GETTING OUT OF THE WOODS:
Diversifying Nigeria's Economy Through the Telecommunications Sector

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SUMMARY OF PRESENTER'S BIODATA

Professor Umar Garba Danbatta

Professor Umar Garba Danbatta, the Executive Vice Chairman and Chief Executive Office (EVC/CEO) of the Nigerian Communications Commission (NCC), was born in Danbatta Local Government Council of Kano State. He obtained his BEng, MSc degrees from the Technical University of Wroclaw in Poland and his PhD from the University of Manchester Institute of Science and Technology (UMIST) UK. His area of specialization is Telecommunications Engineering and Information & Communications Technology (ICT). He began his work career as an Assistant Lecturer in the Department of Electrical Engineering, Faculty of Technology of Bayero University Kano in 1985 and rose to become a Professor in 2003.

In the course of his career he has held various academic positions of Dean of the Faculty and Head of Department at different times. Part of his administrative responsibilities, in the University, included:

- Deputy and Acting Dean of Students' Affairs;
- Administrator of the Works Department;
- Director of the Centre for Information Technology (CIT);
- Member of over 60 University committees and task forces, including numerous stints as Chairman;
- Served on over 20 committees, prominent among which was his Chairmanship of the Implementation Committee of Kano State University of Science & Technology, after which he became its pioneer Deputy and Acting Vice-Chancellor when it took off in 2001.

Professor Danbatta has supervised more than sixty (60) PhD theses, M.Eng dissertations and B.Eng projects in diverse areas of telecommunications and has also served as external examiner to seven (7) universities and polytechnics. He is an assessor, technical reviewer and editorial member to eight (8) research journals. Also, he has to his credit, more than fifty (50) articles in journals, conference proceedings and technical reports. Prof Danbatta is the author of *Elements of Static Engineering Electromagnetics.*

He has received eighteen (18) distinguished awards and certificates of honour. Professor Danbatta has served two terms of five years as a Member of Council for the Regulation of Engineering in Nigeria (COREN), and is a COREN-registered engineer and Fellow of the Nigerian Society of Engineers (FNSE). He is also a Fellow of the Renewable and Alternative Energy Society (FRAES).

Professor Danbatta was the Vice-President of the Digital Bridge Institute (DBI), International Centre for Advanced Communications Studies, which was established in 2004 by the Nigerian Communications Commission (NCC) to build capacity for the Nigerian/African telecoms industry in the diverse areas of Information and Communication Technology (ICT). While at DBI, he developed expertise in the following major areas of ICT implementation, policy and regulation:

- Regulation of the telecommunications sector of the Nigerian Economy;
- Competition, interconnection and price regulations in a developing economy;
- Issues concerning authorization of telecommunications services in a developing economy;
- Strategies for ensuring universal access and service to telecommunications services;
- Strategies towards effective spectrum management in a developing economy;
- Issues on institutional and legal framework for effective regulation of telecommunications services; and
- New and emerging technologies and impact on regulation of the telecommunications sector of a developing economy.

Until his appointment as the EVC, Professor Danbatta, was a member of the Implementation Committee of the Northwest University Kano, and also served as the Acting Vice-Chancellor of the Kano University of Science & Technology, Wudil.

After his appointment as the Executive Vice-chairman and Chief Executive Officer of the Nigerian Communications Commission (NCC)) in August 2015, he has tremendously transformed the Telecom Sector in the areas of staff welfare, infrastructural development, consumer's empowerment and satisfaction, job creation, standard information and communication technology revolution, research & development, re-branding of the telecoms sector, cordial relationship with stakeholders, increase in active mobile broadband penetration, efficient monitoring and value driven usage for the provision of different types of services. As the

EVC/CEO, Professor Danbatta has declared 2017 as the **"Year of the Consumer"**. This is to underscore the importance he attaches to the Consumer. NCC under Professor Danbatta has received several awards and recognitions both locally and internationally. These include:

- Quality Achievement Award for Best Practices 2017 by European Society for Quality Research (ESQR) 2017 in London UK.
- Exceptional Public Service Performance in the Platinum category by Bureau of Public Service Reforms 2017.
- 2017-Beacon of ICT Awards as Telecom Regulator of the Year.
- European Award for Best Practices 2016 by ESQR in Brussels Belgium.
- African Regulator of the Year 2016 at the African Information Technology and Telecoms Awards (AITTA) in Accra, Ghana.
- Regulator of the Year 2016 by Africa Leadership magazine in New York, USA.
- Telecoms Personality of the Year 2016 at the12th Nigerian Telecoms Award, Lagos.
- Personality of the Year by the Lagos Chamber of Commerce Industry, Mines and Agriculture.
- African Quality Achievement Award 2016 by African Quality Institute.
- Human Rights Government Agency of the Year 2016 by Constitutional Rights Awareness and Liberty Initiative (CRALI).
- Regulator of the Year 2016 by Africa Digital Awards.
- Chief Executive Officer (CEO) of the Year 2016 by TELL Magazine.

Also, at the recent University of Nigeria, Nsukka convocation, Prof Danbatta joined the list of Eminent Nigerians who have delivered the Convocation Lecture of the University, delivering the 46th Convocation Lecture.

Professor Umar Garba Danbatta is an embodiment of excellence, an epitome of humility and a leader per excellence. He is happily married with children.

1.0 Preamble

Nigeria has been a mono economy for a long time owing largely to its dependence on crude oil revenues. Due to instability and uncertainty in global crude oil prices, the Nigerian government has recognized the need to diversify the economy so as to attain solid and sustainable economic growth (Danbatta, 2016). Broadly speaking, economic diversification is a global solution for overcoming rigidity of and vulnerability of the sectors of the economy, in order to increase reliance and productivity. On the other hand, the telecommunications industry plays a crucial role in providing the requisite tools that support the diversification of the economy through improvising the knowledge economy using Information and Communications Technology (ICT) (Danbatta, 2017). The telecommunications sector has enhanced human capabilities in areas such as health, education, agriculture, finance, transportation, commerce, governance, etc. (Danbatta, 2016).

2.0 Introduction

2.1 Imperatives of Economic Diversification

In a bid to address the structural imbalance of monolithic (mono-product) economy dependency in Nigeria, efforts have been made over the years by governments to develop the non-oil sectors of the economy by initiating various supportive policies and incentives aimed at encouraging economic diversification with different degrees of success (Agbaeze et. al., 2015) (Onudugo et. al., 2015). These policies include (Onudugo et. al., 2015):

i. Protectionism (1960 – 1986) import substitution industrialization aimed at expanding the industrial base, enhancing cash crops exports;
ii. Trade Liberalization (1986 Structural Adjustment Programme (SAP) era) aimed at deregulation, commercialization, privatization and liberalization of the economy and
iii. Export promotion (Post-SAP period) aimed at facilitating the diversification of the economy through policy support to Small and Medium-Sized Enterprises (SMEs) to enhance exports.

The liberalization of the telecommunications sector in 2001 has triggered a realistic opportunity of economic diversification, as the sector is adjudged to be one of the major support services needed to promote growth and modernization of other sectors of the economy (Jorgenson and Vu, 2016).

Telecommunications (telecoms) is the transmission and exchange of all types of information (voice, data and video) over significant distances within the shortest time by electronic means. Telecom breaks distance barrier and as such, can act in its own right as an enabler to drive socio-economic transformation, growth, developments and modernization across all sectors of the economy.

The telecommunications sector has globally brought about radical changes in the way people interact, learn, work and transact business activities and also acts as the fulcrum and catalyst that propels the socio-economic transformation and growth of economies of nations. The impact of this sector is evident in virtually all countries, Nigeria inclusive, and is likely to continue in the years to come, as technology penetrates and fosters vital changes in all sectors and dimensions of the human life and conditions (Jorgenson and Vu, 2016).

The phenomenal growth in Nigeria's telecommunications sector over the years call for urgent policy measures for the purpose of creating an environment that will make it possible for economic diversification in this era of dwindling crude oil revenues. Particularly, as the telecommunications sector plays a dual role (Lin, 2008) in economic activities, not only in itself as a distinct circle in economic system, but also a supplying means to other sectors.

This inaugural lecture will therefore, discuss the role played by the Nigerian Communications Commission (NCC) Strategic Vision Plan in addressing the telecommunications infrastructure challenges in Nigeria and also the crucial role the telecommunications sector plays in the diversification of the economy.

3.0 Achievements

The current administration of the NCC has attained some major milestones in its mandate to develop the industry. In order to achieve its mandate, the Commission has put in place various strategies that will enable it become a responsive, world-class communications regulatory organization that promotes a market-driven telecommunications industry that fosters universal access to ICT for all Nigerians.

The statistics released in 2016 in a report by the ITU-UNESCO Broadband Commission for Sustainable Development (ITU/UNESCO, 2016) shows that Active Mobile-Broadband Penetration has increased within the space of one year from less

than 10% in 2015 to 20.95% in 2016 and Internet Penetration reached a milestone of 47.44% as shown in the Tables 1, 2 and Figures 1, 2.

Note: ITU - International Telecommunications Union and
UNESCO - United Nations Educational, Scientific and Cultural Organization

Table 1: *Active Mobile-Broadband Subscriptions (MBS) % Penetration in selected ITU Member States (Danbatta, 2016) (ITU/UNESCO, 2016)*

MEMBER STATE	AMB %	RANK
Monaco	65.24	53
United Kingdom	87.79	25
Singapore	142.2	2
Algeria	40.11	95
South Africa	59.47	63
Egypt	50.66	78
Senegal	26.42	123
Ghana	66.82	51
Nigeria	20.95	128

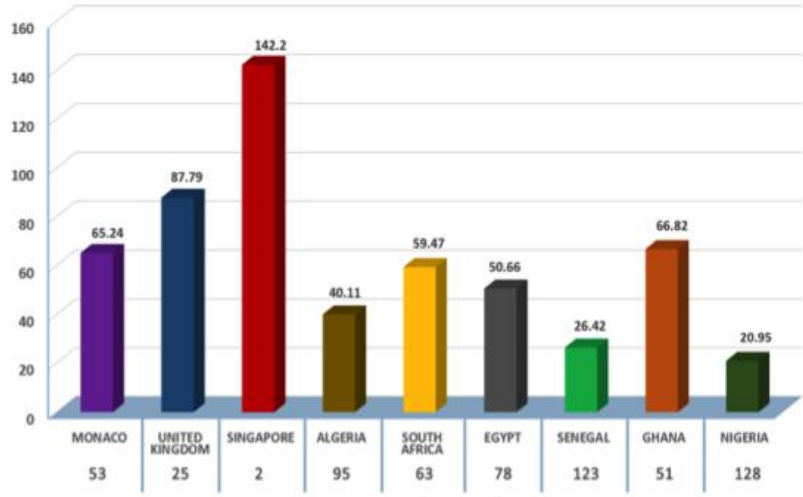


Figure 1: *Bar chart for Active Mobile-Broadband Subscription (MBS) per 100 inhabitants in selected ITU Member States (Danbatta, 2016)*

Table 2: *Percentage of Individuals using the Internet (PII) in selected ITU Member States (Danbatta, 2016) (ITU/UNESCO, 2016)*

MEMBER STATE	PII	RANK
Monaco	93.36	8
United Kingdom	92	13
Singapore	82.1	28
Algeria	38.2	114
South Africa	51.92	87
Egypt	35.9	116
Senegal	21.69	127
Ghana	23.48	132
Nigeria	47.44	96

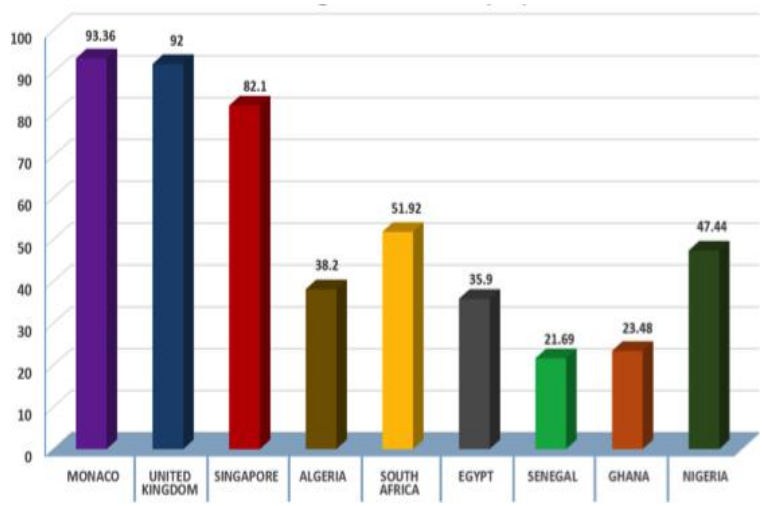


Figure 2: *Bar chart for Percentage of Individuals using the Internet (PII) in selected ITU Member States (Danbatta, 2016)*

Evidently, Figures 2 and 3 show that Nigeria's telecommunications sector is certainly moving in the right direction and the Commission is further repositioning itself to address the dynamics of the sector to achieve more growth. This success so

far achieved by the Commission is strongly attributed to the robust regulatory frameworks, guidelines and directions of the Commission.

3.1 Articulating a Strategic Vision Plan

The NCC, under my stewardship, has developed an NCC Strategic Vision Plan (SVP) for the fiscal years 2015 to 2020. The process for the development of this five-year strategic vision has taken a lot of effort and time. The SVP provides a comprehensive roadmap for promoting innovation, investment, competition, and consumer empowerment, and improving the Quality of Service (QoS) within the telecommunications industry.

The SVP responds to the policy goals of the NCC in recognizing the immense socio-economic importance of ICT (Iyoboyi and Na-Allah, 2014) to national development and therefore seeks to ensure that the ICT infrastructure are to the standard necessary to provide ubiquitous broadband services in Nigeria.

3.2 The 8–Point Agenda

The goals and objectives set by the SVP are premised on three 'As', which are the hallmarks of Universal Access and Service (UAS) ecosystem elements i.e. Availability, Accessibility and Affordability of services. Furthermore, the UAS elements are in sync with the components of the existing NCC Strategic Management Plan (SMP) (2013 – 2018).

In developing the SVP, focus is on an 8-point agenda that is aimed at ensuring a reflection of the overall strategy of the Commission as shown in Figure 3.

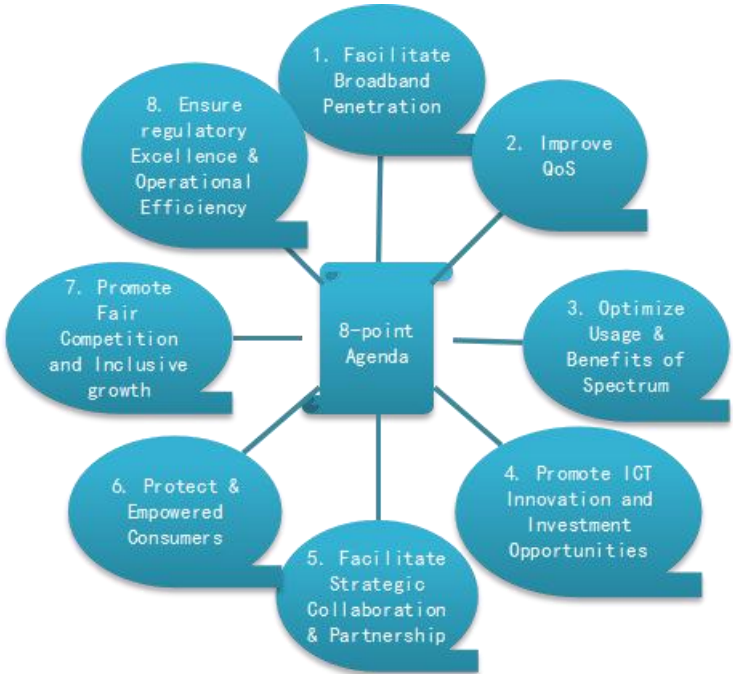


Figure 3: *The 8-Point Agenda*

3.3 Implementing the 8-Point Agenda

Strategic success comes not simply from crafting a sound strategic plan. It is however, an essential ingredient, but results come from activities that are deliberately and effectively undertaken to implement the plan. Hence, the need to go beyond strategic visioning to developing strategic implementation processes for the 8-point agenda.

The methodology adopted for the implementation of the SVP is based on Hoshin Kanri /Policy Deployment method (MacDonald and Shen, 2004) (Tennant and Roberts, 2001) (Boisvert, (n.d.)), which ensures strategic goals of the NCC drive progress and action at every level. In the case of the SVP, four levels are adopted to eliminate waste that comes from inconsistent directions and poor communications. This is depicted in Table 3.

Table 3: *SVP tactics (Tennant and Roberts, 2001) (Boisvert, n.d.)*

Level	Strategy	Tactics
1	Tactical Planning	Concentrating on the Key Performance Indicators (KPIs)
2	Catchball	Structuring workable plans through consensus
3	Measuring progress	Carefully selecting KPIs that will drive the desired behavior
4	Closing the loop	Using regular follow-up to keep progress on track

Deriving from Table 3, the SVP action work focuses on achieving vital annual stretch goals that are linked to the five-year SVP within the systematic planned Hoshin Kanri method. The plan of action (tactics) of Table 3 forms the framework for the systematic implementation of the SVP goals and objectives in ways that ensure strong alignment between strategy and tactics, and that the Key Performance Indicators (KPIs) are meaningful and appropriate.

The Hoshin Kanri method caters for flexibility and adaptability, which are important to successful implementation of the SVP. Tactics have the tendency of changing in the course of fulfilling the strategy, and as such, flexibility and adaptability are important characteristics of the SVP implementation process. As a result, progress reports are reviewed at regular intervals, at which results are assessed and tactics are recalibrated.

Table 4: *Vision of the 8-point Agenda*

S/N	Goal	Vision
1	Facilitate Broadband Penetration	Provide and optimize access to and use of affordable fixed and mobile broadband everywhere in Nigeria
2	Improve Quality of Service	Promote the availability of reliable, interoperable, rapidly restorable critical ICT infrastructure that are supportive of all required services
3	Optimize Usage and Benefits of Spectrum	Maximize the availability of spectrum in order to provide diverse and affordable ICT services and ensure spectrum acquisition does not distort market competition
4	Promote ICT innovation and investment opportunities	Promote ICT innovations in a manner that improves the nation's ability to compete in the global economy, through increased investment in youth and promotion of SMEs in ways that can deliver new business breakthroughs

S/N	Goal	Vision
5	Facilitate Strategic Collaboration and Partnership	Develop effective partnership with relevant stakeholders to foster ICT sustainable economic development and social advancement
6	Protect and empower consumers	Promote consumers from unfair practices through availability of information and education required to make informed choices in the use of ICT services
7	Promote fair competition and inclusive growth	Ensure a competitive market for communications services that foster fair inclusion of all actors, in innovative ways that facilitate new investment, job creation and consumer satisfaction
8	Ensure regulatory excellence and operational efficiency	Ensure an effective regulatory framework, efficient processes, strict compliance monitoring and enforcement, efficient management of internal resources and structure, and maintain a commitment to transparency

Subsequently, the Commission unveiled the SVP in Lagos and later in Kano on 27th January 2016 and 12th February 2016 respectively for the fiscal years 2015 – 2020. It is important to also state that the NCC also aligned its regulatory efforts with the strategic vision and goals of the ITU as shown in Table 5 (ITU Strategic Plan, 2016 – 2019), so as to further strengthen the telecommunications industry consistent with the National Broadband Plan (NBP) that will in turn lead to the desired socio-economic transformation of our country by leveraging the power of ICT to drive and accelerate the process – digital transformation.

Table 5: *ITU strategic vision goals and targets (ITU Strategic Plan, 2016 – 2019)*

Goal	Vision
Growth	Enable and foster access to and increased use of telecommunications/ICTs
Inclusiveness	Bridge the digital divide and provide broadband for all
Sustainability	Manage challenges resulting from telecommunication/ICT development, innovation and partnership

Since the commencement of the SVP implementation, the telecommunications sector has played a greater role in Nigeria's economic diversification, prominent amongst which include: contributions to the education, health, financial services and transportation sectors of the economy.

i) The Education Sector

The use of ICT has transformed learning processes in educational environments as it helps in shrinking the long-standing equity[1] and accessibility gaps[2] of the education sector (//tech.ed.gov/). Interestingly, though, to realize the benefits it brings to the educational system, assigned instructors[3] and other stakeholders within the educational ecosystem need a firm commitment to work together using available technologies to improve the sector. The NCC interventions play a vital role in supporting the educational sector in the provision of ICT infrastructure and tools, and also in addressing capacity development of manpower. Furthermore, the impact of the Commission's interventions is remarkable in the educational ecosystem as shown in Table 6.

Table 6: *NCC interventions in the Education sector*

School	Location	Remarks
DBI Learning Centres	Abuja, Asaba, Enugu, Kano, Oshodi and Yola	Training facility with modern infrastructure to promote learning
Virtual Examination Centre's in two-selected WAEC-approved secondary schools each in the northern and southern zones.	Niger and Kano States – Northern Zone. Bayelsa and Oyo States – Southern Zone	WAEC Intervention
Data sharing, e-Learning Platforms and ICT infrastructure for four (4) universities in the Northern Zone	ABU Zaria, BUK Kano, UDUS Sokoto, FUTY Yola	ASUU Intervention

[1] Equity in education means increasing the access of students to educational opportunities – adopted from National Education Technology Plan (NETP) - http://tech.ed.gov/

[2] Accessibility refers to the design of apps, devices, materials and environments that support and enable access to content and educational activities of all learners – adopted from NETP- http://tech.ed.gov/

[3] Instructors in this context refer to lecturers or teachers or administrators associated with education – adopted from NETP - http://tech.ed.gov/

Data sharing, e-Learning platforms and ICT infrastructure for four (4) universities in the Southern Zone	NDU Bayelsa, Fed. Univ. Atuoke Bayelsa, Bayelsa State Univ. Main Campus, FUT Akure.	
School Knowledge Centre – SKC North Central Zone and FCT (22 Schools) School Knowledge Centre – SKC North East Zone (22 Schools) School Knowledge Centre – SKC North West Zone (28 Schools) School Knowledge Centre – SKC South East Zone (20 Schools) School Knowledge Centre – SKC South South Zone (23 Schools) School Knowledge Centre – SKC South West Zone (23 Schools)	FCT and Benue, Kogi, Kwara, Nasarawa, Niger and Plateau States Adamawa, Bauchi, Borno, Gombe, Taraba and Yobe States Jigawa, Kaduna, Kano, Katsina, Kebbi, Sokoto and Zamfara States Abia, Anambra, Ebonyi, Enugu and Imo States Akwa Ibom, Bayelsa, Cross River, Delta, Edo and Rivers States Ekiti, Lagos, Ogun, Ondo, Osun and Oyo States	To equip students and their neighbouring communities with ICT learning tools
ICT Computer Based Test (CBT) Centres	12 ICT/CBT centres project on-going across the country and additional 4 skills acquisition centres are scheduled for completion	To equip students and their neighbouring communities with ICT/ CBT Examinations tools
National Teacher's Institute e-learning Centre	Kaduna	To bridge ICT gap in teacher education in Nigeria
Information Resource Centres (IRCs)	More than 30 state libraries and 12 tertiary institutions across the geo-political zones of the country	To create ICT-driven knowledge management (digital libraries).
University Inter-Campus Connectivity (UnICC)	A total of 381.7 km OFC has been deployed to 15 universities linking them with their medical colleges	To deliver broadband infrastructure and access to facilitate research and learning

UnICC-Electronics Project	Provision of connectivity is on-going in 5 universities	Interconnecting end-user electronics within university campus
Tertiary Institution Knowledge Centre	Fed. Univ. Birnin Kebbi, Fed Univ. Gusau, Fed. Univ. Gashua, African Univ. of Science and Tech., Northwest Univ. Kano, Kwara College of Arabic and Islamic Studies, Awgu Study Centre, National Institute for Construction Tech. Uromi Edo State, SBRS Funtua Katsina State and Sokoto State Univ.	To equip students and their neighbouring communities with ICT learning tools

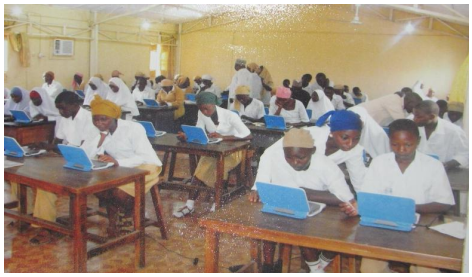
(**Source:** //ncc.gov.ng/) (//uspf.gov.ng/).

As regards capacity development, the Commission introduced the Advanced Digital Awareness Program for Tertiary Institutions (ADAPTI) aimed at bridging the digital gaps that exist in the academia by providing computers, ICT equipment and the necessary facilities to provide lecturers, administrative staff and students with the requisite ICT skills essential for the 21st Century. Also, the NCC supplies, computers and other ICT equipment, which include scanners and printers to the beneficiary institutions.

The NCC provides suites of e-Learning applications for academics and students in tertiary institutions across the country, specifically, to provide the tools that will enable familiarity and confidence in the utilization of ICT in teaching, research and learning. More than 300 institutions of higher learning have been beneficiaries of the ADAPTI programme. In general, platforms through which ICT has impacted on education sector include use of:

i. **E-education:** Telecommunications enable access to education in remote areas through internet, mobile education, content enrichment, access to wide range of education resources in the cloud, online and distance e-learning from the comfort of our homes;
ii. **E-library platform** that helps improves researches of lecturers/researchers and students;
iii. **Multimedia ensembles** such as interactive boards (smart boards) for teaching and teleconferencing; and
iv. **Networked and stand-alone computers** in conjunction with other devices for conducting examinations/tests, such as Computer Based Testing (CBT) for Joint

Matriculation Examinations Board (JAMB). Indicated in Figure 4 are sample pictures of the e-education platforms:



e-learning in Secondary School

CBT

Figure 4: *e-education platforms*

ii) The Health Sector

The health sector has grown significantly in recent years, particularly using e-health platforms that are proven catalysts for significant healthcare improvement, especially in areas of qualitative health, continuity of health services, availability and record keeping of healthcare information. The Commission has provided data sharing, e-health platforms and ICT infrastructure to teaching hospitals across the country as shown in Table 7 to improve the health sector.

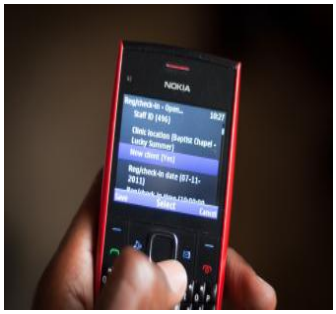
Table 7: *NCC Interventions in the Health Sector*

Hospitals	**Location**	**Remarks**
Data Sharing, e-Health Platforms and ICT Infrastructure for four (4) Teaching Hospitals in the Northern Zone	ABUTH Zaria, BUKTH Kano, BSUTH Makurdi, UDUTH Sokoto	To Equip Teaching Hospitals with e-health infrastructure
Data Sharing, e-Health Platforms and ICT Infrastructure for four (4) Teaching Hospitals in the Southern Zone	Univ. College Hosp. Ibadan, OAUTH Ile-Ife, UNNTH Enugu, State Univ. of PH Teaching Hospital	

(**Source:** //uspf.gov.ng/)

E-health: Clinical patients have access to online information on the nature of their illnesses which assist the doctors to provide quick healthcare support. Again, telemedicine has enabled expanse of knowledge base in the regarding both patients and the doctors. The NCC interventions have greatly assisted in improving

telemedicine and health records management as shown in the pictorial representations of Figure 5.




Appointment reminder Patient record management Telemedicine

Figure 5: *e-health platforms*

iii) The Financial Services Sector

The application of ICT concepts and techniques to the financial services sector has become of fundamental importance and prerequisite for local and global competitiveness. By implications, the telecommunications sector has continued to change the way financial institutions and their corporate relationships are organized worldwide through the variety of innovative devices and Over-the-Top (OTT) applications available to enhance the speed and quality of service delivery. The OTT applications are next-generation global communications applications (apps) that are products of the Internet. The important benefits offered by the OTT platforms to consumers and businesses are huge especially in commerce, education, governance, messages, transactions, etc. In the global perspective, the OTTs as platforms are becoming inseparable from the larger ecosystem of devices and apps, and for this, the OTTs have stimulated demand for improved coverage and monetizable data. Applications such as *Skype*, *iMessage*, *Wechart*, *Line*, *Viber*, *WhatsApp*, *Facebook Messenger* and *Google Hangouts* are referred to as OTT platforms (apps) (Williamson, 2016).

Research shows that *Facebook* apps alone created over 182,000 jobs in 2011, and that the aggregate value of the *Facebook* app economy exceeds US$12 billion (//rhsmith.umd.edu/). *WhatsApp* has more than 500 million and 1billion user milestones in April 2014 and February 2016 respectively, while by 2016 *Facebook*

Messenger and *WhatsApp* were carrying 60 billion messages a day, three times more than SMS (Williamson, 2016).

To this effect, the NCC has developed an effective partnership with the Central Bank of Nigeria (CBN) in order to foster the use of ICT for sustainable economic development and transformation of financial services. The Commission has also offered Short Code to CBN mobile payment service licensees, on request, to improve e-banking services among others.

The prominent role played by the telecommunications sector in revolutionizing the financial sector is ensuring the availability and accessibility of efficient telecommunications services to financial institution's self-service facilities. These facilities include Automated Teller Machines (ATMs), mobile banking, Internet-banking and e-commerce (online-shopping and stores). The Commission ensures that Internet Service Providers (ISPs) and Mobile Network Operators (MNOs) provide good QoS to the financial services networks for their customer satisfaction as shown in Figure 6.

ATM

Mobile Banking

e-commerce

Internet Banking

Figure 6: *e-financial services*

Furthermore, the NCC continues to promote and facilitate universal access to ICT to ensure implementation of the following financial sector areas, which were identified as the economic enhancement needed for the Nigerian economy:

a) **E-Taxation to boost Revenues:** Electronic filing of tax returns, and online assessment and payments of tax obligations by the tax payers would boost tax revenue collection of government.
b) **E-Commerce:** the expansion of broadband and backbone infrastructures to drive financial inclusion and massive uptake of mobile money across the nation. ICTs also revolutionize the service industry in a way that borrowing, savings and money transfers can happen swiftly which will stimulate financial inclusion through the use of mobile phones.
c) **E- government:** an overall cost reduction in governance through paperless electronic communications links within the government ministries, departments and Agencies. Examples include, Treasury Single Account (TSA), e-Payroll, etc.

iv) The Transportation Sector

There has been tremendous streamlining of the transportation sector through the use of ICT. The Commission has provided a spectrum for this sector in order to facilitate the roll-out of diverse and affordable ICT services. The impact of the telecommunications sector in the transportation sector includes:

a) Improving user (traveller) experience – such as online ticketing, boarding, and check in processes; and
b) Vehicle tracking and navigations through mobile and Internet services.

Vehicle tracking | Air ticket online | Navigation system

Figure 7: *e-transport platforms*

1. Prospects

The prospects of the telecommunications sector to the diversification of economies are enormous. To that effect, the Nigerian government has recognized the dual role-played by the sector in contributing to the Gross Domestic Product (GDP), the socio-economic transformation of the society and to other sectors of the economy.

4.0 Economic and Social Transformation

Information and knowledge have become critical to innovation, economic opportunities and development as well as the survival of mankind traditionally. Globally, access to ICT has conferred certain competitive advantages to those who have it over others that do not for education, health, economic growth, etc. As Nigeria tries to evolve from the era of exploration of natural resources to the industrial and information era, access to ICT has become more prevalent, a basic right and a means to poverty reduction.

In Nigeria, the number of active mobile subscriptions is over 149 million as at April 2017 and the active ICT infrastructure deployment continues to rise to support the telecommunications sector. ICT is changing the way companies do business, transforming public service delivery and encouraging innovation. In the new world order, the competitiveness of economies (NCC, 2014) depends on their ability to leverage new technologies. The telecommunications sector has helped the Nigerian economy in many ways:

i. Direct job creation

In Nigeria, the Telecommunications sector, through ICT, has created direct and indirect employment in the form of business centres; vendors, kiosks, operators call centres, umbrellas, shops, computer villages and small businesses that require minimal capital to set up. The prospect of the ICT sector is to rival large employers of manpower in the country in both the formal and informal sectors of the economy.

ii. Contribution to GDP growth

Gross domestic product (GDP) is the dollar value of a country's total output of goods and services at market prices. Essentially, the best way to compare GDP between countries is through their GDP per capita, which measures the standard of living in a nation (//businessdictionary.com/). The World Bank has found that a 10% increase in broadband penetration in developing countries results in a commensurable increase of 1.38% in GDP (Danbatta, 2016) (Kim et. al., 2010). Table 8 also indicates the positive correlation between GDP per capita and Broadband penetration of some ITU member states.

Table 8: *Correlation of GDP per capita with Broadband penetration of leading Broadband markets 2015 (ITU/UNESCO, 2016) (Statistics, 2015)(//worldbank.org/).*

S/N	Country	GDP Per Capita (USD)	Population (Million)	ITU Broadband Penetration Ranking
1	Luxembourg	99,717,70	0.543	16
2	Switzerland	80,999.30	8,238	2
3	Norway	74,481.80	5.142	8
1	United States	56,115.70	325.127	13
2	Sweden	50,585.30	9.693	6
3	United Kingdom	43,929.10	63.843	25
4	Finland	42,403.50	5.460	1
5	France	36,352.50	64.982	38
6	Japan	34,523.70	126.818	5
7	Nigeria	2,671.70	183.523	126

Further to this, a report from Deloitte in conjunction with GSMA and Cisco shows that the mobile telecommunications sector continues to offer unprecedented opportunities for economic growth in both developing and developed countries; essentially stating that to every 10% increase in mobile penetration, there is an increase in total factor productivity in the long run by 4.2 % (GSMA, 2012). The report also indicates that for a 10 % migration of consumers (subscribers) from using 2G to 3G technologies and services, there is a corresponding 0.15 % increase in GDP per capita growth (GSMA, 2012). In Nigeria, despite the decrease in Active Voice Subscriptions and Active Mobile Internet Subscriptions in the months of Feb. to Apr. 2017, the industry witnessed a continuous increase in data usage as shown in Table 9.

Table 9: *Data Usage Statistics*

Month	Data Used (Terabyte) TB	Difference
February	22,019.66	-
March	30,627.40	Increase
April	31,160.00	Increase

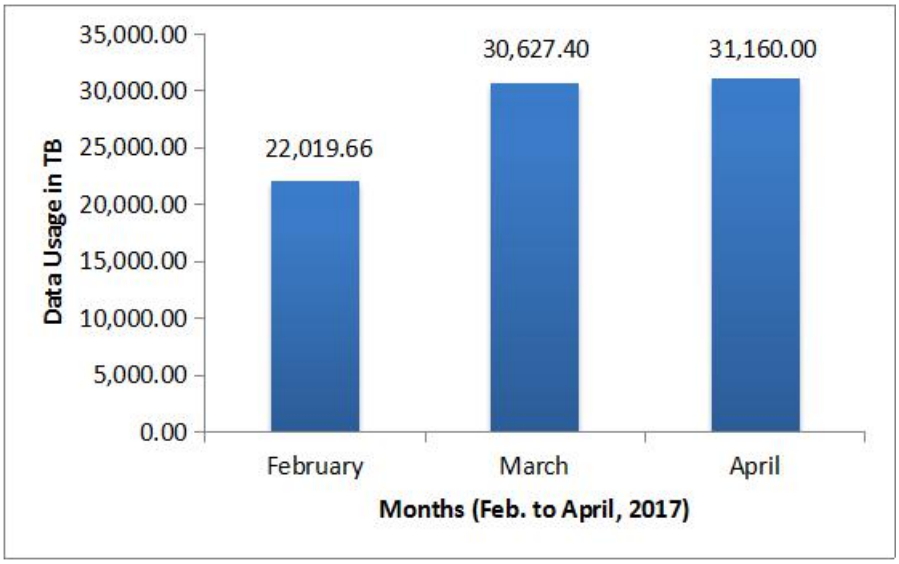


Figure 8: *Plot of Data Usage Statistics Feb.- Apr. 2017*

Deriving from Figure 8, the volume of data usage from Feb. to Apr. 2017 have continued to increase, which indicates that the Internet economy continues to retain and prosper its critical number of usage in this period. This is largely due to migration of subscribers using Internet subscriptions of 2G (legacy) technologies and services to the exciting improved subscribers experience offered by the 3G and 4G (broadband) technologies and services as shown in Table 10.

Table 10: *Comparison of 2G, 3G and 4G Active Internet Subscriptions – Jan. and Feb. 2017*

S/N	**2G Total Internet Service Subscriptions**			**3G Total Internet Service Subscriptions**			**4G Total Internet Service Subscriptions**		
	Jan. 2017	**Feb. 2017**	**Diff.**	**Jan. 2017**	**Feb. 2017**	**Diff.**	**Jan. 2017**	**Feb. 2017**	**Diff.**
1	91,542,308	90,274,249	-1,268,059	38,865,129	40,216,710	1,351,581	2,538,672	4,501,331	1,962,659
Trend	**Decrease – 1.39 %**			**Increase – 3.48 %**			**Increase – 77.31 %**		

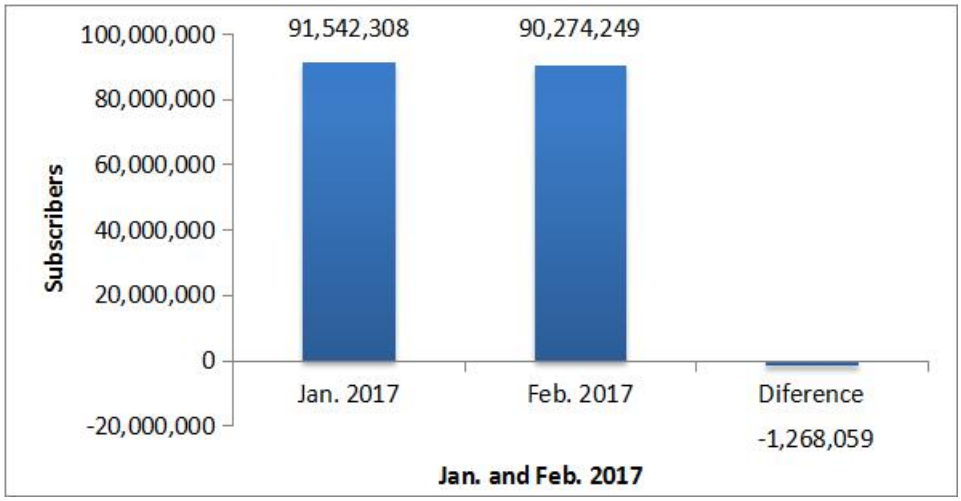


Figure 9: *Plot of 2G Active Internet Subscriptions Jan. to Feb. 2017*

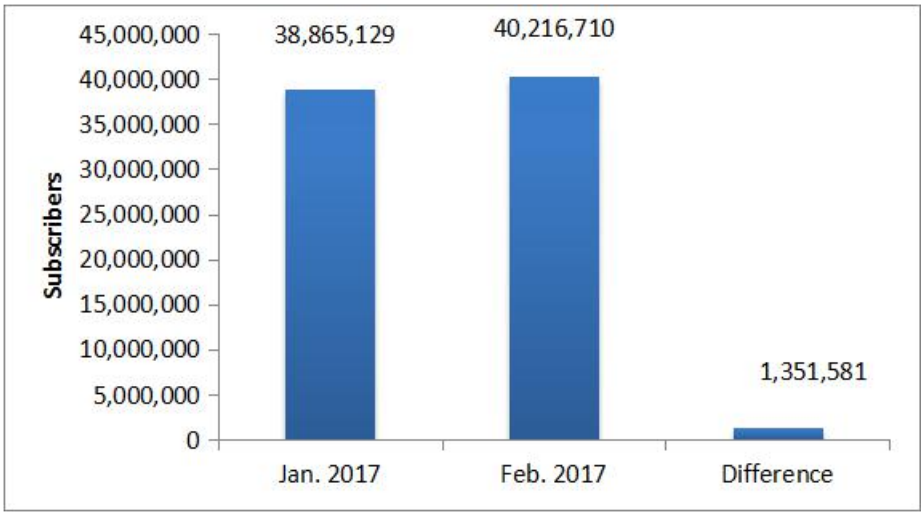


Figure 10: *Plot of 3G Active Internet Subscriptions Jan. to Feb. 2017*

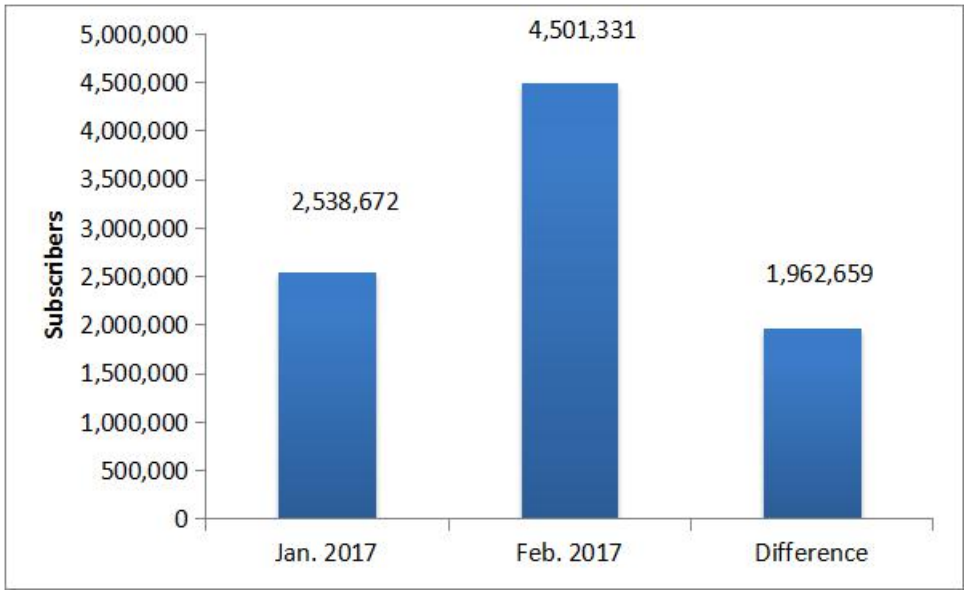


Figure 11: *Plot of 4G Active Internet Subscriptions Jan. to Feb. 2017*

The dynamics of subscriber's subscription has tilted towards 3G and 4G largely due to high capacity and throughput of the technologies. The subscribers of 3G and 4G subscription in Feb. 2017 increased by 3.48 % and 77.31 % respectively as shown in Table 8 and Figures 10 and 11. This is an indication of subscribers migrating from 2G (legacy) technologies and services to technologies that support high capacity and throughput (broadband) such as 3G and 4G.

Furthermore, the share of Nigeria's telecommunications sector in total GDP has stabilized in the last six quarters as released by the National Bureau of Statistics (NBS) report. In the First Quarter (Q_1) of 2017, the telecommunications sector contributed N1.452 trillion to the GDP, i.e. 9.16 %. This is an increase of 0.2% compared to the First Quarter of 2016, indicating stable growth in the sector as shown in Table 11 and Figure 12 (National Bureau of Statistics).

Table 11: *Percentage Contribution of the Telecommunications Sector to GDP (Q1, 2016 - Q1, 2017)*

Quarter	1st Qtr, 16	2nd Qtr, 16	3rd Qtr, 16	4th Qtr, 16	1st Qtr, 2017
Value Cont. (Trillion)	**N1.411**	**N1.580**	**N1.398**	**N1.662**	**N1.452**
% CONT.	8.85	9.74	7.97	9.13	9.16

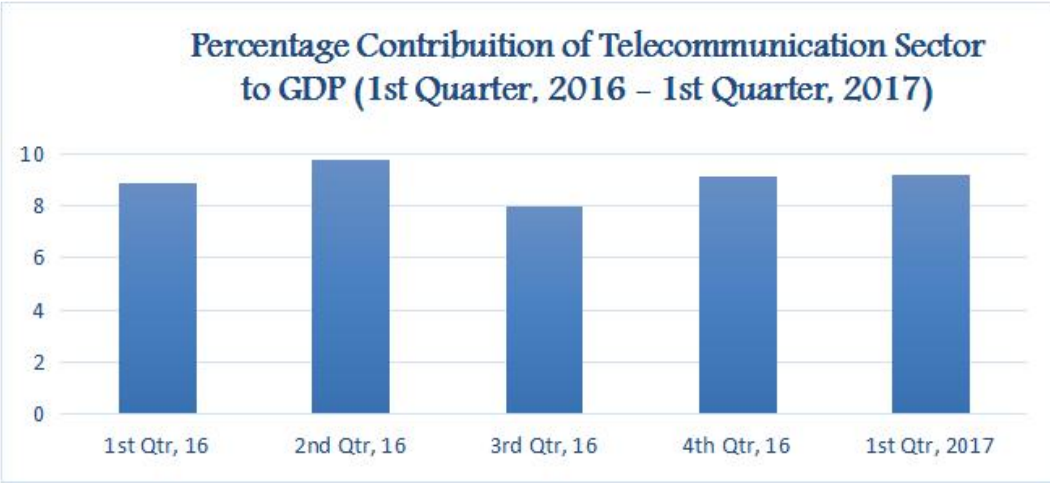


Figure 12: *Contributions of Telecoms Industry to GDP (2016 Q1 – 2017 Q1) (National Bureau of Statistics).*

iii. Emergence of new services and industries

Numerous public services have become available online and through mobile phones. The transition to cloud computing is one of the key trends for modernization, which was brought in via the ICT infrastructure. ICT has enabled the emergence of a completely new sector, the OTT applications industry. The OTT apps have blossomed over the short period of its existence, contributing billions of dollars to economies around the globe.

4.1 Deployment of Broadband Infrastructure

Broadband is completely transforming the way essential services are delivered from e-health to e-education to e-commerce to e-government. And it's about helping countries to diversify their economy to meet the Sustainable Development Goals in

every sector. According to a document of the ITU: "In the 21st century, the social and economic development of every country on earth will depend on broadband networks". This is why one of ITU key priorities is the delivery of equitable, affordable broadband access to the Internet for all people, wherever they live and whatever their circumstances.

The Federal Government of Nigeria has joined the league of ITU member states in recognizing broadband potential for contributions and improvements of socio-economic development of the nation and therefore articulated a policy document, the Nigerian National Broadband Plan (NBP 2013).

The NBP 2013 provides a roadmap and timelines to deliver a five-fold increase in broadband penetration over a span of five (5) years (2013 – 2018), which the Commission aligned its SVP with and aimed at:

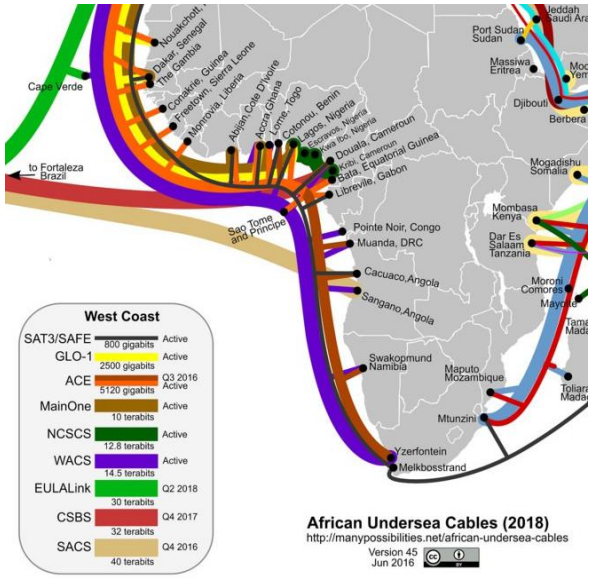
i. providing available, accessible and affordable broadband services to all citizens; and
ii. transforming the economy to a digital knowledge-based for national development.

The prospect of building broadband networks that transverse the entire country with the requisite capacity will ensure amongst others:

i. The ability to control and use energy more efficiently;
ii. The ability to manage healthcare in poor, or isolated populations;
iii. The ability to deliver the best possible education to future generations;
iv. The ability to take better care of our environment;
v. The ability to streamline transport networks; and crucially,
vi. The ability to help meet the Sustainable Development Goals.

4.3 Licensing of Infrastructure Companies

Currently, Nigeria has more than 10 terabytes of telecommunications capacity existing at the landing points in Lagos (Figure 13), but the challenge is the deployment of fibre infrastructure across the country that will effectively distribute this capacity to the distribution nodes at the metropolitan areas of all regions in the country. Though, there is presence of deployed broadband fibre infrastructure in the country, but it has not sufficiently covered the entire country as shown in Figure 14.



(**Source:** USPF)

Figure 13: *African Undersea Cables showing International Cable Landing Points*

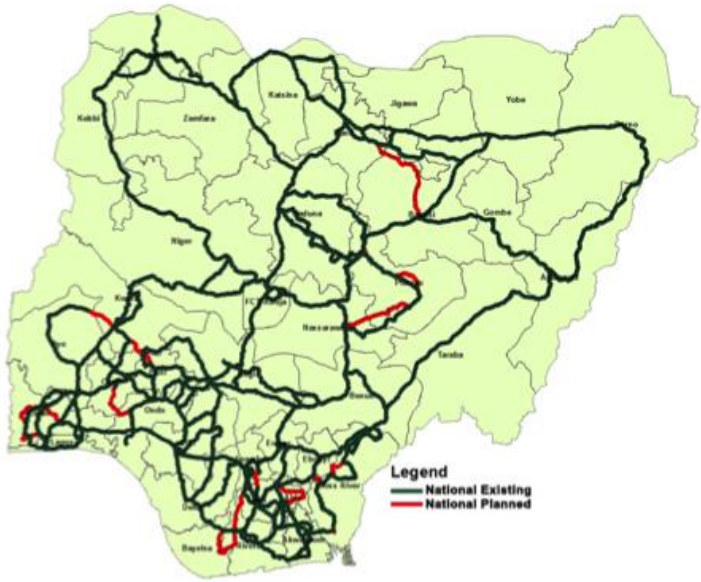


Figure 14: *Existing and Planned National Fibre infrastructure in Nigeria*

Figure 13 shows the wide gap between the National Planned and National Existing Broadband Fibre Infrastructure in Nigeria, which has been identified in the NBP as critical regarding the achievement of our broadband penetration target of 30% by 2018. Further to this, the Commission put in place a new broadband deployment environment through an Open Access Model in line with National Broadband Plan (NBP). The "Open Access Model" has been examined as the model for optic fibre transmission network deployment to bridge the current gap and deliver fast and reliable broadband services to households and businesses. The model is also envisaged to address the challenges of congested and unplanned towns, the challenges around infrastructure sharing and other issues such as high cost of Right of Way (Industry Consultation Paper, 2013).

Additionally, the Open Access Model will potentially help optimize the cost of broadband access across Nigeria and ensure that all operators, whether large or small, have equal access to broadband infrastructure. In this regard, the NBP is envisaged to be an open-access carrier-neutral backbone and metropolitan fibre network that spurs service innovation. The NBP framework will provide an open access, non-discriminatory and non-exclusive pricing to all service providers. The objective of this initiative is to stimulate a new national broadband network that is not only more widespread but also faster and more secure than what is available, thereby stimulating other sectors of the economy and leading to higher economic spinoffs for Nigeria. In addition, it will offer efficient connectivity as well as ultra-high-speed broadband services that are available, affordable and sustainable (Industry Consultation Paper, 2013). To that effect, the Commission established a Broadband Implementation and Monitoring Committee (BIMC) to drive the broadband infrastructure licensing and deployment using the Open Access Model.

Currently, BIMC is finalizing the Phase 1 of the Infrastructure provision licenses awarded for the Lagos and North Central zones. Furthermore, the NCC has advertised the Phase II project, i.e. bidding and selection process for service providers (Infrastructure Companies – Infracos) in the remaining five zones; North-East, North-West, South-East, South-South and South-West. So far, the evaluation criteria for the selection of the remaining five zones for Phase II of the Project has been developed by the BIMC and the technical and financial evaluation of the bids have commenced. Furthermore, the Commission is in the process of selecting a consultant to oversee the project roll-out by the prospective licensees.

Note: The mandate of the Infracos is to provide and operate infrastructure services and to facilitate broadband penetration, i.e. provide and optimize access to and use of affordable fixed and mobile broadband everywhere in Nigeria.

4.4 Spectrum

Despite the overwhelming reliance on mobile access, the Commission is currently reviewing its spectrum licensing framework to accommodate stakeholders' needs. Consultations have commenced on spectrum trading, active infrastructure sharing, refarming of available spectrum resources in the 2.6 GHz and other suitable bands. Also, the NCC is working with the National Frequency Management Council (NFMC) on harvesting digital dividend spectrum for broadband deployment.

4.5 Attracting Investments

The result of the telecoms industry liberalization in Nigeria opened up burst of activities, investment opportunities, and improvement in the general business climate. Nigeria has since witnessed a great increase in the number of market players, unprecedented growth in the networks, empowerment of the Nigerian citizens, job creation, economic stimulation, and substantial increase in access to ICT. This has been achieved through NCC's commitment to full, fair and transparent regulation. Today, the Nigerian telecommunications market is the fastest growing telecommunications market on the African continent.

For this, The NCC has reached an advanced stage in the implementation of a Code of Corporate Governance for the industry that will serve to strengthen telecoms legal entities and attract investment. Furthermore, the Commission engages investors in different fora to attract Foreign Direct Investments (FDI). Table 12 shows the FDI in the telecoms sector for 2015 and 2016.

Table 12: *FDI in the telecommunications sector for the period January 2015 to December 2016*

2015		2016	
MONTH	**AMOUNT USD**	**MONTH**	**AMOUNT USD**
January	304,696,754.21	January	704,201.00
February	8,574,565.70	February	6,979,892.37
March	29,094,209.47	March	5,756,476.84
April	56,172,318.10	April	47,378,265.66
May	76,740,520.82	May	28,301,431.66
June	5,807,621.70	June	67,018,269.50
July	241,252,359.51	July	4,256,309.10
August	20,576,281.64	August	118,123,478.35

September	107,663,500.62	September	122,420,006.76
October	60,920,848.51	October	319,292,120.37
November	20,166,606.92	November	90,346,697.08
December	12,280,619.15	December	144,609,849.65
Total	**943,946,143.35**		**955,186,998.34**
Trend and %	**Increase - 1.19 %**		

(**Source:** Central Bank of Nigeria (CBN))

From Table 12, it is clear that the FDI has been stable in the last two (2) years with a slight increase of 1.19%. This is as result of engagement with targeted international partners and potential investors, which has further raised the profile of the Commission and the telecoms sector at large. I have made presentations at key events like the World Summit on Information Society 2016 and GSMA World Congress in order to attract FDI for the sector.

2. Challenges

In spite of the Commission's successes, challenges bedevilling service delivery still exist in the industry, notable amongst them are issues related to Right of Way (RoW), power, vandalism of telecommunications infrastructure, access gaps in the provision of infrastructure, foreign exchange, pricing and competitiveness.

5.0 Right of Way (RoW)

Right of Way (RoW) charges are fees, levies and taxes that Ministries, Departments and Agencies (MDAs) from Federal, States and Local Government Areas impose on telecommunications operators on specific distances sought to dig and lay their fibre cables. The issue of "Right of Way" has become a source of concern because apart from the imposition of huge levies or fees on telecoms operators, bureaucratic bottleneck in getting approvals to dig and lay cables in the ground are factors that are discouraging operators in expanding broadband penetration into all the nooks and crannies of the country.

The Commission, through its Industry Working Group on Multiple Taxation continues to maintain dialogue with organizations regarded as major players at the Federal, States and Local Government levels to stop further imposition of different taxes, fees and charges on telecoms operators. The dialogue is aimed at ensuring that taxes collected by all concerned are done in accordance with existing laws on taxes and levies (Approved Rates for Collection) Act, 1998, which clearly spells out the taxes and levies collectible by the various tiers of government.

Activities of the Industrial Working Group also include sensitizing major players in the three tiers of government on the implications of multiple taxation, particularly as it affects Quality of Service and growth of the telecoms industry in general.

The Commission was able to secure the support of the Government of Ogun State, to unseal 47 Base Transceiver Stations (BTSs) shut down by an agency of the state government and reduction of ground rent for BTSs from #360 million to #120 million in favour of Integrated Holding Services (IHS) Towers.

Additionally, the Commission, at the Governors' Forum made a presentation, drawing the attention of State Governors to the National Economic Council's resolution on multiple taxation and multiple regulations on deployment of telecoms infrastructure. Abiding by this resolution will energize the economic activities in the states and attract investments.

Recently, the Commission intervened with respect of RoW issues for deployment of fibre infrastructure in Kano State, which is in line with item five (5) of the 8-point Agenda, i.e. Facilitate Strategic Collaboration and Partnership. The Commission amicably resolved the RoW issues regarding two (2) federal roads (Zaria and Maiduguri Roads) in Kano between the State Government and MTN Nigeria Communication Limited. Furthermore, the Commission secured a permit fee waiver of a whopping #221 million in favour of MTN.

5.1 Electric Power Supply

Electric power supply has continued to be a major setback in the drive towards enhancing quality of service in the telecommunications industry. The situation, according to stakeholders, has placed additional operational costs on the shoulders of the telecoms operators with the attendant adverse impact on service delivery. The slow investment in building new BTSs and other infrastructure in the industry, has also been attributed to erratic power supply due to the attendant increase in operational costs of running the BTSs. The Commission, as part of its responsibilities, continues to engage in discussions with telecoms operators and collocation service providers on how to ameliorate the burden of the huge investments in running their BTSs on generating sets.

5.2 Vandalism of Telecom Infrastructure

Vandalism of telecoms infrastructure has continued to be a major setback in the industry. While service providers have continued to stress on the negative impact it has over the years in the provision of good quality services to its teeming customers, the Commission continued to collaborate with the Federal Government to provide adequate security to telecoms facilities.

The Commission continues to engage members of communities on the need to protect telecommunications infrastructure through various platforms such as Town Hall meetings, Telecom Consumer Parliaments and other outreach programmes. The Commission commenced activities that would lead to the establishment of a 'Telecommunications Critical Infrastructure Bill'. Development of the Bill has reached an advanced stage, as network operators and other stakeholders in the industry have made useful contributions to the draft document. It is hoped that when this Bill is passed into law, government would rank telecommunications infrastructure among the critical infrastructure, which should enjoy priority protection in the country, as well as specify definite sanctions for wilful destruction of communications infrastructure.

5.3 Access Gaps

Glaring access gaps exist in availability and usage of the ICT infrastructure in various spheres of the economy. The distinctions are in:

i. Unserved areas: Areas not served with ICT infrastructure;
ii. Under-served areas: Areas with insufficient ICT infrastructure and
iii. Other sectors of the economy not maximizing the potentials of ICT infrastructure.

The NCC, through the Universal Service Provision Fund (USPF) bridges the access gaps by facilitating and extending broadband services to the under-served and unserved communities and groups using the connectivity programme. The connectivity programme comprises telecommunications infrastructure projects that are implemented through a Public-Private Partnership Model, which includes, Base Transceiver Stations (BTSs), Rural Broadband Initiative (RUBI), University Inter-Campus Connectivity (UnICC) and Backbone Transmission Infrastructure (BTRAIN).

5.4 Foreign Exchange

Telecommunications operators are facing difficulties in accessing foreign exchange (Forex) for the deployment of telecommunications services in the country because of the scarcity of Forex. As such, the government is rationalizing and prioritizing Forex allocation to each sub-sector of the economy. In addressing the Forex challenge, the Commission has engaged the CBN management and to that effect, the CBN agreed to include telecommunications as part of the CBN priority list for accessing Forex. This has reduced the Forex burden on the telecoms operators.

5.5 Pricing and Competitiveness

Despite the huge mobile access and growing smartphone penetration, there are still challenges with reaching an acceptable price point for data services. The NCC had to intervene with a temporary retail data price floor – this is however in process pending the conduct of a comprehensive cost study. There are also issues with stimulating demand for local content and affordability that are being addressed on a national scale. There is therefore a huge opportunity for infrastructure providers to offer cost-effective solutions and bridge the gap.

5.6 Awards and Recognitions

In spite of the challenges bedevilling the telecoms sector in Nigeria, the NCC has strived to ensure regulatory excellence and operational efficiency as enshrined in the 8-point Agenda of the SVP. So far, in less than two (2) years, the Commission as a foremost telecoms regulatory agency in Africa has catalysed the use of ICT for economic diversification and transformation of our dear nation. In recognition of our landmark achievements, the Commission and the Executive Vice Chairman (EVC) have received awards, notable amongst which are itemized in Table 13.

Table 13: *Awards and Recognitions*

NIGERIAN COMMUNICATIONS COMMISSION			
S/N	**ORGANIZATION**	**DESCRIPTION**	**YEAR**
1.	European Society for Quality Research (ESQR)	Quality Achievement Award for Best Practices	2017
2.	Bureau of Public Service Reforms	Exceptional Public Service Performance in the Platinum category	2017
3.	Leadership Newspaper	Leadership Government Agency of the year	2016
4.	Africa Information Technology Awards (AITTA)	African Regulator of the Year	2016
5.	African Quality Institute (AQI)	African Quality Achievement Award	2016
6.	Constitutional Rights Awareness and Liberty Initiative (CRALI)	Human Rights Government Agency of the Year	2016
7.	European Society for Quality Research (ESQR)	European Award for Best Practices	2016
8.	Beacon of ICT Awards	Organization with best use of Social Media	
9.	Nigeria Internet Registration Association	Most supporting sponsor	2016
EVC/CEO NCC			
1.	Beacon of ICT Awards	Telecoms Regulator of the Year	2017
2.	Africa Leadership Magazine, New York, USA	Regulator of the Year	2016
3.	12th Nigerian Telecoms Award, Lagos	Telecom Personality of the Year	2016
4.	Africa Digital Awards	Regulator of the Year	2016
5	Bayero University, Kano	In recognition of selfless and dedicate service to the nation and for being a worthy Ambassador of the University	2016
6.	TELL Magazine	Chief Executive Officer (CEO) of the Year	2016

6.0 Conclusion

The telecommunications sector plays a dual role in economic activities, not only in itself as a distinct circle in the economic system, but also a supplying means to other sectors. The NCC as an agency of government has been resolutely committed to the rapid and a pervasive deployment of broadband networks and services in the country.

In line with the Nigerian National Broadband Plan and the Commission's Strategic Management Plan (SMP), the EVC developed the Strategic Vision Plan (SVP) for fiscal years 2015 to 2020 to ensure that the ICT infrastructure are to the standard necessary to provide ubiquitous broadband services in Nigeria.

The methodology adopted for the implementation of the SVP is based on Hoshin Kanri /Policy Deployment method, which ensures strategic goals of the NCC drive progress and action at every level. Within the space of two (2) years after the implementation of the SVP, the telecommunications sector has played a greater role in Nigeria's economic diversification, prominent among which include; contributions to the education, health, financial services and transportation sectors of the economy. Furthermore, quantitative results show that, Active Mobile-Broadband Penetration has increased within the space of one year from less than 10% in 2015 to 20.95% in 2016 and Internet Penetration reached a milestone of 47.44% and contribution of the telecommunications sector in Q1 of 2017 is N1.452 trillion to the GDP i.e. 9.16 %. This is an increase of 0.2% compared to the Q1 of 2016, indicating stable growth in the telecoms sector.

In spite of the Commission's successes, challenges bedevilling service delivery still exist in the telecommunications sector, notable amongst them are issues related to Right of Way (RoW), power, vandalism of telecommunications infrastructure, access gaps and Foreign exchange. In general, our sector continues to contribute substantially to the socio-economic transformation of the country in the areas of employment, productivity and economic growth as well as GDP.

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