investment between the year 2003 to 2014 [17]. According to Dr. Isa Pantami, minister of communications and digital economy, Information and communications technology contributes 13.9% to Nigeria's GDP, in the year 2019. This is in line with the prediction that the internet will contribute USD300 billion to Africa's GDP by 2025 [18]. This is very significant and in line with the World Bank (2009), mobile and broadband have more economic impact in developing nations than in developed nations, While developed countries have been transformed by information, communications, and technology, the transformation in the developing world is often even deeper, benefiting not only the wealthy, but also middle- and lower-income citizens.

A research survey conducted by the International Telecommunication Union [19] states that Nigeria has high population density and the sector of wired and wireless communication is considered as the main sector that creates job positions especially the mobile phone sector. Similarly, a survey conducted by the Nigerian Communication Commission (NCC) in the year 2018, revealed that the contribution of the Telecoms Industry to GDP was rated 7.7% in 2012 as against 10.43% in the second quarter of 2018 [3]. This shows a relatively positive contribution of the information technology industries to GDP resulting to economic growth.

The evolution of ICT in developing countries is fast expanding giving the region the hope for the achievement of technological advances that will advance and project the developing nation economically [20]. Nigeria as an emerging ICT country has benefitted from the application of ICT, especially in the banking industries, revenue generation, and human resource development. Nigeria being a developing country is in need of radical change in governance, economic growth and development, these can be achieved through reengineering existing governance processes with the help of digital economy. The adaptation of digital economy can lead the nation to overall economic growth and development.

Methodology

This research is aim at evaluating how prepared Nigeria is to participate in the digital economy. The research adopted an existing assessment models developed by Economist Intelligence Unit, Mosaic Group, World Bank, WITSA to measure the e-readiness of any country in term of digital infrastructure. Some modified indices-based assessment models are Networked

Readiness, Access to the internet, Technological readiness, ICT infrastructures, E-Services, Availability of local content, Digital Divide and Human Resources and Digital Skills. Secondary data were utilized for this research, and the data were sourced from Nigerian Communications Commission (NCC), International Telecommunications Union (ITU) report, Economics Intelligent Unit (EIU) report, Alliance for Affordable Internet (A4AI), report, Nigeria Ministry of Communication Technology and digital economy, Research ICT Africa, United Nations report, World Economic Forum (WEF) report and other related literatures.

Analysis and Discussion

Networked readiness

Networked Readiness is a very important indices of a nation's ability to implement digital economy and harness advantage of ICT. But, the year 2015 Global Information Technology Report, GITR, by World Economic Forum, reveals that many African nations, including Nigeria, dropped in Networked Readiness Index ranking [21]. Though, United Nations E-Government Survey (2016) and the ITU (2017) [22] survey, reveals that Nigeria is witnessing the fastest growing telecommunications market in the world, huge penetration of mobile phones, these devices are no doubt prerequisite towards realization of digital economy, but in isolation cannot create digital economy without other necessary facilities to harnessing their potentials in service delivery. Thus, there is need for Nigeria government to invest more on network facilities, especially broadband to bring more of her citizens into network coverage, in order to participate in the digital future. This is because technology is very dynamic, it is not about what a country have, it thrives on innovation and ability to adapt to new trends [23].

Access to the internet

Access to the internet measures the extent to which individuals, corporates and businesses organization can access Internet, and their ability to access digital services through the internet. Though, Nigeria is reported to have fast and large internet penetration, individual Internet penetration is relatively low in Nigeria, at around 28.7%, Individuals using fixed Internet broadband was score 8.2% and International Internet bandwidth (bps per inhabitant), that is, the Proportion of Nigerians using the Internet was at 2,986 [24,25]. In total, Internet usage in Nigeria stands at 27.7% [22], Judging from this report, only 61.2% of the Nigerian population enjoys access to the Internet despite the fact that more than half (63.3%) now own a mobile phone. The lack of internet access by many Nigerians and strict regulatory model for mobile money has stunted its growth in Nigeria, with the country's population being amongst the lowest mobile money users of eight African countries surveyed in 2017 [26]. According World Economic Forum [21], only 11% of Africans could access 3G internet, which allows mobile operators to offer a high data-processing speed. This lack of access to the Internet by many Nigerians, may deprive many the opportunity to participate fully in the digital economy as well as online financial transactional and any other online services. Without access to the internet by many citizens, digital economy policy

targeted for economic development might not yield the expected result.

Technological readiness

Nigeria ranks 112th out of 137 countries in The Economist Intelligence Unit's Technological Readiness Ranking for 2018. Nigeria's Broadband penetration level is currently 31.5 per cent, and mostly in urban areas, although the Federal Government has said it will strive to grow the country's Broadband penetration to 70 per cent by 2021, to increase penetration to the rural areas [27]. Broadband, a major technological for the digital economy to thrive remains a challenge, according to the minister of communication and digital economy, broadband penetration in Nigeria, is approximately 37.8 per cent, less than 40 per cent [17]. Household broadband penetration was rate at 0.04% at the end of 2018 (ITU, 2018). Nevertheless, the Minister of Communication and Digital Economy, Isa Pantami, has inaugurated a new National Broadband Plan Committee to drive the nation's Broadband plan with the sole objective of boosting internet access. The National broadband is expected to increase broadband penetration to 70% by 2025 [28]. The inefficiency of Nigeria's broadband plan may be affecting the country's capacity to make reasonable progress in term of digital economy and diversification plan by the current government. In the span of five years, Nigeria continues to be ranked among countries with the lowest broadband penetration in the world [17-29]. No country can succeed or thrive on digital economy without adequate broadband penetration properly put in place, that is why government must put adequate mechanism in place to make sure that the proposed national broadband is achieved for effective digital resources to the underserved and unserved areas in the country. Without this, digital economy policy will remain a mirage.

ICT infrastructures

Though Nigeria is poised for economic growth and development through digital economy, Nigeria's infrastructure is far from being adequate for a fully digital economy. Some infrastructures that are essential for the smooth operation of the proposed digital economy remains low or totally absent. About 62.05% of all mobile subscriptions were on 3G in 2017, 89.79% of the mobile network population coverage was on 2G and 11.04% was on LTE (ITU, 2018). Similarly, Households with broadband Internet access was meagerly 3.0% (RIA, 2017). In the year 2016, Nigeria was 70th position below the best-performing African country, Mauritius, that ranked 20th in Africa. Nigeria was placed on the same level with Ethiopia, Uganda and Zimbabwe, some of the poorest countries in the world [6].

Similarly, Nigeria ranked 143rd out of 176 countries scored by the ITU's ICT Development Index survey in the year 2017. On the Access Sub-Index and Use Sub-Index, Nigeria ranked 145th and 147th respectively. These ranking places Nigeria as one of the lowest-ranking countries that is not a least developed country. African nations continue to lag behind in the availability, affordability, and use of ICTs. African countries including Nigeria have lowest ICT development Index (IDI) (ITU, 2016; World Economic Forum, 2016b).

Nigeria still have low penetration of computers, low internet penetration (30 percent), poor electricity supply, and limited terrestrial networks (RIA, 2017). There is low rollout of 3G and as much as 70 percent of the network with the largest national footprint is still only 2G. Nigeria currently have 4G network in the major cities of the country, an essential infrastructure upon which digital economy so critically depend.

E-Services

In a digital economy nation, on-line presence is very essential, where information about Ministry, Department or Agencies (MDAs), the services they render, a window for its transactions with citizens and businesses opened, and the data it generates on daily or periodic basis offered for analysis and policy making are made available in digital form [29]. Though, most MDAs have static websites that host basic information and news about the ministries. Essential aspects like online services and transactions are not fully developed even though they are essential for effective function of digital economy. Most of the ministries lack intranets to make information sharing and inquiries efficient, thereby reducing ICT infrastructure in MDAs to mainly sharing internet connection.

Most ministries are still providing annual reports in PDF formats, without providing searchable databases of vital statistics. It is only the Ministry of Trade and Investment that has a functional transactional website [29].

Availability of local content

In term of local content and patents, Nigeria ranks 111 out of 137 countries survey by the Economist Intelligence Unit's Technological Readiness Ranking in the year 2018, with zero value of local content and patents [6]. The lack of local contents manifests also in the language in which web site content is delivered which can only be understood by a minority elite. Most language of digital technology or its content are still in foreign language [30]. The absence of local content, may affect the digital economy policy and the expected outcomes.

In view of the absence of local content, indigenous content promotion is one of the eight (8) important pillars identifies to drive the digital economy in Nigeria (Nigerian National Broadband Plan 2020-2025) [31]. Nigeria as a developing country is no doubt strategizing with a view for Nigeria and Nigerian to cross the digital divide and meet up with the digitally advanced world, effective local and indigenous technology is imperative for digital technology to thrive, local and indigenous technology is what is driving the Chinese economy. Therefore, diligent implementation and adoption of local content and indigenous technology policy is necessary for the realization of digital economy policy plan.

Digital divide

The World Bank's development report of 2016 notes that digital dividends, which it describes as "broader development benefits from using these technologies" have not been evenly distributed. "For digital technologies to benefit everyone

everywhere requires closing the remaining digital divide, especially in internet access,” maintains the Bank

The digital divide refers to the gap in usage and access to digital infrastructure and services between individuals, households, business or geographical areas [32], remains a challenge in most African countries, including Nigeria [3,6] There is gap in mobile phone usage in Nigeria, with probability of mobile phone ownership among males higher than that of females and only an approximately 61 percent of Nigerians use the Internet, thus creating a digital gap (Economist Intelligence Unit report, 2016 [33].

The digital divide gaps was also reveals by a research conducted by Research ICT Africa C, in Nigeria, in the year 2018, where its demonstrated that more than 60% of Nigerian do not use the Internet. The Survey reveals a significant inequality in the adoption of ICTs, which according to the survey, favours those at higher income and education levels, as well as those living majorly in urban areas as compared to those in semi-urban, suburb or rural areas (RIA, 2019; ITU, 2018).

The Research ICT Africa (RIA), survey in Nigeria, also demonstrate that, a significant reason for not using the Internet is the absence of coverage of rural people. According to Research ICT Africa (RIA) survey [34], around 35 percent of the population are not currently being served by mobile communication services, of which 21 percent was reported to be living outside mobile coverage.

The digital divide is still a major challenge in most parts of Nigeria, good number of the citizens are still below the critical mass of 20 percent of the population required for the country to benefit from the network effects associated with improved information flows, productivity gains and economic growth [35]. Therefore, while the governments is focusing on the provision of necessary ICT infrastructures towards getting the country ready for digital economy, attention must be given to digital literacy by assisting those without computer skills and necessary e-literacy acquire those skill.

Bridging the digital divide can significantly contribute to the attainment of the digital economy policy, as the policy would be enhanced if every citizen have quality access to ICT infrastructures. Harnessing technology for its economy development and growth may not yield the desire result for Nigeria's future if government does not take a decisive measure to address the digital divide. “For digital technologies to benefit everyone everywhere requires closing the remaining digital divide, especially in internet access,”[36].

Human resources and digital skills

Human resources and skills are major requirement for digital transformation, but in the area of human development as the global indices show, Nigeria scores low on this dimension, ranked 152nd out of 188 countries in the UNDP's Human Development Index (UNDP, 2016) [37]. Nigeria's human capital development remains weak as a result of poor investment. The nation was ranked 152 out of 157 countries in the World Bank's 2018 Human Capital Index [38] Basic digital skills is a prerequisite to being able to utilize Internet services, but digital illiteracy is

still relatively high in Nigeria (Nigeria Digital Economy Diagnostic Report, 2018) [39]. Digital literacy is not an option but a necessary skills require by every individual to be considered competitive and best prepared for today's world of advanced technology and the future of work. However, Nigeria being an emerging nation technologically, digital skill is still very low among the majority of the citizens, especially those in the semi-urban and rural areas (Nigeria Digital Economy Diagnostic Report, 2018). The poor state of digital infrastructures does not encourage the promotion of digital literacy. Promoting and enhancing digital literacy and skills is very crucial if Nigeria is to harness the potential of the digital economy for growth and development as envisaged in the digital economy policy.

In order to fully participate and be active in the 21st century digital era, every Nigerian need digital skills in order to meet global competitiveness [40]. If Nigeria intends to become part of the digital future, the government needs to make concerted efforts towards creating and improving digital skills among her citizens[41-44]. Effective digital literacy will enhances adoption and use of digital products and services among the larger population (Nigeria Digital Economy Diagnostic Report, 2018).

Conclusion and Recommendation

Digital economy implementation, utilization and its effectiveness depend on the e-readiness of various indicators, such as Networked Readiness, Access to the internet, Technological readiness, ICT infrastructures, E-Services, Availability of local content, Digital Divide and Human Resources and Digital Skills, among others. Availability, however, is not enough to reap the full potentials of the digital economy in Nigeria. Analysis and global reports indices rank Nigeria low in term of e-readiness for digital economy. Though digital economy drive is still at infancy in Nigeria, encouraging signs are seen, ranging from eight (8) critical pillars; Developmental Regulation, Digital Literacy and Skills, Solid Infrastructure, Service Infrastructure, Digital Services Development and Promotion, Soft Infrastructure, Digital Society and Emerging Technologies and Indigenous Content Promotion and Adoption identifies to drive the implementation of digital economy in Nigeria. However, to become a digital economy nation, Nigeria requires good broadband penetration to be accessible to all the citizens regardless of their location, available and affordable internet access, digital skills for the citizen and good policy toward local and indigenous technology.

We recommend that, the current and future government should remain faithful to the National broadband plan, which was first proposed in 2013. The current drive by the government to diversify economy through digital economy will eventually create a new line of investment opportunities in Nigeria and pave the way for gradual progress in the country's technological readiness and development.

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