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LEGAL FRAMEWORK FOR REGULATING 5G DEPLOYMENT IN NIGERIA: CHALLENGES AND PROSPECTS

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Abstract

The introduction of Fifth Generation (5G) mobile network technology marks a major development in the global shift towards digital progress. This technology brings about faster data transfer speed, and improved connectivity, which are essential for supporting innovative fields such as artificial intelligence, technological innovations and digital governance. In Nigeria, the introduction of 5G technology holds great promise for driving economic development, enhancing the delivery of public services, and contributing to national progress. However, the complexity and importance of 5G infrastructure also bring about important legal, regulatory, security, and health-related issues that require a well-structured and unified regulatory approach. Although Nigeria has existing laws and regulatory bodies overseeing telecommunications, these were mainly developed for earlier mobile network generations and have not been able to fully address the specific needs of 5G technology. This paper uses a doctrinal approach, focusing on the analysis of relevant statutes and regulations. The paper concludes that while Nigeria has a basic legal and Institutional structure for managing telecommunications,

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there are still major areas where the system falls short when it comes to dealing with the technical, security, and economic impacts of 5G technology. To address these challenges, the paper suggests creating specific regulatory tools for 5G, improving coordination between different agencies, increasing efforts to enforce cybersecurity and data protection measures, and developing better ways to inform the public about the benefits and risks of 5G technology.

Keywords: *5G, Artificial Intelligence, Cybercrimes Act, NDPA, Internet of Things*

1.0 INTRODUCTION

Right from its conception, mobile network has refashioned the way activities are carried on, and has since then been on a rapid surge. Recently arising from the rapid development of this transformative and disruptive technology is the need to shift the paradigm from the fourth to fifth generation network, popularly identified as the 5G network. This technology is not merely a development, it represents a notable advancement, introducing substantial applications such as internet of things, virtual reality and medicine into human spheres.[1]5G enhances the functionality of remote works and digital collaboration. Through the technology, remote employers and employee are afforded the opportunity

[1] 'Connecting the future without limits' (*Repsol,* 2024) avaliable at https://www.repsol.com/en/energy-move-forward/innovation/5g-technology/index.cshtml accessed 14 December, 2025.

to hold virtual meetings, share real time data, and cloud sharing, all which could be done smoothly regardless of location.[2]

The evolution of telecommunications in Nigeria is notably responsible for the substantial development of communications across the nation. The industry has evolved from a full-state monopoly through the Nigerian Telecommunications Limited (NITEL) to a liberalized environment driven by the Nigerian Communications Commission Act 2003. Since repealing the former NCC Act, the NCC Act 2003 remains the primary legislation regulating the activities conducted within the telecommunications industry, further establishing the Nigerian Communication Commission to serve as the main body responsible for the implementation and enforcement of the Act.

The deployment of 5G technology is capable of affecting and challenging existing essential rights of individuals. Frequent scandals occurring, particularly in relations to private telecommunication and social media companies have demonstrated how ravenous to data are these private companies. Pertinent it is to say, the infrastructure and supply chains largely responsible for the deployment of 5G are often in the control of these actors operating under authoritarian regimes. Therefore, regulating 5G technology will aim to strengthen rights and foster trust in the digital age.[3] Doing this

[2] TI Partners, 'The Impact of 5G on Digital Transformation' (*Tekedia*, 2024) available at https://www.tekedia.com/future-of-5g-digital-transformation/?srsltid=AfmBOoqM8JpwLNil-KrInJZ9xjpUUChJqgcB6N9eaytLK6MrcITKRrI4 accessed 14 December, 2025.

[3] Oluwaseyi Kolawole Oladele, 'Telecommunications Policy and Regulation in the Era of 5G' (*ResearchGate,* 2023*)* available at https://www.researchgate.net/publication/384661660_Telecommunications_Policy_and_Regulation_in_the_Era_of_5G accessed 14 December, 2025.

will in some form give a large extent of control to citizens over their persons, while encouraging continued economic growth.[4]

2.0. CONCEPTUAL AND THEORETICAL FRAMEWORK

In order to properly grasp and appreciate the centerpin and mainstream of this work, it is imperative to evaluate and conceptualised the key terms which are prominent to the understanding of this work. Therefore, this section seeks to examine the key terms of this work by defining key terms and other terms which the concept revolves around.

2.1. Meaning and Nature of 5G Technology

5G technology is a new technology that was launched after 1G, 2G, 3G and 4G technology by telecommunication companies. It makes use of some new networks which are designed to connect everybody, and everything, to the inclusion of machines and objects.[5] While 5G runs on the same frequency as previous networks, improvement in speed, latency, and bandwidth enables 5G to function as twice faster, with shorter download and upload time, stronger connectivity and reach, and significant reliability.[6]

Just like other emerging technologies like artificial intelligence, machine learning, and Internet of Things, 5G technology is a disruptive tool capable of substantially changing how humans interact with social media, the community, and how they make use of information.[7] Specifically due to its

[4] Ibid.
[5] 'Everything you need to know about 5G.' (Qualcomm) available at https://www.qualcomm.com/5g/what-is-5g accessed 15 December, 2025.
[6] Mesh Flinders, Ian Smalley, 'What is 5G?' (IBM) available at https://www.ibm.com/think/topics/5g accessed 15 December, 2025.
[7] Ibid.

high speed, 5G is capable of making impact on things related to AVs[8], gaming system, video streaming etc.

Arising from the preceding analysis is the need to evaluate the features distinguishing 5G technology to the fourth generation 4G technology. First, is in relation to the time spent on uploading and downloading. While 4G technology in its overall capability reaches 20 Mbps to 100 Mbps, 5G technology presents a massive improvement in its overall speed, with 5G technology having the ideal capability of reaching 1Gbps to 3Gbps.[9] Additionally, through smart-cell, 5G technology increases network cell density and network capacity. While 4G promised speed and efficiency, 5G technology emerged to cover the areas where its predecessor fell short by increasing its density to accommodate more users and provide a wider accessibility to connection.[10] Similarly, previous generations network like 4G do not have the capability to connect numerous devices, 5G technology improved on this through its ability to transmit to several devices intelligently with high precision which reduces its noise and gives it the ability to connect more devices without frequent lags or restraints.[11]

[8] Autonomous vehicles or self-driving cars are vehicles that integrate the use of artificial intelligence and computer system in functioning requiring little to no human efforts in functioning well. They rely on sophisticated technologies including sensor, artificial intelligence and software in analysing the situation of the environment to make decisions and control themselves.

[9] Michaela Goss, Deanna Darah, '5G vs. 4G: Learn the key differences between them' (*Techtarget*, 2025) available at https://www.techtarget.com/searchnetworking/feature/A-deep-dive-into-the-differences-between-4G-and-5G-networks accessed 15 December, 2025.

[10] Ibid.

[11] '5G vs 4G' (Ericsson) available at https://www.ericsson.com/en/5g/5g-vs-4g accessed 15 December, 2025.

2.2. Concept of Telecommunications Regulation

Telecommunications regulation are the rules, and regulatory guidelines put in place to regulate activities conducted within the telecommunications sector, which is usually implemented and enforced by a statutory independent body which has been specifically granted the power to enforce such regulations.[12]

The continued transformation of telecommunications, influenced by rapid development of technological advancements, has necessitated the need for putting regulations in place to accommodate conduct within the telecommunications sector. Asides that, the liberalisation of the telecommunications contingent upon the enactment of the NCC Act which has duly redefined the sector from a state monopoly to a liberalised industry is another factor.[13] Therefore, it is only ideal to hold that regulation of these activities goes beyond an option, it becomes a necessity in order to ensure proper competition in the industry, while ensuring the growth of the sector as well as promoting the best interests of the citizens.

[12] In Nigeria, the Nigerian Communication Commission (NCC), which has been established by the NCC Act 2003 is the primary independent body responsible for overseeing activities conducted within the telecommunications industry. They have been granted the powers to enforce and implement the Act, as well have been given the power to release guidelines relating to the telecom industry.

[13] OECD, 'Telecommunications Regulations: Institutional structures and responsibilities' (2000) *OECD Digital Economy Papers*, No. 48, OECD Publishing, Paris pg. 6 available at http://dx.doi.org/10.1787/236438205724 accessed 15 December, 2025.

2.3. ROLE OF LAW IN REGULATING EMERGING TECHNOLOGIES

Every technological advancement, regardless of its sophistication is a double-edged sword presenting both positive and negative impacts on the society. While a technology like artificial intelligence provides efficiency, ease, convenience, it poses challenges relating to ethical use, breach of data privacy, misinformation and possible algorithmic biases. The internet in its entirety, while it provides access to wide range of information, suffers from pirated copies of music, image, videos etc, similarly, illegal download, explicit and harmful content. Narrowing it all down to telecommunications sector, while it has made investments, business, trade, communication effortless, it suffers from cyber threats and notably, breach of privacy.

Furthering from the foregoing analysis, it occurs that the law is not meant to just exist in vacuo or merely theoretical, it serves to regulate and govern the use of emerging technologies and ensure their operations is in line with a manner not threatening to the rights of individuals, and one not detrimental to the nation's global economic standing.

3.0 LEGAL AND INSTITUTIONAL FRAMEWORK FOR THE REGULATION OF 5G IN NIGERIA

It is, however, apparent that deployment and operation of 5G in Nigeria is founded on a complex legal hierarchy starting from the Constitution to particular subsidiary legislation and regulatory guidelines setting out the powers of the Federal Government prescribing the mandates of various regulatory agencies and putting on operators what their compliance obligations are:

3.1 Constitutional Basis of Regulation in Telecommunications

The legal framework for regulating telecommunications in Nigeria is primarily traced to the Constitution of the Federal Republic of Nigeria 1999 (as amended). The Constitution provides for a federal system through which control of such vital communication infrastructure is vested in the federal government in order to ensure cohesion and the security of the Nigerian state. Acting by virtue of Section 4, the National Assembly has been empowered to make laws for the peace, order, and good government of the Federation concerning any matter included in the Exclusive Legislative List. Indeed, Item 46 of the Exclusive Legislative List (Part I, Second Schedule) places "Posts, telegraphs and telephones" categorically as matters within the exclusive legislative list, putting in the hands of the Federal Government.[14] This constitutional provision provides the legal basis that prevents state governments from legislating on the substantive regulation of telecommunications services, thereby assuring uniformity at a national threshold in the deployment of 5G and not disparate state regulatory regimes.

However, it begets a conflict point between federal regulatory powers and state control over land use. Whereas the Federal Government licenses the spectrum and services, the state governments control physical planning and land use by virtue of the Land Use Act 1978. This results in situations where there are often regulatory tussles between RoW and base station siting. The Supreme Court has once interpreted this area of conflict in Attorney General of Lagos State v Attorney General of the Federation,[15] where the

[14] Constitution of the Federal Republic of Nigeria 1999 (as amended), Second Schedule, Part I, Item 46.
[15] Attorney General of Lagos State v Attorney General of the Federation [2003] 12 NWLR (Pt 833) 1.

limits of federal power in physical planning were contested. The particular manifestation of the constitutional tension in the context of 5G is when the agencies of states, such as the Lagos State Infrastructure Maintenance and Regulatory Agency, make levies or other demands for planning permits which may be inconsistent with the federal licenses that the NCC granted, thereby amounting to a double regulatory burden on operators.

3.2 Statutory Framework

The statutory framework for 5G is multifaceted, with both sector-specific laws and broader compliance statutes.

3.2.1 Nigerian Communications Act, NCA 2003

The NCA 2003 is the principal legislation regulating telecommunications. It establishes the Nigerian Communications Commission, NCC, and confers the power on it as a regulator. Most relevant to the approval of 5G is Section 121 of the Act, which states that the power to plan, assign, license, and regulate the frequency spectrum for use in the communications sector is exclusively vested with the NCC.[16] What this section has provided is a legal backup for the auctioning of the 3.5GHz spectrum band. Also, Section 135 makes it incumbent that relevant approvals on infrastructure rollout be obtained by operators through a balancing act of federal licensing with local planning authority regulations.[17] However, the exclusivity of the powers of the NCC alone has always been subjected to challenge in courts. Recent judicial interpretations have shown that while it regulates the technical areas, this is shared concurrently with the FCCPC on market

[16] Nigerian Communications Act 2003, s 121.
[17] ibid s 135.

competition, viewed through the expanded interpretation of the Federal Competition and Consumer Protection Act 2018.[18]

3.2.2 Cybercrimes (Prohibition, Prevention, etc.) Act 2015

Owing to the fact that 5G networks will equally carry critical services such as remote surgery and autonomous driving, their security becomes paramount. Section 3 of the Cybercrimes Act empowers the President, on the recommendation of the National Security Adviser, to designate certain computer systems and networks as Critical National Information Infrastructure (CNII).[19] Resultantly, 5G infrastructure enjoys heightened legal protection. Section 5 of the Act prescribes severe penalties for offences against such infrastructure, ranging from a minimum of 10 years imprisonment to a death sentence if the sabotage results in death.[20] This Act therefore provides the prosecutorial leverage required to deter vandalism and cyber-attacks against the dense network of 5G small cells and core networks.

3.2.3 The Nigerian Data Protection Act; NDPA 2023

The NDPA 2023 is principal legislation for data privacy, replacing the former NDPR 2019. The Act introduces categorization of "Data Controllers of Major Importance" under Section 65.[21] Telecommunication operators fall squarely within this category on account of handling immense volumes of personal data and geolocation traffic through 5G networks. To that effect, Section 5 requires their registration with the Nigeria Data Protection

[18] See Federal Competition and Consumer Protection Commission v MTN Nigeria Communications Plc (FHC/ABJ/CS/123/2023) (unreported) where the court affirmed the FCCPC's concurrent jurisdiction.
[19] ibid s 5.
[20] Cybercrimes (Prohibition, Prevention, etc.) Act 2015, s 3.
[21] Nigeria Data Protection Act 2023, s 65.

Commission, NDPC, and prescribes stricter compliance obligations, including the designation of a Data Protection Officer and the conduct of mandatory audits of data protection.[22] This statute is essential to regulating 5G because it institutes standards for cross-border transfers of data, which happen rather frequently in 5G cloud-based network architecture.

3.3 Regulating Institutions

These range from sectoral regulators to cross-sectoral agencies, each with various interlocking mandates.

3.3.1 Nigerian Communications Commission (NCC)

NCC is the independent regulator for the telecommunications industry and a creation of Section 3 of the NCA 2003. As it pertains to 5G, it has mandates on spectrum auctioning, unified access service licenses, and type approval for 5G equipment. The Commission is also to set and enforce QoS key performance indicators. It is also an arbiter in cases of disputes arising among operators over interconnectivity and infrastructure sharing-areas that are key to reducing the cost of deploying 5G.

3.3.2 National Frequency Management Council (NFMC)

The NFMC is the apex body for spectrum management policy, established under Section 27 of the NCA 2003. Chaired by the Minister of Communications, Innovation and Digital Economy, it has a different mandate from the operational role of the NCC. The commission would face the challenge of assigning spectrum to different commercial operators, while the NFMC coordinates the bulk allocation across different sectors like aviation, broadcast, defence, and telecommunications in order to avoid harmful interference. This is very important at this point when the

[22] ibid s 5(d).

deployment of 5G is being done in the C-band-3.5GHz-because this band falls next to those used for aviation altimeters, hence high-level policy coordination will be required to ensure safety.

3.3.3 National Information Technology Development Agency (NITDA)

NITDA's mandate, as derived from the NITDA Act 2007, is on developmental and non-telecoms matters of the digital economy. It oversees the software, IT hardware, and digital services on top of the 5G network.[23] The NITDA will execute the National Digital Economy Policy and Strategy and drive the uptake of 5G use cases on e-government and smart cities. Further to this, it has issued the Guidelines for Nigerian Content Development in ICT, which shall guarantee that the 5G value chain accelerates the cause of indigenous technologies, not just total reliance on foreign vendors.

4.0 REGULATORY PROCESSES FOR 5G DEPLOYMENT IN NIGERIA

The Nigerian legal system has established an intricate structure that enables the regulation of the application of 5G technology. The legal framework of documents hinges on the Nigerian Communication Act (NCA) of 2003, which empowers the Nigerian Communication Commission (NCC), together with other environment and data protection laws. To set up the 5G telecommunication technology, there is the need to provide infrastructure

[23] National Environmental (Standards for Telecommunications and Broadcast Facilities) Regulations 2011, reg 5(4).

that comprises of acquiring spectrum as well as addressing the health and safety parameters of regulation.

4.1 Spectrum Allocation and Licensing Procedures

The deployment of the 5G Technology depends on the allocation of particular frequency bands; in most instances, the 3.5GHz (C-Band) band will be the most appropriate for balance coverage and capacity. The NCC is also legally bound by Section 121 of the Nigerian Communications Act of 2003 to administer and control the allocation of funds from the frequency spectrum of Nigeria.[24] In the case of 5G, the Commission adopted an auction method of selection. This was reinforced by the National Policy on Fifth Generation (5G) Networks for Nigeria's Digital Economy, which was approved by the Federal Executive Council in September 2021.[25]

The NCC, in line with its policy guidelines, issued an Information Memorandum (IM), outlining the terms and conditions for the auction of the 3.5GHz spectrum. The terms and conditions for the allocation of the spectrum involve the bidders having the licence or purchasing the Unified Access Service License (UASL) upon winning the allocation of a spectrum lot.[26] The licensing and terms for the usage of the 5G spectrum currently

[24] Nigerian Communications Act 2003, s 121. Available at https://ncc.gov.ng/accessible/documents/128-nigerian-communications-act-2003/file> accessed 18 December 2025.
[25] Federal Ministry of Communications and Digital Economy, 'National Policy on Fifth Generation (5G) Networks for Nigeria's Digital Economy' (2021). Available at https://nitda.gov.ng/wp-content/uploads/2022/01/NATIONAL-POLICY-ON-5G-ISBN_compressed-1.pdf accessed 18 December 2025.
[26] Nigerian Communications Commission, 'Information Memorandum on 3.5 GHz Spectrum Auction' (NCC, 2021). Available at https://www.ncc.gov.ng/media-centre/public-notices/1083-information-memorandum-on-3-5-ghz-spectrum-auction accessed 18 December 2025.

stand at a period of 10 years, and the licence can be renewed subject to terms and conditions that involve the development of selected areas.

4.2 Infrastructure implementation and Right of Way Approvals

The major regulatory barrier to the deployment of 5G networks means that a denser deployment of Base Stations is required than in the case of the 4G network and is permitted under the Right of Way (RoW) factors. Section 135 of the NCA 2003 gives the licensees the right to install the necessary facilities for the deployment of the wireless networks.[27]

There has historically been a backlog because of the different RoW rates in the 36 states of Nigeria. To correct the backlog, the National Economic Council has adopted a simplified rate of ₦145 linear meter for broadband infrastructure.[28] However, there are some areas that apply the blended rate, and other states express more discrimination than others in their application. The authority in the Federal Capital Territory considerably waived the RoW tariffs as high as ₦14.50 per meter in 2022 in order to make the construction of infrastructure as quick as possible.[29] The Guidelines on Collocation and Infrastructure Sharing of NCC also recommend, and this is as well a necessity in 5G, which is a very costly technology, that there be no unnecessary replication of passive

[27] Nigerian Communications Act 2003, s 135.
[28] Abdur-Raheem Adebayo Shittu, 'Harmonization of Right of Way Charges and Implementation Strategies' (Federal Ministry of Communications, 2017). Available at https://fmcide.gov.ng/wp-content/uploads/2023/11/harmonization_of_right_of_way.pdf accessed 18 December 2025.
[29] 'Nigeria cuts right of way fee 90%' African Wireless Communications (15 December 2022). Available at https://www.africanwirelesscomms.com/news-details?itemid=5396 accessed 18 December 2025.

infrastructure such as masts and ducts that could increase costs and further harm the environment.

4.3 The Environmental Impact Assessment Regulations

Telecommunications facilities are also monitored by the National Environmental Standards and Regulations Enforcement Agency (NESREA). The operators are required to comply with the National Environmental (Standards for Telecommunications and Broadcast Facilities) Regulations, 2011.[30]

Under these regulations, it is mandated that the operator carry out either an Environmental Impact Assessment (EIA) or an Environmental Audit on the location. The key elements of compliance have been outlined in relation to the distance necessary between the facility and residential houses, schools, and hospitals, which is not less than 10 meters from the perimeter wall to the base of the mast.[31] NESREA is mandated to close down facilities that fail to comply with these distances or fail to meet the environmental necessities.

4.4 Data Protection and Cybersecurity Compliance

The architecture of the 5G network enables the processing of a significant amount of personal data. This is primarily due to to the ultra-reliable low latency communications, as well as the massive Machine Type Communications, the IoT. And why should one even think about the incredible data processing capacities of the 5G? The obligations of compliance have now shifted since the Nigeria Data Protection Regulation

[30] National Environmental (Standards for Telecommunications and Broadcast Facilities) Regulations, 2011, S.I. No. 11. Available at https://nesrea.gov.ng/wp-content/uploads/2025/05/Standards_for_Telecom_and_Broadcast_Facilities_Regulation-2011.pdf accessed 18 December 2025.
[31] Ibid.

2019 has been turned into a subsidiary legislation by the Nigeria Data Protection Act 2023.[32]

Under the Nigeria Data Protection Act, telecommunication operators are classified as data controllers/processors of prime concern. This means that they must implement technical and organizational measures as a foremost concern to ensure that the relevant data is protected. Moreover, a Data Protection Impact Assessment must be carried out for high-risk data processing. Furthermore, a Data Protection Officer must also be appointed. Moving on, Cybercrimes (Prohibition, Prevention, etc.) Act 2015 also mandates operators to retain traffic data for a period of two years, which is of prime concern in the context of 5G.[33]

4.5 Health and Safety Standards on Electromagnetic Radiation Exposure

The rise of concern in the public with regard to the health implications of Non-Ionizing Radiation (NIR), which comes from 5G towers, is addressed by using tough technical standards. For example, the NCC has adopted guidelines offered by the International Commission on Non-Ionizing Radiation Protection (ICNIRP). The regulatory requirements are supported by the Guidelines on Technical Specifications for the Installation of Telecommunications Masts and Towers, 2009.[34] The maximum permissible

[32] Nigeria Data Protection Act 2023. Available at https://ndpc.gov.ng/Files/Nigeria_Data_Protection_Act_2023.pdf accessed 18 December 2025.

[33] Cybercrimes (Prohibition, Prevention, etc.) Act 2015, s 38.

[34] Nigerian Communications Commission, 'Guidelines on Technical Specifications for the Installation of Telecommunications Masts and Towers' (2009). Available at https://ncc.gov.ng/sites/default/files/2024-11/Documents/Legal-Guidelines_Technical_Specifications_for_the_Installation_of_Telecommunications_Masts_and_Towers.pdf accessed 18 December 2025.

exposure limits have been prescribed by the foregoing guidelines to ensure the safety of the people. The NCC has its own compliance monitoring process to ensure that the total radiation emitted by the 5G base stations does not exceed the safety limits prescribed by the ICNIRP. Any firm that is found violating the emission standards will face severe consequences, such as the closure of the violating base station.[35]

5.0. KEY LEGAL AND REGULATORY CHALLENGES

The deployment of the transformative 5G technology poses myriad of legal challenges that require rapt and adequate attention and must be properly navigated. In view of this, this section seeks to examine the various challenges posed by the rapid deployment of 5G technology.

5.1. Legal and Policy Challenges

Until given cognisance to by the legislature, one of the most valid concerns in relations to regulatory framework is the slow pace it adopts in comparison to emerging technologies. Regulations in Nigeria have always struggled to keep up in pace with emerging technologies. It becomes an even more complication when it is a sophisticated technology like the notorious artificial intelligence and the fulcrum of discourse in this work, the 5G technology.

While the NCC Act 2003 was most needed as at the time it was enacted, it is expedient to posit that 22 years after its enactment, it no longer dances to the tune of modern realities.[36] Since the enactment of the Act in 2003,

[35] Ibid.
[36] Folake Balogun, 'Why Nigeria's telecom law needs a 5G/AI era upgrade' *BusinessDay Ng* (2025)

telephone networks have dramatically evolved from 2G to 5G, with the snippet of 6G starting to establish the foundation to give it a shape. In spite of all this, the NCC Act has only found its peace through silence over these emerging technologies.[37] Adding to that, the lawmakers have also not deemed it as a necessity to address the issues surrounding the 5G technology. In light of the silence of the NCC Act, Nigeria has no dedicated legislation regulating these technologies, therefore it is only left to rely on fragmented structured legislation in regulating emerging technologies like the 5G technology.

5.2. Infrastructure and Economic Challenges

While the 5G technology promises a boundless series of benefits and possibilities, it is important to bear in mind that in order to ensure the proper deployment of the technology, substantial infrastructure has to be put in place to ensure an even deployment and functionality of the technology. However, the cost attached to putting this infrastructure in place is not to be undermined. For a country like Nigeria where the poverty rate is devastatingly high[38], it becomes a near impossibility getting the requisite cost in putting these resources in place.

According to the NCC, only about 3 percent of internet users in Nigeria are on 5G network, with 4G being dominant with 44.96 of users, while 2G at

https://businessday.ng/technology/article/why-nigerias-telecom-law-needs-a-5g-ai-era-upgrade/

[37] Ibid.

[38] Sami Tunji, 'Poverty rate among rural Nigerians now 75% – W'Bank' *The Punch* (2025) available at https://punchng.com/poverty-rate-among-rural-nigerians-now-75-wbank/ accessed 16 December, 2025.

43.53per cent goes ahead of 3G at 9.32per cent[39] Further, the International Telecommunication Union (ITU) noted that there is an uneven adoption of 5G technology, with countries of high income earning rate having up to 84% adoption of 5G, while low income countries have roughly 4% adoption rate.[40] This significant gap of adoption is not traced to anything else, but that the higher the income, the higher the ability to put proper resources in place for the proper adoption of 5G. Countries where the income is higher tend to have the bigger tendency of properly adopting the technology compared to countries where the income is low. This, which is clear from the ITU analysis.

5.3. Security and Privacy Concerns

Among the most notable features that distinguish the 5G technology from previous technologies is the capability it has to connect to several devices simultaneously. While this is a monumental opportunity, it is also a double-edged sword. The sheer number of devices 5G connects to increases the risks of cyber threat. In consequence, cyber-attackers are afforded the opportunity to access more points that can serve as potential entry points that can be exploited, with lateral movement through the network enabling a potentially massive impact. This problem is quite complex and becomes an increased complication in industries where downtime costs hundreds of thousands a day and ransomware payments can be in the millions.[41]

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[39] Lucas Ajanaku, '5G sluggish coverage heightens global inequality' The Nation (2025) available at https://thenationonlineng.net/5g-sluggish-coverage-heightens-global-inequality/ accessed 16 December, 2025.

[40] 'Statistics' available at https://www.itu.int/itu-d/reports/statistics/2025/10/15/ff25-mobile-network-coverage/ accessed 16 December, 2025.

[41] Georgia Cooke, '5G Security Challenges and Solutions: A Network Security Vendor's Guide' (*AbiResearch*, 2025) available at https://www.abiresearch.com/blog/5g-security-challenges-and-solutions accessed 16 December, 2025.

Contrarily, data collection is another major challenge for 5G users. Virtually all smartphone applications require the personal information of its users. When this information is gotten by this technology, it creates every iota of doubt over how this information is stored.[42] 5G technology has no physical boundaries, it utilises a cloud-based storage. In future occurrences, it oustrides users of the capacity to control what data is gotten. Arising from the fact that each country has its specific data privacy laws is the challenge of data protection of citizens of other countries.[43]

5.4. Public Perception and Health Concerns

The installation of new radio access infrastructure is a pre-requisite to the deployment of the 5G technology. The installation of this radio base however carries significant health risks which subjects the public into a state of confusion and controversies over the potential health crises of the base on the public.

6.0 PROSPECTS AND OPPORTUNITIES OF 5G REGULATION IN NIGERIA

The advent of 5G technology transcends a generational step, it is poised to be a vital enabler of notable opportunities in the Nigerian digital landscape. It opens up a new world of revolutionary changes across several industries. It is capable of making a complete transformation in the digital evolution. Consequently, this section has been dedicated to examine the several

[42] 'Privacy challenges and security solutions for 5G networks' (*Nokia*) available at https://www.nokia.com/thought-leadership/articles/privacy-challenges-security-solutions-5g-networks/ accessed 16 December, 2025.
[43] Ibid.

prospects and opportunities accompanying the advent of the transformative 5G technology.

6.1. Enhancement of digital economy and innovation

The advent of 5G technology is an unprecedented digital evolution possessing the requisite ability to transform the monument for developing businesses. The 5G technology will not be a mere technological connection, but will affect socio-economic growth which will stimulate growth, development and innovation on businesses. This is due to the fact that the new technological link will make it possible to implement well-known initiatives including smart city, smart-companies and artificial intelligence into several facet of businesses.[44] Further, the increased data transfer speed, and reduced time between the transmission and reception of data grants 5G technology the ability to refashion the role of connections in global society, providing a new foundation for business innovation.[45]

6.2. Promotion of Smart Governance and E-Government

The advent of 5G networks opens a historically unprecedented avenue to the Nigerian Government to transform its processes and interactions with the populace in relation to efficiency. For that reason, frameworks that shape the law and regulation associated with the development of fast-speed networks with low latency are integral to achieving the aspect of 'Smart Governance. 'The technological advancements of 5G is characterised by incremental delivery in public services capable of enhancing the dispensation of governmental functions. 5G being a significant improvement to 4G network has increased the possibilities for digital

[44] Olokundun, M., Ogbari, M., Falola, 'Leveraging 5G network for digital innovation in small and medium enterprises: a conceptual review' (2022) 11 *J Innov Entrep* available at https://doi.org/10.1186/s13731-021-00181-5 accessed 17 December, 2025.
[45] Ibid.

interactions between the government and the citizens. Even in crises like nationwide lockdown, or time of pandemic, the technology facilitates the maintenance of government functions and provision essential services. In light of this, the technology may be seen an asset for a government seeking to maintain resilience, efficiency and responsiveness to citizenry needs.

On top of this, it enhances the development of e-government and reduces bureaucratic processes. Its wide bandwidth facilitates a seamless process in the digitizing all public crucial records such as land, business, and civil vital records, with instant access to all public services offered to all citizens, which in itself can be regarded as improving transparency in the public sector and preventing financial leaks, which stands as one of the primary objectives in The National Policy for Fifth Generation Networks of Nigeria's Digital Economy.[46]

6.3. Improved Service Delivery in Health, Education, and Transport

The regulation of the infrastructure of the 5G network serves as one of the factors rooting for revolution in the provision of social services in the country of Nigeria. The regulation provides a standard quality service with ultra-low latency, thereby creating a positive effect in the medical, education, and transport sectors.

The health sector is also going to prove substantially beneficial with the use of 5G telemedicine. Nigeria lacks doctors to treat patients in rural areas; however, with 5G, the doctor can examine a high-definition video of the patient and continuously track the patient. "Medical traffic" shall be given

[46] Federal Ministry of Communications and Digital Economy, 'National Policy on Fifth Generation (5G) Networks for Nigeria's Digital Economy' (2021) 12. Available at https://fmcide.gov.ng/wp-content/uploads/2023/11/National-policy-on-5G.cdr_.pdf accessed 18 December 2025

priority, and telesurgery shall be enabled.[47] This means the patient shall be operated on by the surgeon's robotic arms because the latency is close to zero. The immediate transmission of huge images (like MRIs) shall improve diagnosis.[48]

For the education sector, 5G technology presents opportunities associated with 5G regulation, which involves substantive learning. The high-speed internet access allows for the application of Virtual Reality and Augmented Reality. This makes students who are in remote locations to effortlessly take part in virtual labs and out-of-class visits.[49] The action reflects the intention of the Federal Government to fill the gap created by the lack of fast internet in education.

6.4. Strengthening Regulatory Capacity and Digital Sovereignty

The advent of the new technology known as 5G technology indicates a paradigm shift in the regulative abilities of the commission in going back to old existing regulation. This is a challenge and opportunity for the Nigerian Communications Commission to enhance technical knowledge.

In considering the prospect of 5G networks being the backbone of infrastructure architecture which is pivotal to the sustainability of the nation as a viable state in the future, cyber sovereignty takes centre stage. Cyber sovereignty can be ascertained to generally fall within the extent and limit

[47] Adeyinka Aderibigbe and others, 'Reviewing the Impact of 5G Technology on Healthcare in African Nations' (2025) 9(2) International Journal of Research and Innovation in Social Science 315.
[48] Md Momtazur Rahman and others, 'The evolving roles and impacts of 5G enabled technologies in healthcare: The world epidemic COVID-19 issues' (2022) 34(4) King Saud University Journal of Computer and Information Sciences 1154.
[49] Agbotiname Lucky Imoize and others, 'Assessing the Prospects and Barriers to 5G Implementation in Nigeria' (2025) 2(1) Global Journal of Engineering and Technology Advances.

of the government's independence in the cyber world with respect to their right to data ownership, preservation of data in the country, and protection of data. The Data Protection Act of 2023 immediately pertains to the matter. Processing of sensitive data in the 5G industries must be done in Nigeria (data localization).[50]

7.0. Conclusion

The advent of 5G goes beyond just a mere step up from 4G network, it represents a global transformation for telecommunications. In Nigeria, it is in the intersection of law, policy, economics, security, and daily human conduct. This work has examined and brought out that 5G brings a whole new level of capacity, ultra-fast response times, and smart network features that can shake up everything from national security to healthcare, transport, fintech, and even how governance and public administration works. For a developing country like Nigeria, the advent of 5G technology will open up new opportunities for everyone as it is an unprecedented chance to boost competitiveness and take charge of Nigeria's global standard in the tech future.

[50] Nigeria Data Protection Act 2023, ss 24-25.