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NIGERIA'S EVOLVING PRESENCE IN CYBERSPACE

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ABSTRACT[1]
Cyberspace is now critical to every nation's socio-economic, cultural and political activities. When it is disrupted or fails, a country may experience strong adverse effects. On the contrary, its correct functioning and pliability is transforming modern society with exceptional pecuniary and social benefits. With many activities increasingly moving to the Internet, cyberspace has become a new stage for innovations, enterprises, social networking, criminality and war. This paper presents a brief overview of a study on Nigeria's presence in cyberspace. The Internet penetration growth and evolving Internet infrastructure provisioning in Nigeria were examined and a critical assessment of Nigerian presence in cyberspace was carried out between the months of August and September 2015, using the United Nations online presence index methodology. Web content, interactivity, the currency of information, downloadable documents and other data sets were used to compare various sectors of the Nigerian economy, including all tiers of government, academia and the organised private sector. The study revealed that the organised private sector and private educational institutions are doing better than government educational institutions and ministries. Actions for increasing presence in cyberspace and achieving e-governance for improved services and productivity in Nigeria and similar developing countries are recommended.

KEYWORDS
cyberspace, information economy, e-governance, cyber innovations, online presence, Internet presence

INTRODUCTION

Cyberspace has emerged as an indispensable domain for individuals, businesses and governments. Many economies use the Internet for provisioning of critical services such as governance, financial transactions, the supply of electricity, water, and delivery of goods and services in almost all sectors [1], [2]. As cyberspace is used to control, process, share, collaborate and communicate information, it is now a vital infrastructure of the 21st century. Consequently, its disruption can cause a country's economy and institutions to grind to a halt [3].

Nigeria's journey in cyberspace started without planned information systems and network infrastructure, until the establishment of a regulator, the Nigerian Communications Commission (NCC) [4]. NCC's policy and institutional reforms for the liberalisation of the telecoms sector accelerated the Internet growth and penetration rate in Nigeria. By the beginning of the 2000s, Internet penetration began to grow rapidly with the heavy importation of VSAT technology across the country and the popularisation of Internet cafés. Thereafter, the three international submarine cables, namely SAT3, GLO1 and MainOne, provided access to the global Internet. Subsequently, the introduction of Global System for Mobile communications (GSM) technology contributed to the explosion of Internet access with the roll-out of 3G mobile technology. Presently, mobile Internet bandwidth accounts for about 55% of Internet connectivity in Nigeria, with over 80 million Internet users as at October 2015 [5], [6]. The Nigerian cybercitizen represents 2.3% of world Internet users, with Nigeria ranked eighth in the world for number of Internet users [5]. Nigeria has consistently maintained its lead in the growth of the number of Internet users in Africa, although as engagement in cyberspace is increasing as the mainstream of human enterprise, cyber-criminality is also increasing at a fast pace worldwide.

This paper examines Nigeria's evolving presence in cyberspace and its prominence in terms of emerging, digitally driven society. The United Nations' four-stage model framework for benchmarking the various stages in evolution of e-government services of countries is utilised to investigate the web presence of various tiers of Nigerian government, ministries, as well as tertiary institutions and the organised private sector [7]. Based on international best practice, a list of imperative actions is proffered for improving the cyberspace presence of Nigeria and other sub-Saharan African countries, so as to achieve security and economic sustainability.

ONLINE PRESENCE SURVEY OF NIGERIAN ORGANISATIONS

In gauging Nigeria's presence in cyberspace, a detailed survey and analysis was conducted, comparing various websites. The UN online presence index methodology (2012) was adopted to generate an online index [7], [8], [9]. The survey was carried out in August and September 2015. The online index was derived by grading each website based on the following characteristics: essential information and content of the site, currency of information, downloadable documents, newsletters, reports and databases. The interactive nature of the site (ability to receive feedback from clients, customers), blogs, chat forums, help features, two-way communication on the site, response to emails, and

1 This paper is a shortened and edited version of the paper titled "A critical assessment of Nigeria's presence on the cyberspace", presented at CyberAbuja 2015, International Conference on Cyberspace Governance: The Imperative for National and Economic Security, Abuja, 4 to 7 November 2015. References are retained in IEEE style as in the conference paper.

language translations were also investigated. The sectors investigated were government, academia, finance, business, oil and gas, and telecommunication industries.

These features were categorised into stages of evolution. Stage One implies a website presence with necessary information, but not frequently updated. Stage Two applies to constantly updated websites with downloadable materials that are current. Stage Three represents a website that allows for two-way communication with users and where transactions can be conducted. Stage Four is applied to classify a website that is a one stop shop where access to all the necessary information is present, in various languages, to all users at home and abroad.

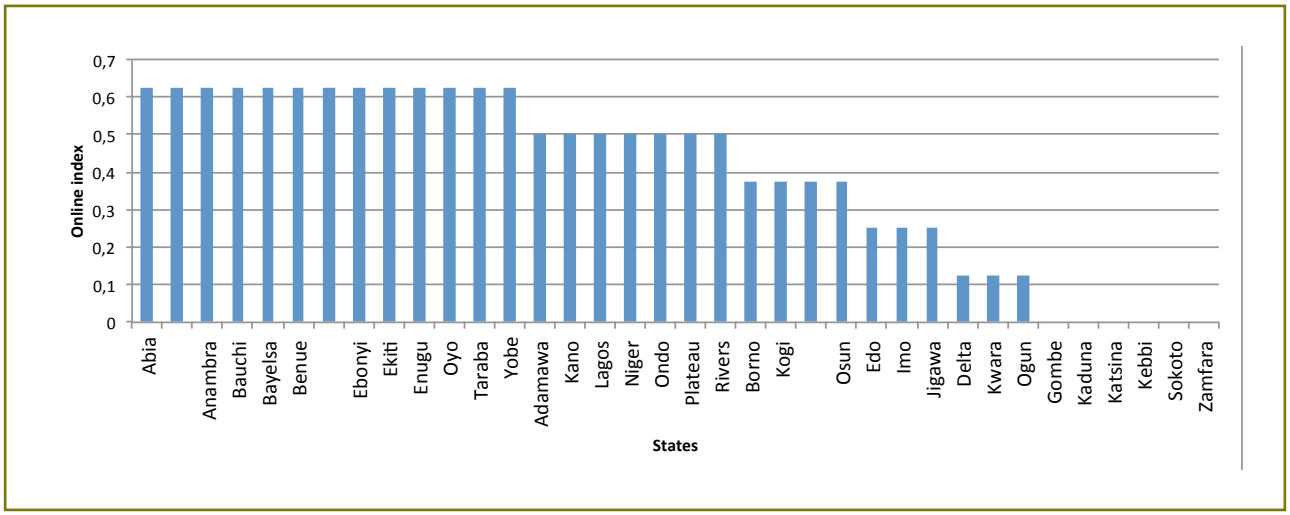
Online index values of 0 to 0.25 were assigned to websites at Stage One, values of 0.25 to 0.5 were given to websites at Stage Two, an index of 0.5 to 0.75 was assigned to websites at Stage Three and an index of 0.75 to 1 was applied to websites at Stage Four.

RESULTS

STATE GOVERNMENTS

Figure 1 reflects the web presence of the 36 states, including the Federal Capital Territory (FCT). About 36% were in Stage Three, while one out of every six states was not online. Most of the states with no web presence are the northern states of Nigeria.

FIGURE 1: WEB PRESENCE OF NIGERIA STATE GOVERNMENTS



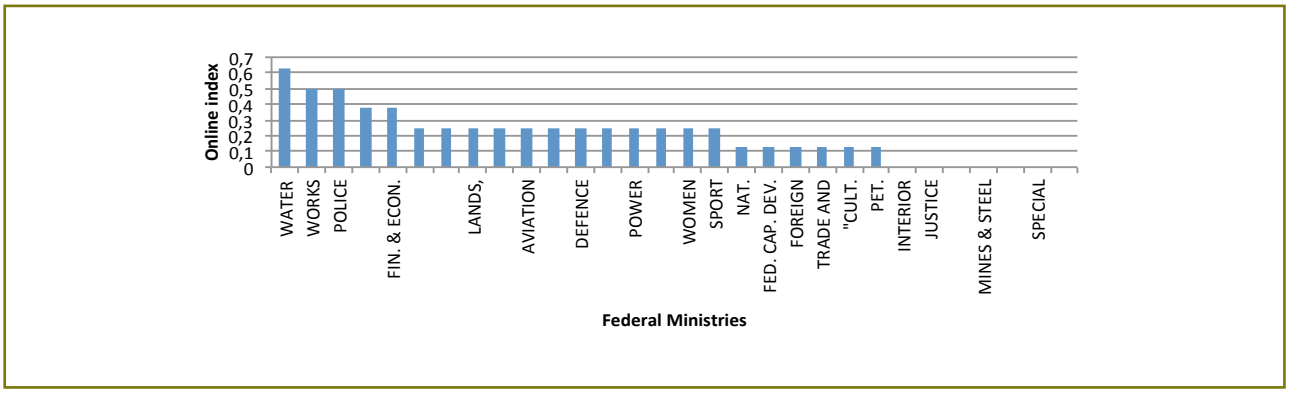
LOCAL GOVERNMENT AREAS (LGAS)

The survey revealed that of the 774 local government areas, only 28 LGAs had any form of web presence. All these local governments were found in one state, Akwa Ibom. The absence of a website for most LGAs, the level of government closest to communities, is a major weakness in Nigeria's online presence.

FEDERAL MINISTRIES

The results reveal that only one Ministry is at Stage Three, while the majority are at Stage One (Figure 2). Out of the 30 ministries surveyed, seven (23%) had no web presence. This is in contrast to the survey results of 2014, which indicated that all Ministries had an online presence [10], making access to government easier and available to more citizens.

FIGURE 2: ONLINE PRESENCE OF FEDERAL MINISTRIES



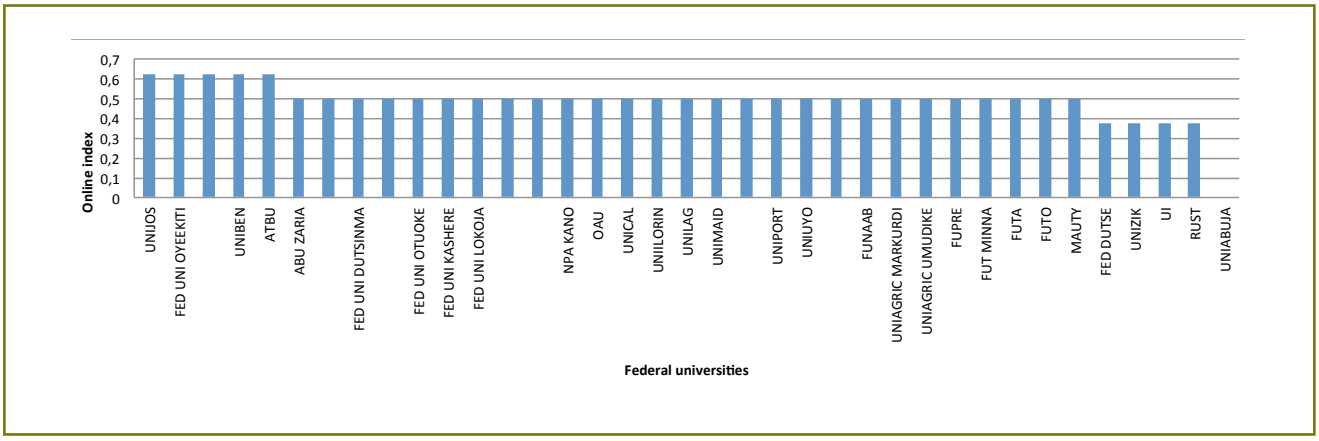
TERTIARY INSTITUTIONS

Given the large number of tertiary institutions, the results of the survey were categorised into various groups, namely universities (federal, state and private), polytechnics and colleges of education (CoEs).

UNIVERSITIES

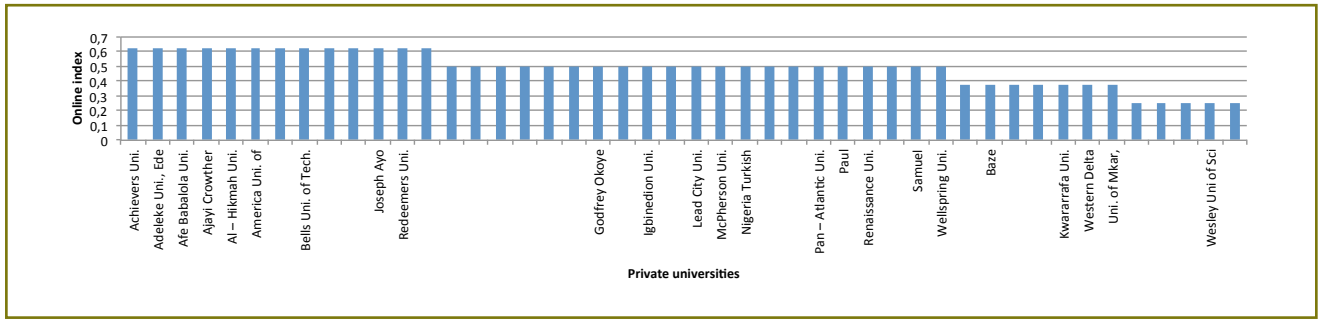
The survey revealed that more federal universities are participating in the many benefits of cyberspace, with more than 97% being online, to enable them to provide e-services such as online result checking, registration and payment of fees (Figure 3). Although, some have reached Stage Three, they are yet to become one-stop shops where all that is needed from the university (information and otherwise) is available online.

FIGURE 3: ONLINE PRESENCE OF FEDERAL UNIVERSITIES



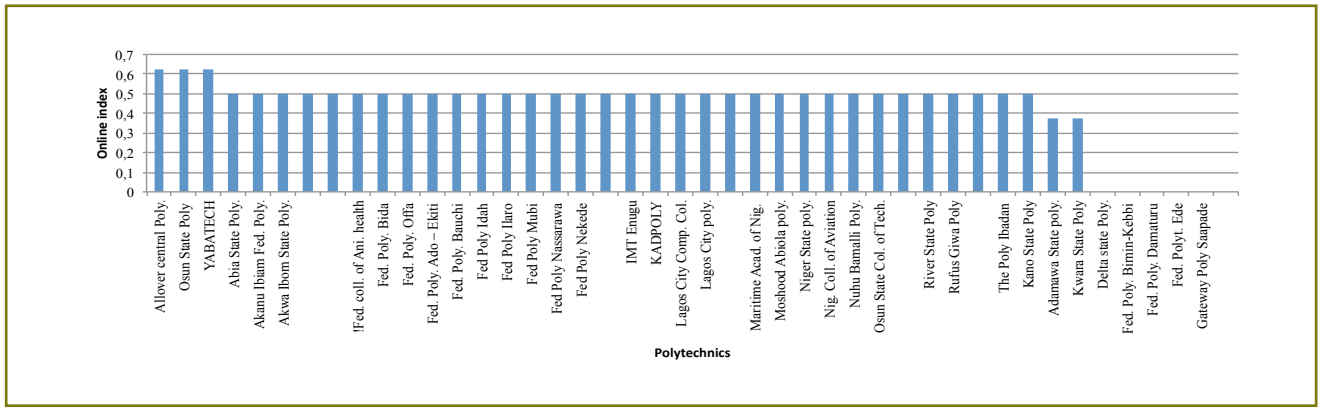
Although most of the state universities investigated have reached Stage Two, with some necessary web features, about 16% are yet to have any form of web presence (Figure 4).

FIGURE 4: WEB PRESENCE OF STATE UNIVERSITIES



It is important to note that the private universities have latched onto the many benefits of having a web presence. All the 46 private universities surveyed had web presence, with the majority at Stage Two and 28% at Stage Three (Figure 5).

FIGURE 5: ONLINE INDEX OF PRIVATE UNIVERSITIES



POLYTECHNICS AND COLLEGES OF EDUCATION

The investigation of polytechnics revealed that of the 44 polytechnics studied, five were not on the web (Figure 6). It is worthy of note that most of the polytechnics, namely 88%, have a web presence and 84% have a Stage Two web presence. Of the 34 colleges of education surveyed, only 68% have any form of web presence (Figure 7). This is very low compared with that of universities and polytechnics. In total, 153 public tertiary institutions were surveyed and 15% had no form of web presence.

FIGURE 6: ONLINE PRESENCE OF POLYTECHNICS

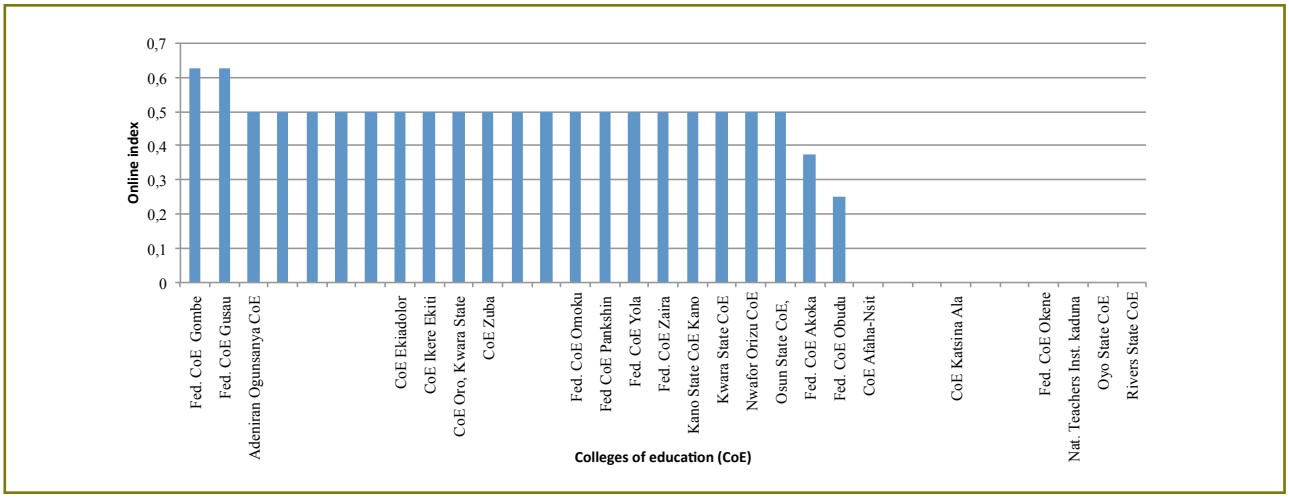
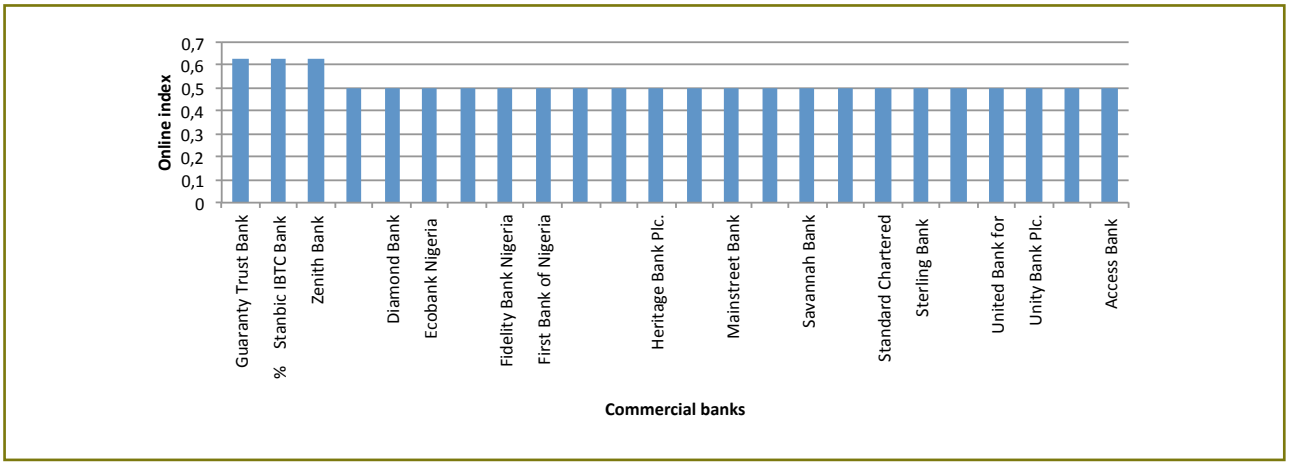


FIGURE 7: WEB PRESENCE INDEX OF COLLEGES OF EDUCATION (COE)



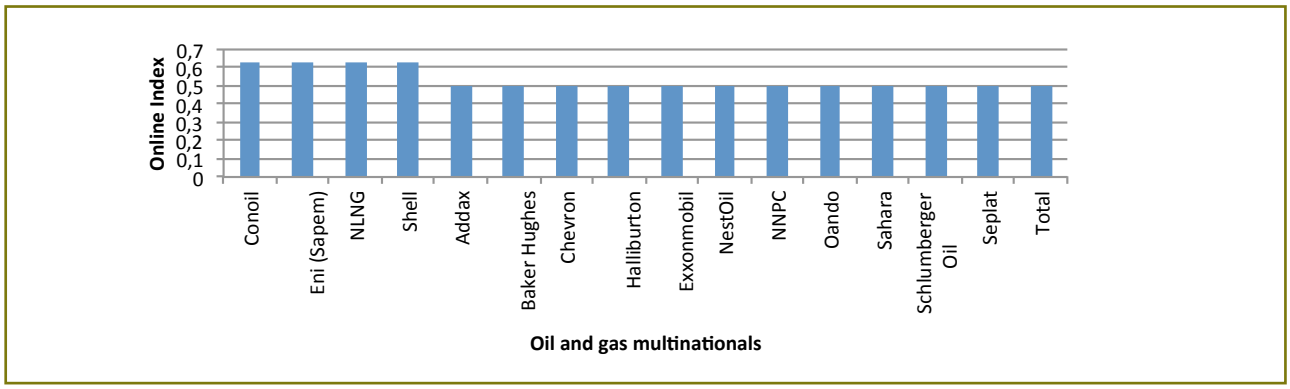
SECONDARY SCHOOLS

The secondary schools have embraced the use of Cyberspace. Out of the 24 Federal Government Colleges investigated, 62.5% were online, with features between Stage One and Stage Two. This is encouraging when compared with the previous survey carried out in 2014 [10].

BUSINESSES AND FINANCIAL SECTOR

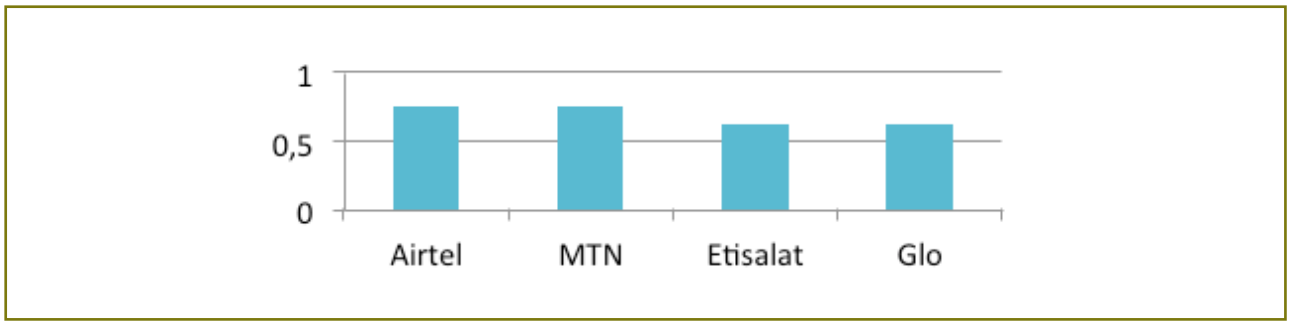
Microfinance and other banks that were investigated revealed that of the 88 micro finance banks surveyed, only 11 (12.5%) of them had any form of web presence. Commercial banks all make use of the Internet to do business with customers (Figure 8).

FIGURE 8: ONLINE INDEX OF COMMERCIAL BANKS



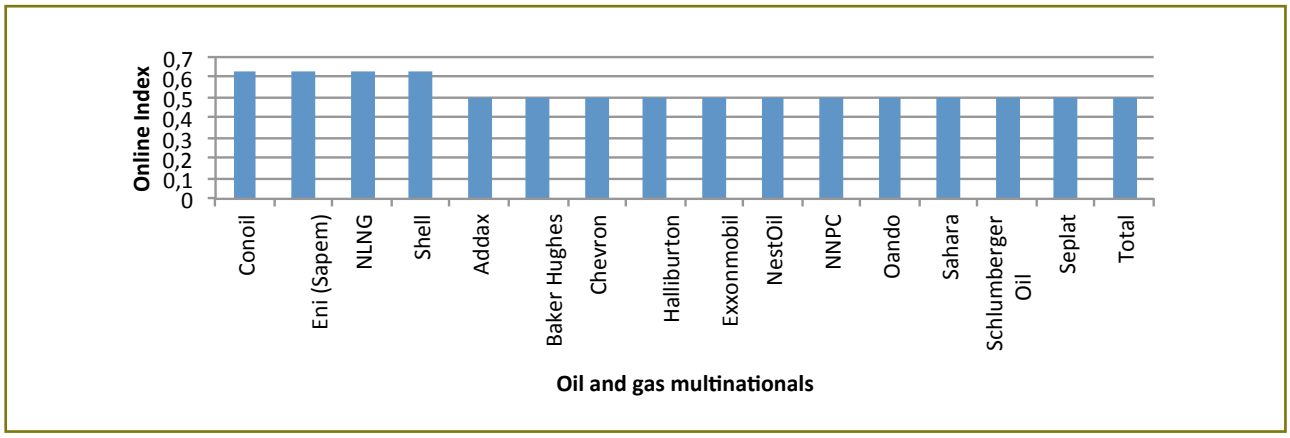
The online presence of mobile phone companies reveals that all are online, and they have keyed into providing excellent e-services to their customers (Figure 9).

FIGURE 9: TELECOMMUNICATION COMPANIES ONLINE PRESENCE



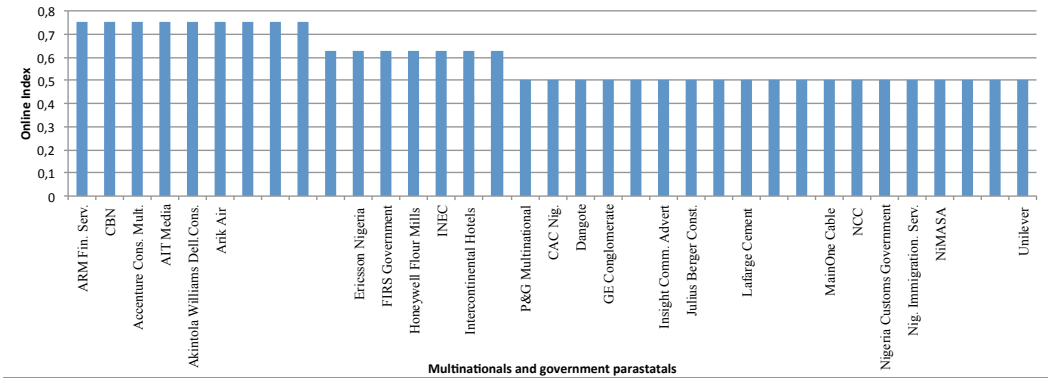
As seen from Figure 10, the multinational oil and gas companies have functioning websites that are rated at Stage 2. They have all bought into the benefits of doing business online.

FIGURE 10: OIL AND GAS MULTINATIONALS WEB PRESENCE INDEX



A few multinational companies that provide services ranging from manufacturing to information technology services were investigated and their online presence is as shown in Figure 11. All the companies and parastatals investigated (35) were seen to have web presence.

FIGURE 11: ONLINE INDEX FOR SOME MULTINATIONALS AND GOVERNMENT PARASTATALS



DISCUSSION

The outcome of the survey carried out during August to September 2015 depicts a significant online presence of states, private universities, public tertiary institutions, multinational companies, businesses and commercial banks, but a very low web presence for ministries, local governments and microfinance banks. This is not beneficial for organisations that deal directly with grassroots communities. The LGAs, who have a key role to play in providing grassroots information on basic items such as numbering of houses, taxes on shops, cleaning and maintenance of roads, healthcare, primary and adult education, birth, death and marriage certificates, must move swiftly towards greater online presence.

The future of Nigerian cyberspace is promising because there are several application areas for e-government that would yield profit and sustainable development, such as payment of taxes, import duty, government fines, feedback from communities and stakeholders, and other. The organisations and businesses that have already adopted e-administration are realising the benefits and delivering improved quality of service to their customers. This is evident in the survey conducted on businesses, as 100% of the manufacturing firms investigated exhibited above Stage Two e-presence. The financial sector offers further evidence of the success of e-administration, as most banks offer e-services to their customers and have integrated their ICT infrastructures so that transactions can be done from any bank branch. This is in addition to the integration of ATM facilities and mobile banking for various banks, so that customers can withdraw cash from any ATM, or use their smartphones for banking, irrespective of their bank. Thus, e-governance and ICT infrastructure have produced significant digital change in the banking and organised private sector. The emergence of the Nigerian cybercitizen and the growth and penetration rates of Nigeria's Internet usage are also important indicators of the encouraging healthy growth of Nigerian cyberspace.

With the increasing adoption of e-administration in the tertiary institutions, the positive impact felt in the banking environment can be replicated in universities, polytechnics and colleges in the areas of improved teaching and learning, research and development, planning and projection, accountability and administration. Dramatic life-changing benefits can be realised if appropriate ICT infrastructure is provided in the tertiary education system [8].

For sustainable economic development to be realised, there must be citizen feedback. From this study, Nigerian websites are yet to provide this feature, noting that information dissemination is still one way, from government to citizens. Those living in LGAs in rural areas and some towns do not even have the necessary ICT infrastructure to access the websites.

Presently, application forms for government and organisational use can be filled in online, thereby reducing the cost of travel and risk of life, Thus some of the benefits of e-governance, such as reduction in cost of governance, equality of access to information, elimination of bureaucracy, and efficient service delivery, are beginning to be realised.

At the time of the study, very few small and medium enterprises in Nigeria had websites and thus could not be reached by the global community for e-commerce. Future access to ICT infrastructure can boost such businesses with greater profits and more job creation.

On cybersecurity, the Federal Government of Nigeria has recognised the importance of cybersecurity and has introduced several initiatives. In 2004, the Nigerian Cybercrime Working Group (NCWG) was established, a 15-member committee drawn from government and the private sector to look into the legal and institutional framework for addressing cybercrime in Nigeria [11]. The Committee developed the first Bill on Cybercrime and Critical Information Infrastructure Protection, which was conveyed to the National Assembly, although sponsored by a private individual. However, the Bill suffered an inexplicable setback. In 2011, a National Committee was set up by the National Security Adviser charged with the responsibility to harmonise the various cybersecurity bills pending in the National Assembly. The draft Cybersecurity 2011 Bill was finally signed into law in 2015. The National Cybersecurity Policy and Strategy was launched in March 2015. Some federal government institutions are confronting cyber-criminality aligned with their constitutional mandates.

The Economic and Financial Crimes Commission (EFCC), established in 2003, is also fighting all sorts of digital financial crimes. EFCC works in collaboration with the Financial Action Task Force on Money Laundering (FATF), an intergovernmental organisation. The Independent Corruption Practices and other Related Offences Commission (ICPC), established in 2000, has the mandate to receive and investigate reports of corrupt offences as created by the Act, and in appropriate cases, prosecute the offender(s).

In the same vein, the Central Bank of Nigeria, regulating the banking industry, has set out frameworks as policy direction towards confronting the menace of digital fraud in the banking sector. The latest of these initiatives is the biometric verification number (BVN), established in 2014 as a centralised biometric identification system for the banking industry. The BVN provides a unique identity that can be verified across the Nigerian banking sector and other financial institutions as part of the Know Your Customer (KYC) programme.

Whether the activities of these institutions are yielding the expected results is open to debate. Undoubtedly, the use of ICT is becoming a game changer. Recommendations to improve the present scenario are given in the following section.

RECOMMENDATIONS

In view of the fact that cyberspace is now critical to every nation's safety, socio-economic and political activities, the sub-Saharan African countries need to work together to provide the necessary legislation and agreements to support e-governance across the region. Itemised below are specific imperative actions for improving the cyberspace presence of Nigeria, also pertinent to other sub-Saharan African countries.

i. **National ICT regulators:** These should ensure that all government organisations and educational institutions adopt e-governance process workflows and applications. This is in addition to having a cybersecurity policy that is regularly updated. By e-governance is meant the processes associated with online governance of institutions, economy and society.
ii. **Provision of affordable broadband infrastructure:** For Nigeria, the FGN National Broadband Plan is commendable and implementation should be given top priority. e-Governance and e-business cannot be achieved with the present slow and expensive Internet access.
iii. **Proper financing of ICT infrastructure:** The initial cost of ICT infrastructure is usually high. Strategic, targeted ICT infrastructure funding should be made available through national budgets, but should not crowd out private sector investment. It is also important to budget for support and maintenance costs. The digital divide is rooted in the lack of e-infrastructure, which has hindered information use and knowledge creation.
iv. **Appropriate staffing and establishment of ICT units in organisations:** The establishment of ICT departments in all ministries and parastatals at the federal, state and local government levels should be made mandatory.
v. **Provision of steady power supply:** Renewable power supply (solar and wind) should be used for ICT installations. Computers and networks need clean power to function optimally.
vi. **Provision of a secure experience for web visitors:** Any computer connected to the Internet is vulnerable to virus infection or attack. There should be a call centre with a phone number and email address, where cybercrime can be reported.
vii. **Vulnerability and threat assessments:** These must be carried out regularly on all government ICT infrastructure. This is in addition to having robust business continuity and disaster recovery plans that are regularly tested.

CONCLUSION

For Nigeria, there exists a digital divide within the country, as seen from the survey conducted. Some Federal Ministries and states have a Stage Two online presence, while the LGAs are generally yet to commence e-governance. Most tertiary institutions have established web presence, while very few secondary schools have keyed in. Similarly in the business sector, most multinationals and banks are enjoying the benefits of e-business, while microfinance institutions are lagging behind.

With economic and social activities increasingly moving to the Internet, cyberspace has become the platform for innovations, enterprises, social networking, criminality and war. Nigeria and some other West African countries have started moving towards an increased online presence. It is vital for Nigeria and other sub-Saharan African countries to learn from global best practice and collaborate to develop a harmonised framework with necessary defense against cyber-criminality and cyber-warfare.

REFERENCES

[1] U. M. Mbanaso and E. S. Dandaura. (2015, May – June). "The cyberspace: Redefining a new world." *IOSR Journal of Computer Engineering (IOSR-JCE). [Online]. 17*(3), pp. 17-24. Available: http://www.iosrjournals.org/iosr-jce/papers/Vol17-issue3/Version-6/C017361724.pdf [Nov. 20, 2015].

[2] International Telecomunication Union (ITU). "Impact of broadband on the economy." [Online]. Available: https://www.itu.int/ITU-D/treg/broadband/ITU-BB-Reports_Impact-of-Broadband-on-the-Economy.pdf April, 2015 [Nov. 20, 2015].

[3] I. Nnadozie. "Nigeria will lose $15million to cyber theft related cases by 2020." Internet: http://www.thenigerianvoice.com/nvnews/126855/50/nigeria-will-lose-15million-to-cyber-theft-related.html Oct., 2013 [May, 2015].

[4] NCC. "Nigerian Communications Commission (NCC)." Internet: http://www.ncc.gov.ng [Nov. 20, 2015].

[5] Internet Live Stats. "Internet users by country (2014)." Internet: http://www.internetlivestats.com/internet-users-by-country/ July 1, 2014 [Nov. 20, 2015].

[6] Ericcson. "Internet goes mobile: Country report Nigeria." Internet: http://www.ericsson.com/res/docs/2015/consumerlab/ericsson-consumerlab-Internet-goes-mobile-nigeria.pdf [July, 2015].

[7] United Nations. (2012). "UN e-government survey: e-Government for the people." [Online]. Available: http://unpan3.un.org/egovkb/Portals/egovkb/Documents/un/2012-Survey/unpan048065.pdf [Nov. 20, 2015].

[8] United Nations. (2008). "UN e-Government survey 2008: From e-government to connected governance." [Online]. Available: http://unpan3.un.org/egovkb/portals/egovkb/Documents/un/2008-Survey/unpan028607.pdf [Nov. 20, 2015].

[9] United Nations. (2014). "UN e-Government survey 2014: e-Government for the future we want." [Online]. Available: http://www.unpan.org/e-government [Nov. 20, 2015].

[10] G. A. Chukwudebe and E. E. Atimati. "The impact of e-governance and ICT infrastructure on sustainable economic development". Presented at the World Engineering Conference, Abuja, Nigeria, Nov. 2014.

[11] F. Oyesanya. "Review of Draft Nigerian Cybercrime Act." Internet: http://www.gamji.com/article3000/NEWS3561.htm [Nov. 20, 2015].