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# Utilisation of Public Library as Alternative Platform for Deployment of NigComSat-1R Services in Deepening Broadband Penetration in Nigeria

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## Abstract

Broadband Internet penetration of a country is measured by the total number of people that have Internet access against the total population of the country. The study analysed both the Broadband Internet potentials of Nigerian Communications Satellite (NigComSat-1R) and the attempted platforms used to deploy its services in Nigeria and public library services and its existing branches in Nigeria as suitable platforms required to be used to further deepen Broadband Internet penetration in Nigeria. The study is theoretical research that seeks to draw the attention of the NIGCOMSAT agency towards public libraries and its services for a consideration in their quest for good platforms that will be used to deploy NigComSat-1R services members of the public in Nigeria. The study found out that NigComSat-1R has the potentials of deepening Broadband penetration in Nigeria, but due to the challenges in their choice of platforms to deploy its services to all members of the public in Nigeria hence, its contribution to Nigeria's 33% existing Broadband penetration is far below expectation. However, from the findings of the study, it was discovered that 316 functional public libraries are widely spread across all the cities and major towns in Nigeria, and they are open to all kinds of members of the public for use in Nigeria. Therefore, effective collaboration between NIGCOMSAT Limited and Public libraries will be a win-win situation for both organisations. While the public libraries will benefit from the Broadband Internet services that would be provided by NigComSat-1R services to improve and facilitate her services and discharge her function effectively to the public, more members of the public will be attracted to the library to access and use the Broadband Internet services provided by NigComSat-1R, thereby further deepening Broadband penetration in Nigeria. This makes public libraries the best alternative platforms that should be adopted and used to deploy NigComSat-1R services to general public members in Nigeria.

**Keywords:** NigComSat-1R, Public Library, Broadband, and Broadband Internet Penetration

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## Introduction

Broadband internet penetration is arguably one of the most important indices used to drive and measure the digital economy fortune of any given country that aspires to move along with the current trend of globalization. Broadband Internet refers to high-speed Internet access

that is always on and faster than the traditional dial-up access (Chinecherem, Awodele, Kuyoro & Izang, 2015).

It is the importance of broadband Internet to nation-building and development of businesses that prompted Nigeria's government to developed 25 years National Space Development Roadmap by the Obasanjo Administration in 2004. The roadmap made provision for the development and application of communications satellite systems to enhance the growth and development of the country in all sectors of the economy. This led to the launching of the first Nigerian Communications Satellite in May 2007, which was later deorbited on November 10, 2008, due to malfunctioning of its Solar Array Deployment Assembly (SADA) and then replaced with the existing Nigerian Communications Satellite 1- Replace, which has a code name known as NigComSat-1R on December 19, 2011. NigComSat-1R is the second communications satellite launched by Nigeria's government, and it has an in-built Broadband capacity of 39% (Ahmed,2011).

In the same light, Nigeria's government further developed 5 years National Broadband plan in 2013 to entrenched Broadband penetration of 30% by 2018 in Nigeria. Though by 2020, Nigeria was able to achieve an additional 3% of the targeted 30% Broadband penetration contained in the 2013 – 2018 National Broadband plans, NigComsat-1R has little contribution to this achievement. According to the Executive Vice Chairman of NCC, Broadband penetration in Nigeria stands at 33%, and the additional 3% was due to expansion of coverage areas recently carried out by the Airtel mobile network.

Furthermore, another National Broadband Plan has been developed with a 90% target population to have access to broadband by 2025 (National Broadband Plan, 2020 - 2025). This target can easily be achieved if the Broadband potentials of NigComSat-1R are fully deployed through the right platforms to all members of the public in Nigerian. This is because NigComSat-1R services are available everywhere in Nigeria, irrespective of topographical or geographical locations. It has its footprint covering the entire African continent and some parts of Asia and Europe (Ahmed, 2011).

However, the satellite was unable to take the lead in deepening Broadband penetration in Nigeria due to the serious underutilisation of the satellite (Madaki Abdulsalam, 2020). According to Madaki (2020), part of the major challenges causing underutilisation of NigComSat-1R services is lack of backup satellites for redundancy, lack of adequate legislation/regulations to enforce its usage, and lack of suitable platforms to deploy its services to Nigerians, among others. This is part of the reason that prompted the management of NIGCOMSAT Limited to embark on collaborative cooperation with some higher institutions of learning and recently in 2018, with the Nigerian Postal Services (NIPOST) after the failure of its Community Service Centres (CSC) that were established for the deployment of its Broadband Internet services to members of the public in Nigeria.

Though despite all these attempts, NigComSat-1R services has six years left for its life span to expire, and the satellite is yet, to fully deploy its services to general members of the public in Nigeria simply because it lacks a suitable and popular platform that members of the public can easily approach to access and use it Broadband Internet services in order, to further

entrench Broadband Internet penetration in Nigeria. This is because Broadband Internet penetration of a country is measured by the total number of people that have Internet access against the total population of the country (ITU, 2013). High percentage broadband Internet penetration is crucial, as no country can develop in modern civilization without Internet-powered communications (Osuagwuet'al, 2013). Therefore, since none of the platforms used so far provided the desired result satisfactorily, there is the need for the management of NIGCOMSAT Limited to look towards adopting public libraries' infrastructures in Nigeria as alternative platforms to deploy the services of NigComSat-1R for easy access and use by all members of the public in Nigeria.

### **NIGCOMSAT**

The Nigerian Communications Satellite Limited is an agency of the Federal Ministry of Communication incorporated in 2006 as a limited liability company. It is responsible for the operations and management of the Nigerian Communications Satellite (NigComSat-1R) starting from NigComSat-1. The company is a commercial satellite operator with the mandate to provide Internet access to every nook and cranny in Nigeria especially, remote areas. Also, the satellite is to offer ICT services and applications both within and outside Nigeria under its satellite footprints. The successful launching of Nigerian communications satellite-1R on 19<sup>th</sup> December 2011 and the awareness created about its Internet access potentials.

Nigerians are expected to be enjoying sufficient high-speed Internet access at a reduced cost. The satellite was developed with an inbuilt capacity to increase Internet penetration in Nigeria by 39%. This is enough to provide Broadband Internet access for government agencies and private businesses in Nigeria.

### **Public Library**

Public Library is an organisation established, supported, and funded by the government, or through some other form of community organization. Victoria & Rose (2019), quoting the public library service, affirmed that public library provides access to knowledge, information, or works of the imagination through a range of resources and services and is equally available to all members of the community regardless of race, nationality, age, gender, religion, language, disability, economic status, employment status, and educational attainment. The public library is usually established and functions to meet the informational, educational, social, cultural, economic, and recreational needs of public members in all spheres of life (Victoria & Rose, 2019). The services of public libraries include community information services, recreational activities, reference services, storytelling, reading competition, career information, customer care, adult literacy education, mobile library services, service to prisoners, online internet search, among others (IFLA, 2001).

According to Basil & Patience (2012), the public library provides materials, which communicate experience and ideas from one person to another and make them easily and freely available to all people. The public library is a local centre for information that makes all kinds of knowledge and information readily available to its users.

### **Number of functional public libraries in Nigeria**

According to Victoria & Rose (2019), there are about 316 public libraries in Nigeria made up of the headquarters in each of the 36 states, the Federal capital territory, the National Library of Nigeria, and their branches established by the government. However, there are more public libraries in some villages established through community efforts for the service of the people.

### **Broadband**

Broadband also, referred to as wideband, is used frequently to indicate some form of high-speed Internet access at 256Kbit/s in one or both directions (ITU, 2012). The National Broadband plan 2020 – 2025 defines broadband as connectivity delivering a minimum of 10 Mbps in rural areas and 25 Mbps in urban areas to every Nigerian at an affordable price and quality by 2025 (National Broadband plan 2020 – 2025). Broadband includes several high-speed transmission technologies such as Digital Subscriber Line (DSL), Cable Modem, Fiber, Wireless, Satellite, and Broadband over power lines (BPL) (Chinecheremet'al, 2015).

However, Broadband satellite communications for Internet access is a system Engineering methodology for satellite communication networks (Sastri, Kaveh&Pentti, 2014). According to ITU (2012), Broadband satellite systems provide access to the Internet at a high data rate via satellite at affordable prices by its spectrum requirements, technical and operational characteristics of user terminals (VSAT). Broadband Internet access has become a critical part of socio-economic prosperity. However, only six in 180 inhabitants have access to broadband in developing countries. This limited access is driven predominately by subscriptions in urban areas (Zheleva, Schmitt, Vigil & Belding, 2015).

### **Broadband Internet penetration in Nigeria**

Internet penetration of a country is measured by the total number of people that have Internet access against the total population of the country (ITU, 2013). High percentage broadband Internet penetration is crucial because no country can develop in modern civilization without Internet-powered communications (Osugwu'et'al, 2013). Through broadband Internet access, developing countries and isolated communities can better access education, health care, and commercial services (Wolfgang, Renata& Antonio, 2016).

According to Babatunde (2018), the National Broadband plan acknowledged that mobile broadband was the fastest route to attaining its objectives for coverage and penetration. However, despite the growing mobile broadband internet in Nigeria, supported by the increased use of smartphones and other mobile devices to access mobile broadband, there is a need for increase internet penetration by the process through fixed broadband access (Chinecheremet'al, 2015). Statistical report by the International Telecommunication Union in May 2014 indicates that the penetration rate is low, 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 (Chinecheremet'al, 2015).

### **Broadband Internet Potentials of NIGCOMSAT-1R**

Ahmed (2011) said NigComSat-1R has the potentials to provide broadband and bandwidth that provides Internet access which is capable of increasing up to 39% Internet penetration in Nigeria. Also, when NigComSat-1R was launched into the Orbit in 2011, Engineer Ahmed Rufai, the then Chief Executive Officer of NIGCOMSAT, said the communication satellite is a critical national asset that has the broadband capacity of the National Public Security Communications System and would facilitate the availability of broadband connectivity to at least thirty five (35%) percent of Nigerian homes by 2015, especially in rural areas. Also, from a technical perspective, NigComSat-1R is very active with 4C-band, 14Ku-band, 8Ka-band, and 2L-band transponders which can provide the most optimal and cost-effective voice, data, video, Internet, and application service and solutions to users (Ahmed,2011).

The satellite can transmit live video broadcasts of lessons to schools and enable learners in rural and remote areas to interact with instructors in far-flung locations. Other benefits which make the satellite stand out and make it the best option for any government agency or corporation in Nigeria or Africa include rural connectivity, cost-effectiveness, global availability, superior reliability, and superior performance (Greg, 2017).

### **Challenges of Broadband Internet Penetration in Nigeria**

Broadband Internet access has become a critical part of socio-economic prosperity. However, only six in 100 inhabitants have access to broadband in developing countries. This limited access is driven predominately by subscriptions in urban areas (Zheleva, Schmitt, Vigil & Belding, 2015). Also, the right of way charges and multiple taxations by different tiers of government have been acknowledged by industry experts as the greatest obstacle to fibre broadband infrastructure in Nigeria. Nevertheless, solutions have to be found too for the insecurity of telecommunications infrastructure across the country. Telecommunications infrastructures have often become economic vandals, which do not bode well for broadband deployment in Nigeria. Another related challenge to broadband development in Nigeria is the poor electrical power grid (Babatunde, 2018).

However, since the Provision of the Internet is critical for innovation, economics, and social well-being, broadband deliveries in various regions are therefore increasingly taking into consideration of satellite broadband options to bridge the digital divide (ITU, 2012). Therefore, there is the need for NigComSat-1R to utilise better alternative platforms for the deployment of its services to members of the public especially, rural areas in Nigeria.

### **Challenges of NIGCOMSAT-1R Nigeria**

The Nigerian communication satellite-1R does not currently enjoy the desired patronage despite its huge potentials and its large area of coverage (Dayo Oketola, 2016). In the same light, Madaki (2020) discovered that the satellite, despite its enormous potentials and its wide footprint, has been underutilised even by the government and its sister agencies in the same mother ministry of Communications and digital Economy in Nigeria. He identified a lack of backup satellites for redundancy, a lack of good legislation / regulatory policy to enforce its

usage, and a lack of suitable infrastructural platforms to deploy its services to the general public, among others, as the major challenges of the satellite.

#### **Collaborated Efforts / Partnerships of NIGCOMSAT**

In recognition of the need for a suitable platform to deploy the services of NigComSat-1R to its coverage areas especially, members of the public in Nigeria, the management of Nigerian Communications Satellite (NIGCOMSAT) Limited has made several collaborative efforts and partnerships with several organisations to make the services of NigComSat-1R accessible and affordable to Nigerians. Notable among them is signing a Memorandum of Understanding between the management of NIGCOMSAT Limited and the Nigeria Governor's Forum on Wednesday, February 10, 2016. The National Health Insurance Scheme (NHIS) partnered with the Nigerian Communications Satellite (NIGCOMSAT) to equip its soon-to-be established 10,000 Primary Healthcare Centres (PHCs) across the electoral wards of the country with communication facilities on 7<sup>th</sup> June 2016. In the same light, on 31<sup>st</sup> January 2018, NIGCOMSAT partner with NSE on the provision of information technology infrastructure and many other essential projects.

Also, a delegation from the Government of United Kingdom through its agency, the Department for International Development (DFID) has met with Management of the NIGCOMSAT Ltd on 24<sup>th</sup> October 2018 to initiate the process of developing the multi-country promotion of sustainable digital inclusion, which is to add value to Nigeria's socio-economic development and provide affordable, accessible, safe and secure Internet connectivity to the unserved and the underserved in rural communities in the country. On 31<sup>st</sup> October 2018, The Nigerian Communications Satellite (NIGCOMSAT) Limited offered to work with Internet Service Providers and other stakeholders in the country to extend Internet connectivity to rural areas. Speaking at a strategic business interactive session organised in partnership with the Association of Telecommunications Companies of Nigeria (ATCON) in Lagos.

#### **NIGCOMSAT partner with NIPOST**

Oghenevwede (2017) quoted Mr. Stephen Kwande, who said, "In a bid to further expand the broadband penetration in the country, the Nigerian Communications Satellite (NIGCOMSAT) Limited and the Nigerian Postal Services (NIPOST) have set in motion effort to ensure that broadband penetration in the country is achieved through the deployment of NigComSat-1R services while using the NIPOST infrastructure all over the country". Mr. Kwande said that the collaboration is expected to enhance the Federal government's inclusive services such as cash-on-point, cash-based disbursement in remote areas in the six geo-political zones of the country. He added that NIGCOMSAT is expected to provide communication links, especially to the underserved areas where broadband penetration can be deepened, adding that it is estimated every month, over N2 Billion is expected to be disbursed using NIPOST Platforms all over the country to achieve this purpose (Oghenevwede Ohwovoriole, 2017).



## **Justification**

From the available literature analysed above, it is evidence that NigComSat-1R has the potentials to make broadband Internet access available to members of the public irrespective of the geographical locations in Nigeria and that the management of NIGCOMSAT is equal to the task to deploy the services of the satellite to Nigerian, African countries and some part of Asia and Europe. However, despite all the collaborative efforts put in place by NIGCOMSAT to stem the tide, the contribution of satellite to Broadband penetration in Nigeria is below expectations. Johnson (2018) listed the top 10 best Internet providers in Nigeria, which include: Globacom, MTN Nigeria, 9Mobil, Smile Communications Nigeria, Swift, Spectranet, IPNX Nigeria, Netcom Africa, Cyberspace, and Cobranet Nigeria. In the same light, the top five (5) 4G LTE Broadband providers in Nigeria were Spectranet, Swift Networks Limited, Smile Communications Nigeria, IPNX Nigeria, and Glo Nigeria (Gadgets & Tech, 2019). However, since NigComSat-1R did not make a list, it shows that the satellite is still lacking in deepening Broadband penetration in Nigeria. The executive vice-chairman of the Nigerian Communications Commission (NCC) recently this year said the entire Broadband penetration in Nigeria stands at 33% with the ambitious efforts of mobile networks service providers, especially, Airtel which accounted for the 3% above 30% Broadband target of 2018.

However, if NigComSat-1R is not mentioned among top Broadband providers in Nigeria despite its potentials, capacity, and collaborative efforts of its managers then, there is the need for management of NIGCOMSAT to look towards collaborating with public libraries as an alternative platform to best deploy the services of the satellite to members of the public in Nigeria. The proposed collaboration with the public libraries will yield the required result since public libraries are established to provide services to the members of the public without any restriction, and they are popular and known in that regard, deploying NigComSat-1R services to the existing public libraries across the country will be like adding flavour to the services of the libraries which in turn, will attract more people to the libraries, encourage state governors and council chairpersons to establish more public libraries in their domain and rural communities thereby indirectly making the members of the public access and use the services of NigComSat-1R to deepen broadband penetration in Nigeria further.

## **Proposed Areas of Collaboration of NIGCOMSAT with Public Libraries**

The management of NIGCOMSAT Limited should revisit their partnership agreement with the Nigeria Governors Forum and strengthen the MoU since it includes broadband penetration in states with a concentration on E-learning, among other things which can be enhanced by the public library. The state governors, in collaboration with their local government area council chairmen, should ensure the establishment of public libraries at least three in each of the 774 local government area councils of Nigeria to be used as alternative platforms for NigComSat-1R to deploy its services to the entire members of the public in Nigeria. The utilisation of the public library's platforms for deployment of NigComSat-1R services will go a long way to improve the services of public libraries, thereby making it attractive and more useful

for the members of the public and, by extension, it will enhance further deepening of Broadband Internet penetration in Nigeria.

### **Major Findings**

1. The study finds out that despite the huge potentials of NigComSat-1R to further increase Broadband Internet penetration in Nigeria, the satellite is yet to deploy its full potentials to members of the public in Nigeria especially, people living in rural areas. This may be due to challenges of funds to expand its services, inadequate infrastructural platforms to deploy its services to members of the public, the inability of the management of NIGCOMSAT to vigorously pursue the collaborations, and MoUs signed with other companies, business organisations, and government agencies amongst other reasons.
2. The study shows that a public library is an open and popular information centre established by the government to provide free access to information to satisfy the needs of entire public members.
3. The services of both the Public library and NigComSat-1R are meant to satisfy the information needs of the entire public members. Hence, collaboration between them will improve their services as each will be playing a complementary role to each other to attract more patronage.
4. The study identified that 316 existing functional public libraries are widely spread across all the cities and major towns in Nigeria, making it a better alternative platform for NIGCOMSAT to adopt and utilise for the deployment of NigComSat-1R services to Nigerians.
5. The proposed collaboration between NIGCOMSAT Limited and the Public library will lead to the establishment of more public libraries to cut across all the 774 local government area councils and many rural areas in Nigeria.
6. The collaboration will expose large public members to subscribe to the use of Broadband Internet access provided by NigComSat-1R.

### **Conclusion**

The proposed collaboration between NIGCOMSAT limited and the Public library will be a win-win partnership as both organisations will be complementing the services of one another. While the public libraries will be benefiting from the Broadband Internet access of NigComSat-1R to improve and facilitate her services to the users effectively, NigComSat-1R will equally enjoy a large number of patronages from members of the public that will be attracted to the libraries. The more people visit the library and use the Broadband Internet access provided by the satellite; the more Nigeria will experience a significant increase in its Broadband penetration. This makes public libraries to be the best alternative platforms that should be adopted and used for the deployment of NigComSat-1R services to general members of the public in Nigeria. Therefore, the best way for NIGCOMSAT limited can deploy the full potentials of NigComSat-

1R services to Nigerians is to partner with the public library and use its platforms for the deployment of NigComSat-1R services to the entire members of the public in Nigeria.

### Recommendation

1. NIGCOMSAT limited should give serious consideration to deploying the services of NigComSat-1R through Public Library platforms
2. NIGCOMSAT limited should pursue her collaborative agreement with the Nigeria Governors Forum with vigour
3. NIGCOMSAT limited should as well collaborate with Local Government area council chairmen and encourage them to establish more public libraries in rural areas under their area council to have access to more platforms of public libraries.

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