

Limitations of Cable TV Transmission

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Abstract: In this paper, the challenges and limitations of cable television transmission in Nigeria was investigated with further emphasis on the possible ways of overcoming these shortfalls. Coaxial Cables as a guided wave component transmits television programmes to consumers via radio frequency (RF) signals. However, in more recent systems fibre optic cables use light pulses to modulate and transmit information signals. The challenges/limitations of cable television transmission in Nigeria includes but not limited to: Damage to existing fibre infrastructure, poor National infrastructure, interconnection debts, Call masking and call refilling, delineated telecoms infrastructure, weak monitoring and evaluation of infrastructure projects to mention a few. From the research, this paper therefore suggest the following possible ways of remediating these challenges. 1 Reallocating the C-band spectrum for mobile use in Nigeria. 2 The Nigeria Communication Commission (NCC) should actively pursue the implementation of Active Infrastructure Sharing as an alternative to reduce the cost of network deployment. 3 Government should protect existing fibre infrastructure and build adequate national infrastructure. 4 Government through NCC, should monitor and sanction telecoms operators who fail to carry out their universal service obligations as contained in the Licence Documents. The paper therefore concludes that; notwithstanding the estimated short-fall, there are plans for only limited release of spectrum, and it is expected that the short-fall will be greatest in urban areas. High frequency spectrum would be best placed to serve this need.

Keywords: Cable Television, Network infrastructure, C-band, spectrum, optical fiber.

I. Introduction

Cable television is a system of delivering television programmes to consumers via radio frequency (RF) signals transmitted through coaxial cables, or in more recent systems, light pulses through fibre-optic cables (GSMA, 2015). Mobile operators will need to expand capacity to cater for this demand while more efficient use of the current spectrum can deliver some of the capacity. The rest is likely to depend on reallocating spectrum to mobile use. Onipede, K. (2010) posits that C-band spectrum (3.4-4.2GHz) appears to be well suited to provide additional capacity in urban areas, and could help alleviate this expected spectrum scarcity. Recall that, Africa uses a significant proportion of C-band spectrum to provide various satellite-based services, including TV distribution. Thus, terrestrial TV is distributed to broadcast towers using C-band. TV networks and mobile operators are likely to have earth stations operating in C-band, and these are used as hubs for TV contribution, distribution, and global connectivity.

Particularly in Nigeria, the Federal Government has made some initiatives over the years to grow Cable television transmission including ICT infrastructure (Oxford Business Group, 2019.). These include licensing, undersea Cable Licensing, Metropolitan Fibre Cable Network, National Carrier, National Long Distance Communications, Private Network Links, and Open Access Fibre Infrastructure Network (INFRACO) licence. Similarly, the federal government also initiated Wire Nigeria (WiN) project, and the State Accelerated Broadband Initiative (SABI). National Policy and Strategy Documents- Vision 2020, Nigerian National ICT for Development (ICT 4D), Nigeria ICT Roadmap 2017– 2020, ICT Sector Policy Nigeria 2012, The National Broadband Plan (2013-2018), The Universal Service Provision Fund (USPF), National Information Technology Development (NITD) Fund, National Digital Economy Policy and Strategy Document 2020-2030 and Nigerian National Broadband Plan 2020-2025.

II. Problem Statement

The essence of professional bodies/policy makers' setup is to ensure smooth cable television transmission in Nigeria. However, there are several challenges and limitations that are rocking cable television transmission. It is on this premise that this paper considers some of these challenges and limitations. The challenges include but not limited to Damage to existing fibre infrastructure, Poor National Infrastructure, Interconnect Debts, Call masking and Call Refilling, Increased Collocation and Infrastructure Sharing. Ongoing challenge of Delineating Telecoms Infrastructure, Proprietary focus of mobile network infrastructure's (MNOs) in Infrastructure Roll Out, Internal Security, Weak monitoring and evaluation of infrastructure projects, and Contractors Inadequate Funding to finance ICT development in Nigeria (Akhalmeh, P. and Ohiokha, F 2013).

Likewise, in the study of Awolaye, et al, (2018), it was noted that the menace of infrastructure deficit leveraging public-private partnership in Nigeria is as a result of crunch financial reality. Again, the study shows that although Government had done well in its efforts, these infrastructure deficit continue to produce socioeconomic challenges that constitute negative influences to the technological growth in Nigeria (The Nation, 2019).

III. Challenges and Limitations of Cable Television Transmission in Nigeria

Despite the effort and initiatives of the Federal Government over the years to grow cable television transmission in Nigeria, as discussed in the background of this paper, the Nigeria Cable Television Transmission is still faced with some challenges and limitations. According to Adegbite (2015), the challenges of cable television transmission in Nigeria include Damage to existing fibre infrastructure-which could be as a result of cable theft; road works and other operations. The limited and poor National Infrastructure-which include lack of reliable, clean electricity supply limits support for cable TV transmission, making it difficult to reach certain part of the country. Constrained investment in the industry and limited existing backbone infrastructure inhibit further expansion of ICT Technology (Oju, O. and Onyebuka, C 2016). Interconnect Debts-which is the current interconnect debts in the Industry owed to the MNOs and the Collocation Companies which is estimated at over N30b. This has reduced the growth of better networks and further investment in infrastructure (African Development Bank Group, 2014). Although the Commission has often intervened in the manner, the ongoing indebtedness has been a ban on cable TV growth. Call masking and Call Refilling; Increased Collocation and Infrastructure Sharing, Ongoing challenge of Delineating Telecoms Infrastructure as, Proprietary Focus of MNOs in Infrastructure Roll Out, Internal Security, Weak monitoring and evaluation of infrastructure projects, and Contractors Inadequate Funding to finance ICT development in Nigeria. Likewise, in the study of Awolaye, et al, (2018), he noted that the menace of infrastructure deficit leveraging public-private partnership in Nigeria is as a result of crunch financial reality. Again, the study showed that although Government had done well in its efforts in the past, these infrastructure deficits continue to produce socioeconomic challenges that constituted negative influences on the technological growth in Nigeria. In addition, the Nigerian government has strict regulations on the content that can be broadcasted on cable TV, which can also limit programming options available to viewers.

Apart from the above, other challenges facing Cable Television Transmission in Nigeria, according to GSMA Report (2015) include the following: Price Wars- Efforts by the MNOs, Civil Society Groups and other MDAs. Extant literature have it that retail prices have been driven down by lifting or amending the Regulator's voice and data price floors, thereby pleasing the political class and their constituents, but leaving scant profits for the massive investments required to rollout broadband networks. Piracy is yet another challenging area faced by cable TV providers, it has the tendency to negatively impact the revenue of providers. Cable TV services can be expensive for many consumers in Nigeria, this can make it difficult for providers to expand their customer base. Cable TV providers in Nigeria face competition from other forms of media, such as satellite TV and streaming services which can make it difficult for them to attract and retain customers.

Right of Way Permits; The long delays in processing right of way permits as well as their arbitrary cost models have resulted in the prohibitively high costs of leasing transmission infrastructure.

IV. Solution on the Way Forward

Suggesting the way forward to getting out of the rid rocking the smooth transmission of cable television in Nigeria will not be complete without first considering reallocating the C-band spectrum to mobile use in Nigeria (GSMA, 2015). Even though, there are costs that the current C-band users may incur as a result of spectrum reallocation, the benefits are more compared to the costs. For instance, certain fixed satellite services currently relying on C-band spectrum would need to be moved to alternate means of delivery, e.g. other frequency bands allocated to satellite or fixed/terrestrial infrastructure. For the satellite applications that will continue to use C-band spectrum after reallocation, there might be costs related to preventing possible interference from mobile networks operating in C-band. Even though, there may be additional costs arising from a potential decrease in the quality of services and applications of currently used C-band spectrum. Most importantly, the reallocation of C-band spectrum to mobile services is likely to exert two additional effects. First, additional economic activity; the use of C-band spectrum would lead to higher productivity in the mobile sector (Foster, & Pushak, (2011), Hodrab, Maitah and Lubos, 2016). This will ensure the mobile sector is able to use fewer resources to produce a given level of output. Secondly, the freed up resources could then be used by other sectors in the economy to generate economic activity, thereby creating a multiplier effect (Hodrab, Maitah & Lubos, 2016). Higher quality of service for mobile broadband services; by facilitating the flow of information via the use of C-band, improved quality of mobile broadband services encourages the creation of new businesses (Awolaye, et al 2018). Although, this work does not provide a quantitative estimation of analysis, it is important these effects are recognized. Government should protect existing fibre infrastructure and

build adequate national infrastructure. In addition, Government through the NCC should monitor and sanction telecoms operators who fail to carry out their universal service obligations as contained in their Licence Documents. The Nigeria Communication Commission (NCC) should actively pursue the implementation of Active Infrastructure Sharing that would be an alternative to lower the cost of network deployment. This will cut down the cost of building and maintaining the network infrastructure.

The Benefits of Reallocating the C-Band Spectrum to Mobile Use in Nigeria

It is very imperative to note that reallocating the C-band spectrum to mobile use in Nigeria will be of immense benefit to the effective functioning of cable television transmission in Nigeria.

Based on APAC report, we begin by asking two questions regarding the demand and supply situation for spectrum in 2025. Will there be need for additional spectrum for the mobile sector? If yes, what are the likely benefits to mobile operators from reallocation? The answer to the first depends on the future levels of demand for mobile services. There is much evidence that there will be a shortfall in the supply of spectrum available for mobile use. The rise in demand for video and data services on mobile devices (such as laptops, tablets and smart phones) will increase the need for additional spectrum. On the demand-side, Cisco projects that mobile data traffic will grow 14-fold from 2013 to 2018 in the Middle East and Africa, representing a compound annual growth rate of 70%. Likewise on the supply-side, ITU estimates that Region 1, which includes Europe, the Middle East and Africa, will face a spectrum shortfall of between 779-979 MHz in their “High scenario”.

Again, relocation will trigger the future demand for satellite services currently provided in C-band would therefore be met through a combination of the remaining 400MHz of C-band, by moving its operations to alternate frequency bands such as Ka band and Ku band or by migrating to alternative platforms i.e. fixed and terrestrial networks (Englama & Bamidele 2002). Similarly, by having access to additional C-band spectrum it is believed that mobile operators will be able to meet mobile data demand and serve future mobile users more efficiently, i.e. at lower costs than in the case without access to C-band spectrum (Hodrab, Maitah & Lubos, 2016). This is expected to lead to economic benefits (an increase in social welfare) through the following two channels: An increase in ‘producer surplus’ implied by lower costs, i.e. mobile operators will need less resources to meet the future demand for mobile data. It also implies that scarce capital and labour resources in the economy can be freed up and put to other more productive uses. Hodrab, et al, (2016) opined that if access to C-band spectrum lowers the marginal costs of mobile operators, this would lead to lower prices and higher quantity or quality of services in a competitive market. Thus, this would have further positive effects on social welfare.

More so, even though this paper do not explicitly model the cost of satellite operators moving their operations to alternative bands or platforms as it do not expect these costs to be substantial because: operations in Ku/Ka band and high-bandwidth operations using terrestrial solutions are typically more cost-effective; and satellite operators would have a period of 10 years to move their operations and should therefore be able to do so in the most cost-efficient manner.

V. Conclusion

Cable television transmission is mainly concerned with the delivering of television programming to consumers via radio frequency (RF) signals transmitted through coaxial cables, or in more recent systems, light pulses through fibre-optic cables. It is purely the mainstream of mobile services business which aimed at running effective C-band spectrum to mobile use in Nigeria. But on the contrary, it is challenged and limited by damaging the existing fibre infrastructure, poor national infrastructure, poor telecoms infrastructure which has been the bane of ICT development in the country and a leading cause of deficiencies in the quality of telecommunications services, from broadband penetration to reliability of mobile network services. This infrastructure deficit is preventing many Nigerians from gaining affordable and reliable access to C-Band services. However, with the reallocation of the C-band spectrum to mobile use in Nigeria, it will attract a lot of benefit such as; a shortfall in the supply of spectrum available for mobile use leading to a rise in demand for video and data services on mobile devices like laptops, tablets and smart phones, which shall increase the need for additional spectrum. Also, mobile operators will be able to meet mobile data demand and serve future mobile users more efficiently.

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