

Broadband Internet Penetration in Nigeria: A Review

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Abstract: *Broadband Internet is high-speed Internet access that is always on. The disparity in access level in homes in Nigeria have been a concern. Digital divide refers to the gap between people that have access to modern information and communications technology, and those that do not or have restricted access. The internet plays a vital role in dissemination of information applying technology. Despite the availability of information technology and use of internet there exists a gap between those that have access, those that have no access and those that have restricted access. A lot of work has been done by different researchers on digital divide as it relates to many applications. This work review different works and identified that there is major factors that affect broadband internet penetration in Nigeria. It went further to identify some of the initiatives by Nigerian Government in reducing the divide*

Keywords: *Digital Divide, Broadband Internet, Broad band Internet Penetration*

1. INTRODUCTION

Information and Communication Technology (ICT) is an umbrella that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and applications associated with them, such as videoconferencing and distance learning (Margaret Rouse 2014). ICT promote social, economic and political accountability and improve the delivery of basic services, enhancing developmental opportunities in all spheres of life and indirectly adding to the Gross domestic product of the nation.

ITU 2014, there will be almost 3 billion Internet users, two-thirds of them coming from the developing world, and the number of mobile-broadband subscriptions will reach 2.3 billion globally by end of 2014. Fifty-five per cent of these subscriptions are expected to be in the developing world, this confirms that information and communication technologies continue to be the key drivers of the information society. Globally mobile-broadband penetration will reach 32 per cent by end 2014; in developed countries, mobile-broadband penetration will reach 84 per cent, a level four times as high as in developing countries (21%). Mobile-broadband penetration levels are highest in Europe (64%) and the Americas (59%), followed by CIS (49%), the Arab States (25%), Asia-Pacific (23%) and Africa (19%) out of which Nigeria has a share.

The world have identified the importance of ICT in driving the information society but there are gaps to be bridged, Nigeria irrespective of their African ranking as seen on the table below have an urgent need of broadband Internet penetration most areas. Most researcher have found out the gap in various areas of life endeavour as regards the use of ICT. The focus of this paper is to identify those limiting factors to broadband internet penetration in Nigeria.

2. RELATED WORKS

Ogunsola, and Okusaga (2006), examines the imbalances in the availability and usage of information technology infrastructure between developed and industrialized countries of the North and the less – developed countries of the South and exhaustively discussed factors responsible for digital divide and recommend policy guidelines and strategies for establishing infrastructure frameworks for 21st century Informatics Technology.

Ukpebor, and Emojorho, (2012), analysed the technological differences among children in secondary school in Benin City cosmopolis, highlighting the far reaching policy and government

neglects on reforms for secondary schools as well as the role of libraries in helping to bridge the digital divide just like that of the western nations. They are of the opinion that the country needs to improve the infrastructure of public schools and link them with community information centres and that educational decision-makers should act quickly, boldly and share information to build a critical mass of Internet-connected schools and trained teachers and create the African schools of the future.

Nkanu et al (2010), sees ICT as tool for bridging the gap in digital divide phenomenon in Nigerian libraries and recommends that Administrators of Nigerian libraries should collaborate with their parent institutions to re-order their priorities through a major policy shift in order to provide full interest connectivity in their libraries.

Hilbert, (2011) discussed the main approaches researchers have taken to conceptualize the digital divide among individuals and countries. The result is a common framework that addresses the questions of who (e.g. divide between individuals, countries, etc.),

Okon et al 2007 showed the prevalence of digital divide in gender, age, marital status and educational level among individuals as regards internet usage in Calabar. They suggested the federal/state governments as well as university managements in Nigeria should formulate relevant policies to reduce various forms of digital divide that are prevalent in the Nigeria.

Lucky and Achebe (2013) evaluated the effect of digital divide on information accessibility among undergraduate students and established that ICT are not readily available to most undergraduate students and the necessity to bridge the gap between the haves and the have not to be bridge, the institution's management will need to ensure that the class rooms are internet connected and made available in every department to provide easy access to digital information especially to those who are financially incapacitated.

Akanbi and Akanbi (2012) examined the gap in access to Information and Communication Technology (ICT) and its linkages to poverty in Nigeria. They found that the contributions of access to the use of ICTs to poverty in Nigeria has been marginal and the contributing factors are poor quality of service caused primarily by network capacity constraints, lack of physical and transmission infrastructure, scarce spectrum resources, unreliable electric supply.

Robertson et al (2004) use a household survey to analyse the factors affecting narrowband and broadband choice in the UK in early 2003. It was reported that educational attainment, disposable income and the presence of children were all indicators of internet adoption and had a marginally stronger effect broadband as opposed to narrowband at this time. Their results also suggest that downward shifts in broadband price will lead to many more narrowband users switching to broadband as the prices equalise and that this would be concentrated in higher income and ICT acceptance groups. Cited in Anderson et al (2005)

3. CONCEPT OF DIGITAL DIVIDE

Digital divide is a term that refers to the gap between people that have access to modern information and communications technology, and those that do not or have restricted access. Before the late 20th century, digital divide referred chiefly to the division between those with and without telephone access; after the late 1990s the term began to be used mainly to describe the split between those with and without Internet access, particularly broadband (Margaret Rouse 2014). (Some individuals) have the most powerful computers, the best telephone service and fastest internet service, as well as a wealth of content and training relevant to their lives. . . . Another group of people don't have access to the newest and the best computers, the most reliable telephone service or the fastest or most convenient Internet services, these two groups is . . . the Digital Divide. (Selwyn 2004, 344; cited in EZEKWE et al 2014) .

Digital Divide have strong impact on a country's Gross Domestic product. Access to internet means access to information in an information society as it is found this day in the world and information they say is power.

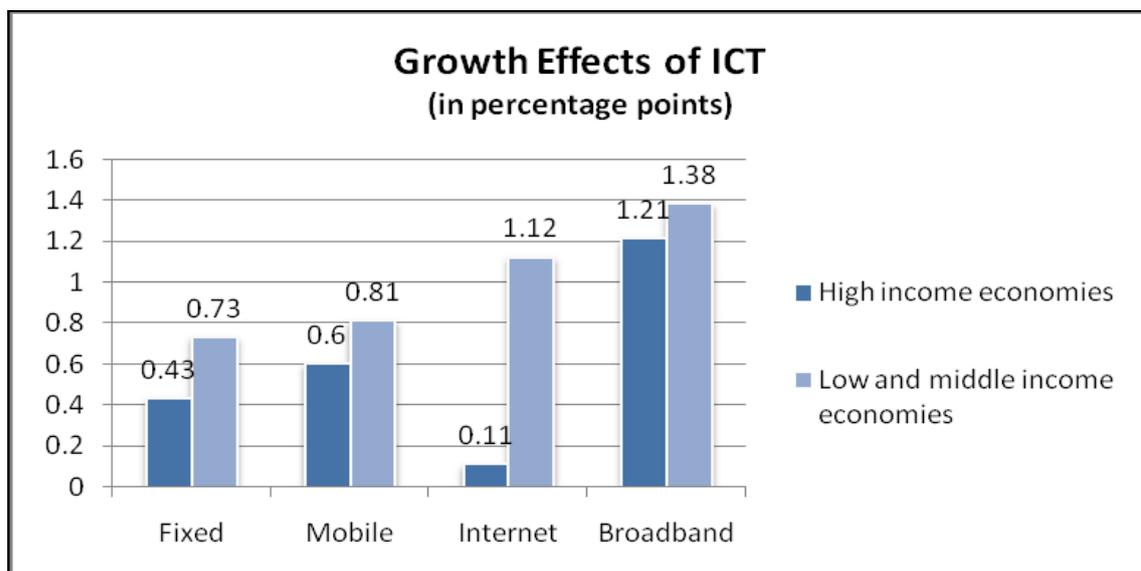
3.1 The Broadband Divide

Broadband Internet refers to high-speed Internet access that is always on and faster than the traditional dial-up access. Broadband includes several high-speed transmission technologies such

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as Digital Subscriber Line (DSL) , Cable Modem, Fiber , Wireless , Satellite, Broadband over Powerlines (BPL) The broadband technology you choose will depend on a number of factors. These may include whether you are located in an urban or rural area, how broadband Internet access is packaged with other services (such as voice telephone and home entertainment), price, and availability.(American Federal Communication Commission)

Emphasis on broadband in the ICT development field arises from the emerging recognition that the nature and scope of interactive communications that can be accomplished by high-capacity data transmission and processing is fundamentally different from and exponentially more valuable than what was possible with older-generation voice and low-speed data connections. This is true based 2009 world bank study which suggests that a 10% increase in broadband penetration yields an additional 1.38% increase in GDP growth for low to middle income countries thereby increasing economic benefits of investing in broadband which is considerable and far reaching. In Nigeria, the evolution of mobile telephone revolution has expanded access to basic voice telephone/internet service among many lower- to middle-income populations. Nevertheless, broadband internet access has not yet penetrated some areas.



Source: Nigerian National Broadband Plan 2013-2008

Table 1. Nigerian Home Internet use via any device (Mobile and Fixed Broadband)

Year(July1)	Internet Users**	User Growth	New Users	Country Population	Population Change	Penetration (% of Pop. with Internet)	Country's Share of World Population	Country's Share of World Internet Users	Global Rank
2014*	67,101,452	16%	9,365,590	178,516,904	2.82%	37.59%	2.46%	2.30%	8
2013*	57,735,862	4%	2,229,563	173,615,345	2.83%	33.26%	2.42%	2.13%	8
2012	55,506,299	19%	8,826,250	168,833,776	2.83%	32.88%	2.38%	2.20%	8
2011	46,680,049	22%	8,350,181	164,192,925	2.81%	28.43%	2.35%	2.04%	10
2010	38,329,867	23%	7,253,663	159,707,780	2.78%	24.00%	2.31%	1.87%	10
2009	31,076,204	30%	7,094,603	155,381,020	2.76%	20.00%	2.27%	1.76%	10
2008	23,981,601	141%	14,017,018	151,208,080	2.73%	15.86%	2.24%	1.53%	15
2007	9,964,584	25%	2,017,720	147,187,353	2.70%	6.77%	2.21%	0.73%	19
2006	7,946,863	60%	2,992,743	143,314,909	2.67%	5.55%	2.17%	0.68%	19
2005	4,954,121	183%	3,204,983	139,585,891	2.64%	3.55%	2.14%	0.48%	19
2004	1,749,138	136%	1,008,744	135,999,250	2.60%	1.29%	2.11%	0.19%	20
2003	740,394	79%	326,278	132,550,146	2.57%	0.56%	2.08%	0.10%	20
2002	414,116	266%	300,836	129,224,641	2.56%	0.32%	2.06%	0.06%	20
2001	113,280	44%	34,540	126,004,992	2.55%	0.09%	2.03%	0.02%	20
2000	78,740	60%	29,563	122,876,727	2.54%	0.06%	2.01%	0.02%	20

Source: Internet Live Stats (www.InternetLiveStats.com)

This gap between telephony and broadband internet is perhaps far more significant in terms of potential socio-economic impacts, than earlier technological leaps. The digital divide is increasingly becoming a knowledge divide. The scope of information and of technical and socioeconomic know-how of educational, scientific, health and political resources available to one segment of society is virtually infinite, while the remainder of the population remains excluded from the information society. (Commission on Science and Technology for Development- Secretary Report 2013) This is application to the vast population of Nigeria. Many who already have access continue to develop while those that has no access remain not having.

4. BROADBAND PENETRATION IN NIGERIA

With growing mobile broadband internet in Nigeria, supported by the increased use of smartphones and other mobile devices to access mobile broadband, there is need for increase internet penetration by the process through fixed broadband access. Statistical report by the International Telecommunication Union in May 2014 indicates that penetration rate is low as and it stood at 6%. The Nigerian Communication Commission acknowledged the low penetration and announced in August 2014, the modalities to increase the penetration level from 6% to 30% by 2018.

5. FACTORS LIMITING BROADBAND PENETRATION

Despite having broadband service providers like Main One, Glo 1, SAT3 and WACS Cables, most homes in Nigeria do not have access to fast internet or where there is access, it is limited.

5.1 Poor Electrical Power Supply Infrastructure

Obasi and Kalejaiyi (2013), Irrespective of power sector privatisation, Nigerians have continued to lament about the poor state of power supply and the negative impact it is having in their businesses and living. Power supply affects every sphere of living of which installation and management of telecommunication infrastructures are inclusive. The cost used in powering telecommunication equipment (Base stations, radios etc.) increases the overhead cost thereby affecting productivity.

5.2 Pricing

Pricing have been a major factor for broadband adoption, particularly in developing nations. In some jurisdictions, high cost of deploying broadband infrastructure has pushed the cost of providing services beyond what the ordinary consumer is willing or able to pay. This then indicates that service offers also have to be at the right price and not just the right speed. Without affordability, demand for broadband service will be weak and payback period for investors may become unacceptably long.

Despite the provisions made by the providers above, the cost of internet access has been high compared to most countries in Africa. In countries like Tanzania and Kenya, where the government built nationwide infrastructure backbone, allowing private sector to run it at a determined low cost and making sure that every Internet Service Provider (ISP) has equal access to available broadband capacities; penetration is high compared to Nigeria. Olusunyah (2013). Multi-taxation, yearly charges for telecom infrastructures by government agencies also made the list of factors attributable to the high cost of internet access.

5.3 Right of Way

The legal right, established by usage or grant, to pass along a specific route through grounds or property belonging to another. The huge amount paid by telecommunication operators to have right of way is high thereby affecting the building of infrastructures which also contribute to lower penetration

5.4 Distance

This has to do with the areas covered by the available ISPs. The distance from the base station to the internet users have made it almost impossible for those in the rural areas from accessing internet. The effect of attenuation comes in as the devices move farther away from the base station. As stated in 2013 Data report of the Nigerian telecommunication commission fibre optic

deployment in Nigeria as analysed as at December, 2013; the telecoms operating companies (GSM and CDMA/Fixed telephony Operators) had deployed a combined total of 68,124km

5.5 Infrastructure

According to Ekuwem (2013) in an interview said there is need for massive broadband infrastructure roll-out across the entire length and breadth of Nigeria. There is Main One Cable's 1.92 terabits/sec broadband, Glo One, SAT3 and WASC at the coast. We must get these to the hinterland of Nigeria. We need massive roll out of fibre optic cables, broadband wireless (radio and light-laser) and broadband VSAT to carry terabits/sec broadband capacity from the coast into the hinterland. This fact was confirmed with the statement of the Minister of Communication on the commitment of the Federal Government Nigeria to building broadband infrastructure that will facilitate innovation and entrepreneurship in Nigeria. This means that Broadband Internet access is very low due to lack of adequate infrastructure

5.6 Unequal Distribution of Computer Systems

Computer systems are seen luxury and also the cost of acquiring one is almost out of the reach of the middle class talk less of the lower class of the economy. This has created a divide which also reduces accessibility of internet by mostly people who do not have even when the internet facility is made available.

6. BRIDGING DIGITAL DIVIDE IN INTERNET PENETRATION IN NIGERIA

According to Ndukwe (2008) the Federal Government through the Nigeria Communication Commission (NCC) embarked on certain initiatives to bridge this identified gap. Some of these initiatives are summarised in the table below:

Table2. Federal Government Initiatives

Initiative	Wire Nigeria (WiN) Project	State Accelerated Broadband Initiative (SABI)	Universal Service Provision	The Digital Bridge Institute (DBI)	Digital Awareness Programme (DAP)
Objective	To facilitate the build out of fibre optic cable infrastructure	To stimulate demand for internet services, and drive affordable home broadband	To provide ICT access in unserved and underserved areas	To increase the number of skilled Nigerians in the telecoms sector	To encourage the use of ICT in primary, secondary and tertiary institutions
Achievement strategy	Subsidies and incentives to encourage rapid deployment of fibre transmission cables	Subsidy to build broadband infrastructure in all 36 state capitals and urban and semi-urban centres	Subsidies to the private sector	ICT training for over 2000 local and international students. Intended to become privately-run	Computer and internet facilities, basic ICT training for teachers and students

- Unveiled a National Broadband Plan and was currently implementing the plan to increase broadband penetration in the country by a five-fold, over the 2012 penetration rate, in 2017.
- The Nigerian Communications Commission, NCC, auction of 2.6 gigahertz spectrum band to the telecom industries and private sector. According to the NCC, the nation's telecoms sector will benefit significantly with the auspicious auction in the area of further deepening broadband internet penetration in the country.
- Commitment of the Federal Government to building an ever-present broadband infrastructure that will facilitate innovation and entrepreneurship in Nigeria

7. CONCLUSION

The paper review different works in the area and identified some factors that is limiting the broadband internet access penetration in most areas of the country. These factors include Poor Power Infrastructure, Pricing, Right of way, Distance, Infrastructure, Unequal distribution of Computer systems. The government initiatives in bridging the gap were also identified as stated by Ernest 2008. For further work I recommend that more practical research should be done in the resolving the identified limiting factors.

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