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Cyber Security and Digital Privacy: An Imperative for Information and Communication Technology and Sustainable Development in Nigeria

F.O. Okorodudu*[1], P. O. Okorodudu[2]

*[1]Lecturer, School of Applied Sciences, Department of Computer Science, Delta State Polytechnics, Otefe-Oghara, Delta State, Nigeria

Okoroblackx4@yahoo.co.uk

M.Eng. Student, Department of Electrical Engineering, University of Nigeria, Nsukka, Enugu State, Nigeria

Profphilip2004@gmail.com

Abstract

In recent times, *cyber-attack and digital privacy invasion on Internet commerce, vital business sectors and government agencies have grown exponentially with the number of internet users growing roughly from an estimated 360 million in 2000 to nearly two billion at the end of 2010 and over 3.4 billion as of August, 2016.* Increased internet *penetration has brought with it challenges such as cyber security and digital privacy issues. Addressing these issues in a way that protects the tremendous economic and social values that information technology presents, without stifling innovation, requires a fresh look at the enhanced sustainable development goals of the United Nations. The trust of this paper, therefore, is to analyze the concept of cyber security and digital privacy in relation to the sustainable development of information and communication technology in Nigeria. The paper concludes with a way forward towards meeting the 2030 target of the sustainable development goals as it relates to information and communication in Nigeria.*

Keyword: Internet, Cyber Security, Digital Privacy, Information and Communication Technology, Sustainable Development.

I. INTRODUCTION

The rise of technology and online communication has not only produced a dramatic increase in the incidence of cyber insecurity and digital privacy issues, but has also resulted in the emergence of what appears to be a new variety of threat to the attainment of sustainable development of information and communication technology in Nigeria. Both the increase in the incidence of cyber insecurity and digital privacy invasion and the possible threat to the role of information technology to the attainment of sustainable development poses challenges for the larger internet users, as well as for law enforcement agents. [1]

Cyber security and digital privacy threats began with the rapid increase in internet usage. As the internet covers more ground globally, the risk of cyber insecurity and digital privacy invasion increases globally. Staying shielded from cyber-attacks and digital privacy invasion requires even the most sophisticated of users to be aware of the threats and improve their security practices on an ongoing basis. [2]

Cyber-attack and digital privacy invasion on Internet commerce, vital business sectors and government agencies have grown exponentially with the number of internet users growing roughly from an estimated 360 million in 2000 to nearly two billion at the end of 2010 and over 3.4 billion as of August 12, 2016. [3]

Information and Communication Technology (ICT) has become, within a very short time, one of the basic building blocks of modern society. ICTs have successfully changed the social, economic and political spaces globally so much so that present day human life depends on it. [4]

Sustainable development, as defined by [5], is a global crusade movement. [6] Stated that sustainable development is a process rather than an end goal. [6] Opined further that sustainable development process requires constant evaluation and analysis of the emerging trends in the discussion so as to take it to the next level. Sustainable development therefore emphasized on the need to better the lives of citizens in order to have a secure or almost secure future. Hence, to achieve sustainable development, there is the need for a revolutionary, efficient and reliable system that will make it realizable. These tools, according to [7], are the internet, mobile phones, e-mail, microcomputers, amongst others.

Thus, ICTs are significant tools for sustainable development. However, Nigeria needs to have a sustainable development agenda for its ICT sector before it can key into the sustainable development goals as outlined by the United Nations. According to the International Telecommunications Union (ITU), the role of the ICT cannot be over emphasized. ICTs will play a huge role in helping Nigeria to achieve the new Sustainable Development Goals (SDGs), which follow and expand on the Millennium Development Goals (MDGs), to end poverty, fight inequality and injustice, and tackle climate change by 2030.

Key components that will play lead roles in the attainment of sustainable development of the ICTs sector in the country are cyber security and digital privacy of individuals', whether online or offline.

It is however saddening to note that apart from the 1999 constitution of the Federal Republic of Nigeria which bestowed some rights on an individual and a recently enacted data privacy bill, Nigerian internet users have had no form of protection whatsoever as regards their rights on the internet.

Specifically, the Constitution of the Federal Republic of Nigeria (Promulgation) Act, Chapter C23, Laws of the Federation of Nigeria 2004 (as amended) (the "Constitution"). Section 37 of the Constitution exclusively states that:

"The privacy of citizens, their homes, correspondence, telephone conversations and

telegraphic communications is hereby guaranteed and protected". [8]

The lack of laws and regulators coupled with a judiciary that has limited cyber security and digital privacy awareness capabilities makes it hard to prosecute alleged offenders [9] The thrust of this paper is therefore to bring to fore the need for cyber security and digital privacy as a driving force towards the sustainable development of the information and communication technology sector of the Nigerian state.

II. METHODOLOGY

This paper is qualitative and exploratory in its approach. In keeping with the logic of deductive reasoning and systematic inquiry, the paper qualitatively explores its subject matter. The thrust of analysis was systematically prosecuted under select themes and sub-themes carefully designed to address the salient aspects of the paper's objective.

III. FRAME OF REFERENCE

While cyber security and digital privacy form the thrust of this analysis, there are other key concepts such as Information Technology, Sustainable Development and the Internet which will aid the proper analysis of this paper. Following hereunder is an attempt to clarify these concepts in relation to their contextual meaning in this study

a. Cyber Security

Cyber security is concerned with making cyberspace safe from threats, i.e. cyber-threats. Cyber security is a vague term which implies the malicious use of ICT either as a target or as a tool by a wide range of malevolent actors. Typical cyber issues according to 10] include: confidentiality of information; and integrity of systems and survivability of networks. Cyber security, has, as its key issues, the protection of system networks against unauthorized access and data alteration from within; and the defense against intrusion from within and without.

As a commonly used term, cyber security is used to refer to a number of key issues as enumerated by [11]. As a set of activities and other measures, technical and non-technical, intended to protect computers, computer networks, related hardware and software devices, and the information they contain and communicate, including software and data, as well as other elements of cyberspace, from all threats, including threats to national security; and the associated field of professional endeavours, including research and analysis, aimed at implementing those activities and improving their quality.

Though information security lies at the heart of cyber security, it encompasses more than just information security or data security. While the first goal of modern information security is to ensure that systems are predictably dependable in the face of all sorts of malice especially in the area of denial of service attacks, there is also the issue of national security.

Cyber security could be related to economy and national security when viewed from the mirror of the internet. As an economic issue, cyber security is key to the continuity of online businesses that requires permanent access to technology infrastructures to ensure satisfactory business performance. As a national issue, cyber security involves the dependence of the society on information and communication technology.

b. Digital Privacy

There is presently no specific or comprehensive data privacy or protection law in Nigeria. The only legislation that provides

for the protection of the privacy of Nigerian citizens in general terms is the Constitution of the Federal Republic of Nigeria.

Prior to 2016, Nigeria had two data privacy bills before the national assembly with neither of them still not being passed into law. The implication of this is that privacy invasion as far as information and communication technology is concerned was not punishable by any separate law other than the constitution of the Federal Republic of Nigeria before 2016.

In 2016 however, a bill, known as the digital and freedom bill, 2016 was enacted by the House of Representatives. This bill seeks to provide, amongst others; the protection of human rights online, the protect internet users in Nigeria from infringement of their fundamental freedom and to guarantee the application of human rights for users of digital platforms and or digital media and for related matters. Proper follow up on the bill will minimize cyber-attacks and digital privacy invasion in the country.

Countries with functional data privacy laws ensure strict adherence to data protection principles by making sure that information is used fairly and lawfully and for specifically stated purposes. [12]

Data privacy laws are key to attaining sustainability of the information technology sector as it will make provisions for a breach in data response notifications, non-profiling and automated decisions, right to be forgotten, increased fines for breach and privacy impact assessments. It is thus important that Nigeria implements its data privacy law with modifications to the earlier bills so as to make them effective.

As every day goes by without data privacy legislations being implemented, Nigerians are being taken further away from opportunities and attainment of the SDGs and at the same time moving closer towards digital alienation from lucrative new markets. [13]

c. Information and Communication Technology

Scholars in the field of ICT have not adopted any definition for the term as the concepts, methods and applications involved are constantly evolving. In ICT, things happen very fast hence it is difficult to adopt a definition today that might change soon enough. In general however, ICT is seen as a generic term that refers to technologies that are used for collecting, storing, editing and passing on information in various forms. [14]

In April 2001, Nigeria started the implementation of its ICT policy with the establishment of the National Information Technology Development Agency (NITDA) as the implementing body. Key objectives of the ICT policy as outlined by [15] is stated below: To

- Ensure that ICT resources are readily available to promote efficient national development.
- Guarantee that the country benefits maximally, and contributes meaningfully, by providing the global solutions to the challenges of the information age.
- Establish and develop ICT infrastructure and maximize its use nationwide.
- Create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life.

- Create an enabling environment and facilitate private sector (national and multinational) investment in the ICT sector.
- Empower the youth with ICT skills and prepare them for global competitiveness. To empower Nigerians to participate in software and ICT development
- Encourage local production and manufacture of ICT components in a competitive manner.
- Integrate ICT into the mainstream of education and training.
- Encourage government and private sector joint venture collaborations.
- Develop human capital with emphasis on creating and supporting a knowledge-based society.
- Build a mass pool of ICT literate manpower using the National Youth Service Corps (NYSC) and other platforms as a train-the-trainer scheme for capacity-building.

d. Sustainable Development

Sustainable development maybe defined as development that meets the need of the present without hampering the ability of future generations to meet their needs. [16]. Sustainable development is efficient management of resources for human survival, taking into consideration both the present and future generations. [17]. To achieve sustainable development, the world summit on sustainable development suggested that countries must ensure the full participation of their citizens in development programmes and strengthen the capacities of citizens to access and utilize timely information.

Between the 25th and 27th of September, 2015 in New York, United States, member states of the United Nations unanimously adopted the resolution transforming the MDGs to SDGs. Among the 17 Sustainable Development Goals (SDGs) is goal 9.c, which aims to significantly increase access to ICT and strive to provide universal and affordable access to the internet in least developed countries by 2030. The internet will play a lead role in the implementation and monitoring of the SDGs. The next step will be to see how the goal can become reality in an increasingly digitalized world.

e. The Internet

The internet is a massive networking infrastructure that connects millions of computer users together globally through a network where other computers are able to communicate with one another. [18]

Though there are about 148 million active subscribers in Nigeria, the Nigerian Communications Commission (NCC) puts Internet subscribers at 93,591,174. [19]. The ITU statistics revealed that in the America, about one third of the population is offline, while almost 75 per cent of people in Africa are non-users of the Internet, with only 21 per cent of Europeans offline.[20]

According to the Director of the ITU's Telecommunication Development Bureau, Brahima Sanou,, 2016 marked the year when the international community embarked on the implementation of the 17 SDGs and their 169 targets, with ICT playing a key role in facilitating their attainment.

The new edition of ITU's ICT Facts & Figures, revealed that mobile phone coverage is now almost everywhere, with an estimated 95 per cent of the global population, or some seven billion people living in an area covered by a basic 2G mobile-cellular network. Statistics also show that internet penetration rates are higher for men than for women in all regions of the world. The global internet user gender gap grew from 11 percent in 2013 to 12 percent in 2016. The regional gender gap is largest in Africa, at 23 percent and smallest in the Americas, at 2 percent internet bandwidth. By early 2016, international Internet bandwidth had reached 185,000 gigabits per second, up from a low of 30,000 gigabits in 2008. However, bandwidth is not evenly distributed globally as a lack of it remains a major challenge to improved internet connectivity in developing countries like Nigeria. [21]

IV. NIGERIA, CYBER SECURITY AND DIGITAL PRIVACY

Nigeria, made up of 36 states and 774 local government council areas, with over 170 million people has ICT facilities that are concentrated in urban areas and affordable majorly by the middle and upper class of the society. Rural and sub urban areas are unable to fully participate in the emerging information economy as a result of its lack of affordability in some areas [16]. Nigeria, according to the ITU, falls within the countries with low digital opportunity index scores. The digital opportunity index scores released by the ITU revealed that Nigeria was ranked 31 in the African continent with very low score of 0.41, 0.03 and 0.01 for opportunity, infrastructure and utilization respectively. In terms of ownership and access to personal computers (PCs), only 4.5% of the Nigerian population has access to personal computers. [22]

With increasing internet penetration is the corresponding increase in cyber insecurity and digital privacy invasion. Today's cyber security threats include indiscriminate and broad-based attacks designed to exploit the interconnectedness of the internet. Increasingly, they also involve targeted attacks, the purpose of which is to steal, manipulate, destroy or deny access to sensitive data, or to disrupt computing systems. These threats are worsened by the interconnected and interdependent architecture of today's computing environment. Theoretically, security deficiencies in one area may provide opportunities for exploitations elsewhere.

Personal information has a significant value in today's digital age. Bigger and more equipped countries with higher economic potentials and custodians of personal information have continued to spy on smaller ones with the aim of gathering information in a somewhat illegal way as a result of the lack of data protection and privacy laws in such smaller countries. Nigeria, being one of such countries needs to act swiftly if it wants to safeguard its citizens so that current and future generations are not economically taken advantage of, exploited by foreign companies, racially profiled or have their privacy undermined by Nation States and/or criminals.

This lack of data protection and privacy laws presents a golden opportunity for both legitimate organizations and criminal gangs to target Nigeria with the objective of trawling up information that could be used in a criminal or discriminatory manner. In the event that a breach or indeed a crime is initiated, the lack of laws and regulators coupled with a judiciary that has limited cyber awareness capabilities makes it hard to prosecute alleged offenders.

The emphasis on protecting Nigerian's personal data cannot be over emphasized, Nigeria will need to update and revisit the two bills at the national assembly to combat new data breach and exploitation threats to her citizens.

It has been recognized that many Nation States have initiated and implemented spying and espionage programs to ensure they maintain their country's competitive advantage. We have also seen a rise in profiling campaigns which could be unfavourable to Nigerians in general. Armed with the bio-metric location and financial data, countries and organizations can then develop algorithms from such information to initiate artificial blocks on Nigerians creating barriers to entry to certain environments thereby reducing economic, social and political aspirations.

The absence of Nigerian data protection and privacy laws also make the country subject to other country's legislations in the event of disputes.

V. CHALLENGES OF CYBER SECURITY AND DIGITAL PRIVACY IN NIGERIA

a. Affordability

A survey by Research ICT Africa [23] disclosed that 70% of non-internet users in Nigeria say affordability is the main reason for not using the internet. Majority of internet users in Nigeria access it exclusively using mobile devices. Smart phones and tablets have become a household name in Nigeria. However, mobile broadband is highly expensive in Nigeria where low per capital income exist. A World Bank report indicates that 80% of Nigerians earned $2 or less a day, or an average of $370 in a year [24]. The cost of ICT services is a major barrier to increased internet and broadband usage. Nigeria cannot boast of free Wi-Fi to enable internet access while internet speeds are particularly slow in some locations.

b. Cyber/Internet Crime

Internet scam is a very popular phenomenon in Nigeria with the country highly feared in the international community. Incidences of hacking into individual and organizational accounts and using information obtained to witch-hunt or threaten individuals have not helped matters. These have left people at the mercy of these scammers. Identify theft, cybercrime exposure and hate sites hacking are some of the consequences of internet crime. Consequently, many people have become apprehensive when it comes to internet access and usage. They would rather not have anything to do with such ICT facilities.

c. Lack of Digital Literacy

Lack of basic digital literacy skill is a major threat to digital inclusion. Conventional education i.e. learning to read, write and communicate; can never be downplayed.

However, literacy in information and communication technology (ICT) is a non-negotiable standard in the 21st century. Digital literacy is the ability to identify, search and utilize required information in multiple formats from a wide range of sources presented through information and communication technologies. Digital literacy is one of the core skills required in this digital age. [25]. It enables one to find, critically appraise and manage information that is useful for every area of life.

d. Poverty

Many Nigerians find it difficult to afford mobile phones and this represents a huge barrier to access regular usage of the internet. Perhaps the low per capita income of Nigerians coupled with the current recession of the economy are to blame for this huge setback. A recent survey showed that almost 70% of Nigerian internet users reported that internet services are too expensive for them to afford. [26].

e. Poor Communication Network

First, it will take a much longer time for information to get to hinter lands with poor internet coverage. Even though some communities with low internet penetration use transistor radios to get information, these information are only broadcast at specific times in the day whereas, with internet, these information are available on a 24 hour basis as events unfold. The consequence of this is that people with limited internet access are staved of current information which might be beneficial to them at that point in time. [27] Pointed out that poor and inadequate telecommunication facilities, poor level of computer literacy, among others stand in the way of effective utilization of modern technologies by the citizens of Nigeria

VI. THE WAY FORWARD

For Nigerians to surmount the challenges militating against the attainment of the sustainable development goals before 2030 and for it to be cyber-attack free and data privacy insured , the country's ICT sector must overcome the retarded growth that she is currently besotted with, especially in the area of information and communication technology.

The sluggish development of the ICT sector can be checkmated with full implementation of the digital and freedom right bill of 2016 as enacted by the national assembly. If fully implemented, the bill could help in transforming Nigeria from a consumer nation to a producer nation as investors will feel secure while transacting their businesses online.

Also, for goal 9c of the SDGs to be achieved, there must be the coordination of research and development in the country. Researchers must be provided with the necessary funds to fashion a way out of the country's current quagmire. All hands must be on deck in paying adequate attention to indigenous technology. With a functional cyber security and digital privacy law, local developers and investors will feel safe about their products and innovations.

Nigeria can leverage on its information and communication technology sector by paying

more attention at improving its growth and development in the county through the passage of appropriate laws that will make for its growth. This will give the country some respite from oil dependency and bring us closer to attaining the goals of the SDGs sooner than later.

References

[1] Brenner S (2007). Law in an Era of Smart Technology, Oxford: Oxford University Press p.374.

[2] Cyber Security, Innovation and the Internet Economy. The Department of Commerce Internet Policy Task Force. June, 2011

[3] (http://www.webopedia.com/TERM/I/Internet.html). Retrieved 20th January, 2017

[4] Patrick A. E, David I and Ugochukwu M. U. (2014). ICTs and Sustainable Development of Higher Education in Nigeria: Rewriting the Ugly Narrative. *Journal of Educational and Social Research. Vol. 4 No 1. January, 2014*

[5] Nwanwene, T. A. M. (2007). Communication and Sustainable Development in Nigeria: Implications for the Electronic Media. *International Journal of Communication 6*: 434.

[6] Amodu, L. O. (2008). The Internet as Mass Communication. In: E. M. Mojaye, O. O. Oyemwo, R.

[7] Toyo, O. D and Ejedafiru, F. E (2016). Utilization of Information and Communication Technologies (ICTs) for Sustainable Economic Development in Nigerian. International Journal of Ergonomics and Human Factors. Volume 12, Number 2. Pages 22-34 (February, 2016)

[8] Udo Udoma & Belo-Osagie in *Simmons & Simmons* .Data Privacy Protection in Nigeria: An overview of the Data Privacy Protection Laws in Nigeria. February, 2015

[9] F. Franklin Akinsuyi. (2015). Data Protection & Privacy Laws Nigeria, A Trillion Dollar Opportunity. https://www.linkedin.com/pulse/data-protection-privacy-laws-nigeria-trillion-dollar-f-franklin. Retrieved 20th January, 2017

[10] Odumesi J.O (2006). Combating the menace of cybercrime: The Nigerian Approach (Project), Department of Sociology, University of Abuja, Nigeria p.45.

[11] Odumesi John Olayemi. (2014). A socio-technological analysis of cybercrime and cyber security in Nigeria. International Journal of Sociology and Anthropology. Vol 6(3). Pp 116-125

[12] http://www.sagittarius-marketing.com/News/our-news/webmasters-of-the-future.aspx Retrieved 20th January, 2017

[13] https://www.linkedin.com/pulse/data-protection-privacy-laws-nigeria-trillion-dollar-f-franklin. Retrieved 20th January, 2017

[14] S M Kundishora: The Role of Information and Communication Technology ICT) in Enhancing Local Economic Development and Poverty Reduction

[15] Anyasi, F.I, Onianwa, C.U, Akpaida, V.O.A, Idiakheua, L.O and Ebegba, D. Promoting Sustainable Development in

Nigeria through Information and Communication Technology (Ict). (2012). *IOSR* Journal of Electronics and Communication Engineering (IOSR-JECE). Volume 3, Issue 3 PP 05-11

[16] Goodluck Ifijeh, Juliana Iwu-James, Oyeronke Adebayo (2016). Digital Inclusion and Sustainable Development in Nigeria: The Role of Libraries. 3rd International Conference on Human Development Issues, (CU-ICADI 2016). Pp. 52 - 57

[17] Adejumo, A. and Adejumo, O., "Prospects for achieving sustainable development through the millennium development goals in Nigeria". *European Journal of Sustainable Development*, vol 3 (1), 33-46, 2014

[18] F Okorodudu and P Okorodudu. (2016). Fibre Optics Communication in Nigeria and a Wider Internet Penetration: The Nexus. International Journal of Innovative Science, Engineering and Technology. Vol. 3 Issue 12. Pp. 238-245

[19] http://www.premiumtimesng.com/business/business-data/212377-nigerias-internet-users-94-million-august-ncc.html. Retrieved 27th January, 2017.

[20] International Telecommunication Union, "ICT Facts and Figures". Retrieved from http://www.itu.int/en/ITU-D/Statistics/Pages/ 2015. Retrieved 27th January, 2017

[21] http://guardian.ng/technology/75-of-nigerians-south-africa-egyptians-still-offline/. retrieved 27th January, 2017

[22] National Bureau of Statistics, Annual Socio-Economic Report: "Access to ICT". Retrieved from www.nigerianstat.gov.ng/pages/ 2011. Assessed on 15th January, 2017

[23] Alliance for Affordable Internet, "How Africa's Largest Economy Is Prioritizing Affordable Internet. Retrieved from http://a4ai.org/wp-content/uploads/2014/04/Nigeria-Case-Study-Final.pdf on 20th January, 2017.

[24] World Bank, "Poverty Headcount Ratio At $2 A Day (PPP)". Retrieved from http://data.worldbank.org/indicator/SI.POV.2DAY, .retrieved 30th January, 2017

[25] CILIP Driving digital inclusion The role of library and information professionals, 2014. Retrieved from http://www.cilip.org.uk/sites/. Retrieved 30th January, 2017

[26] Research ICT Africa, ICT Access and Usage Survey. Retrieved from http://www.researchictafrica.net/home_archive_reader.php?aid=55 on 30th January, 2017

[27] Okiy, R. B. (2005). Strengthening Information Provision in Nigerian University Libraries through Information and Communication Technologies. The Electronic Library *23* (3): 311 – 318.