

Disruptive Technology and Regulatory Response: The Nigerian Perspective

Johnson O. Hinmikaiye¹ Oludele Awodele¹ Jide E. T. Akinsola^{2*}

1. Department of Computer Science, School of Computing and Engineering Sciences, Babcock University, Ilesha-Remo, Nigeria

2. Department of Mathematics and Computer Sciences, Faculty of Natural and Applied Sciences, First Technical University, KM 11, Ibadan-Lagos Expressway, Ibadan, Nigeria

* E-mail of the corresponding author: akinsolajet@gmail.com

Abstract

The mobile telecom industry is changing and the competitive landscape for mobile network operators has been disrupted. The industry is shifting from an environment characterized by reliability and scale of networks, to an environment where choice and flexibility of services are more prominent. These have changed the basis of competition and represents the shift from mobile telephony to mobile computing. However, new challenges are assumed to disturb the sustainability of telecommunication companies. Mobile phone companies are likely to be directly affected by rapid mutation occurred in consumers spending habits closely linked to a variety of technological innovation. Hence, this study examined disruptive technology and the Nigerian regulatory response. The study surveyed existing literature to situate this current study within the context of existing evidence. Also, brief articulation of the concept of disruptive technology, its presence in Nigeria and the country's regulatory response as well as reactions thereto. A peep was also taken into the recently released Economic Recovery and Growth Plan, the nation's recovery and growth plan document put together by the Ministry of Budget and Planning, with respect to the technological breakthrough and projections for the country and the sort of regulatory framework required to effectively and successfully deliver on the same. The study concludes with a call for more regulatory activity to balance the competing interests in the society, yet focusing on the benefits such disruptions herald.

Keywords: Disruptive technology, Innovation, Mobile phone, Over-the-top, Technology, Technology regulators, Telecommunication

DOI: 10.7176/CEIS/12-1-06

Publication date: January 31st 2021

1. Introduction

Technology has, in the last two decades in particular, witnessed rapid advancement, with ground-breaking and disruptive innovations which continue to challenge and transform the 'traditional' ways of doing things. This development underscores the concept of Disruptive Technology (Olorundare et al., 2017). The new technologies have made life generally more convenient, easier, cheaper, timely and faster, but often come with resultant risks and consequences such as loss of jobs, reduced revenue and/or annihilation of the affected industries and companies. They also come with certain positives however, such as opening up new business opportunities particularly in services (Iyanda, 2016). Technology affects practically every facet of human life and for this reason, it is important to understand how society and law respond to technological disruptions when they occur. Whilst technology and law have a dynamic feature which makes them evolve with the society, law has been described as an instrument of social engineering. Consequently, as technologies advance, the law correspondingly changes its substance to ensure that the society is not adversely affected by the inevitable social and market frictions that can result from the new technology (Muharam et al., 2020). This check is achieved through passing new legislations and regulatory activism.

2. Disruptive Technology

Any technology that dislodges an established technology by creating a completely new industry is disruptive. Disruptive technology creates new market and reshapes existing ones thereby giving customers and end users the greatest level of access, empowerment, convenience, choice and value. The focal point of disruptive technology is to challenge established business models and radically transform products and services (Evans, 2017). The term "Disruptive Technology", was first introduced by Joseph Bower (Harvard Professor) and Clayton Christensen (a businessman), in 1995 in their article titled-Disruptive Technologies: Catching the Wave. They defined "Disruptive Technologies" as technologies that depart fundamentally from existing ones, usually by being less complicated,

more accessible, and less expensive. They explained that one of the most consistent patterns in business is the failure of leading companies to stay at the top of their industries when technologies or markets change. In order to remain at the top therefore, they must look beyond satisfying small or emerging markets and focus on new technologies that meet the functional demands of mainstream customers (Cheeseman et al., 2020).

The concept was further espoused by Clayton Christensen in his book *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*, published in 1997. The book demonstrates how successful, outstanding companies can do everything "right" and still lose their market leadership or even fail, as new, often unexpected competitors rise and take over the market (Christensen, 1997). Clayton categorized new technology into two: Sustaining and disruptive. Sustaining Technology relies on incremental improvements to an already established technology, whilst disruptive technology lacks refinement, often has performance problems because it is new, appeals to a limited audience and may not yet have a proven practical application. (Brand Genetics, 2013) explained that large corporations are designed to work with sustaining technologies for a number of reasons: they know their market; stay close to their customers; and have a mechanism in place to develop existing technology. Conversely however, they have trouble capitalizing on the potential efficiencies, cost-savings, or new marketing opportunities created by low-margin disruptive technologies.

2.1 Disruptive Technology and The Nigerian Experience

The emergence of disruptive technology is not alien to us. Being part of the global community, Nigerians have experienced some technological disruptions, which have both enhanced the lives of Nigerians as well as caused some frictions between the disrupting technology and the disrupted markets. These frictions have however, also created new market opportunities for other products and services. Some of the industries experiencing disruptions in Nigeria are explain thus.

2.1.1 Telecommunication

In the world of telecommunications, the technological advancement has intruded into the existing state of things. For instance, at the Nigerian International Technology Exhibition and Conference (NITEC, 2016), in a paper titled "Role of disruptive technologies in catapulting the African continents' GDP", the Executive Vice Chairman of the Nigerian Communication Commission (NCC) affirmed that: The word 'disruptive' has been transformed into a beautiful bride whose qualities are being considered strong and positive enough to transform the GDP of the continent. Without doubt, there is an amount of effusive energy which is at work here to the point of intrusion. This is the danger, and this is where Disruptive is coming from".

Disruptive technology in the telecommunication industry is seen in areas like Over-The-Top (OTT) applications and services such as Voice Over Internet Protocol (IP), live streaming and other social media applications. These OTT Intruders (as they are called) are carried over the networks, deliver value to customers but without any carrier service provider being involved in planning, selling, provisioning, or servicing them. Subscribers prefer to use these OTT platforms for making voice and video calls as well as to send messages. This means that the traditional Telecommunication operators cannot directly earn revenue from such services and they are literally now screaming, as they see their incomes continue to nosedive in the face of these disruptors. Other applications like Facebook, Blackberry Messenger (BBM), Viber, WhatsApp, and Skype, to mention a few, are also disrupting the traditional offerings of the Telecommunication operators (KabiamaoWei et al., 2018); (Anabaraonye et al., 2019).

2.1.2 Transportation

The emergence of Uber, a global transportation company in Nigeria in big cities like Lagos and Abuja, is a clear disruptor of the 'old school' taxi and car hire services. For instance, in Lagos, prior to Uber, we had the ubiquitous yellow taxis which in most cases, were unkempt and without air conditioning, thus denying passengers the desired comfort and pleasure of a paid car ride. The alternative was the pricey 'car-hire' services. Then came the era of Red Cab; Metropolitan Cab, which appeared to revolutionize the industry in their time as well: they were air-conditioned and we could request them by phone or even book ahead, to mention some of the features that differentiated them from the yellow taxi (Owoseni et al., 2020).

Uber appeared to have swept all of them aside. The combination of a huge population; high fuel & living costs, unending Lagos traffic (hence the need to preserve personal cars); was just too attractive. Clean cars, neatly-dressed and educated drivers; you can dictate the sort of car you want, the comfort level you wish to travel in (how cool

the air-conditioning should be, for example) and you get to decide whether to pay cash on arrival or to charge it to your bank card. Unlike the conventional taxis, Uber used technology to offer better services in terms of convenience, safety and reliability (Zakari, 2018).

2.1.3 Trade and E-commerce

The emergence of online sales and shopping, online goods and services, digital distribution and other e-commerce related activities through retailing platforms like OLX, JIJI, JUMIA, KONGA and DEAL DEY among others, have added great impetus to the volume of trade and business transactions in Nigeria. These platforms have opened vistas of opportunities and convenience for several Nigerians who sit in the comfort of their homes and offices to shop online for goods and services (Kabir & Kadage, 2017). The traditional malls and markets therefore have to rethink strategies for attracting and retaining customers as the activities of e-commerce, have adversely affected them as well as posed threat to lives and businesses in some cases. In 2015 for instance, an OLX online transaction was concluded in Lagos state where a supposed prospective employee with an ulterior motive absconded with the three children of her employer. Fortunately, the culprit was eventually apprehended and the children returned safely. In her reaction, the President of the Nigeria Internet Registration Association (NIRA) rightly stated that not all transactions should be done online for security reasons (Akahome & Ozuru, 2019).

2.1.4 Education

Technology and innovation have continued to shape learning and change the very old-fashioned way to the more refined system of learning. Online learning is gaining a firm ground in tertiary institutions around the world. The expansion of online learning and learning materials have affected bookshops and publishers who are getting less patronage with the advent of online book stores and search engines like Okada books, LawPavilion, LegalPedia, and so on. The Kindle and other hand-held book devices are all disruptors in this field. Online teaching and online classes are disruptors of the traditional teaching model. You no longer have to be physically present in a class to be taught. Neither does the teacher have to be physically present to teach. The knowledge exchange sessions can be done virtually (Ojo & Nwaokike, 2018).

2.1.5 Financial Services

The emergence of Crypto-currency or virtual currency is a potential disruptor to banks and the financial industry as a whole. This digital currency enables participants to conduct and carry out transactions over the Internet without the aid and assistance of financial institutions thereby adversely upsetting the revenue that would usually accrue to these institutions. Banks are likely to be stripped off their relevance as this financial disruptor empowers people to be their own banks (Omenugha, 2019).

3. Technology Regulators In Nigeria

Technology is regulated in Nigeria by a number of agencies, notably National Office for Technology Acquisition & Promotion (NOTAP) and Nigeria Information Technology Development Agency (NITDA). NOTAP was established by Decree No. 70 of 1979, later amended by Decree No. 82 of 1992 and now referred to as NOTAP Act, CAP 268, LFN, 1994. The main objective of NOTAP is to track the inflow of technology into Nigeria. It is responsible for the evaluation/registration of Technology Transfer Agreements; Promotion of Intellectual Property; Technology Advisory and Support Services. In 2015, the NOTAP Industry Technology Transfer Fellowship (NITIF), a public-private partnership initiative was launched. This initiative aims to boost local technological competencies, with special Ph.D programs at local universities, set up to help promote technological growth in the country (Agri et al., 2018).

Following the enactment of the National Information Technology Development Agency Act, 2007 (NITDA Act), NITDA was established as the regulatory body responsible for, inter alia, the development of the framework and rules for the governance and monitoring of the exchange of data and conduct of transactions online. Simply put, it is responsible for the development of Nigeria's information technology through regulatory standards, guidelines and policies. In carrying out these responsibilities, NITDA has issued some guidelines for the purpose of regulating the e-commerce industry. For instance, in 2013, guidelines on Data Protection were released, aimed at ensuring the privacy of parties to e-commerce transactions (Muharam et al., 2020). These guidelines were also targeted at raising the confidence of the public in such transactions. Also, in 2015, the National Assembly passed the

Electronic Transaction Bill into law, although it is doubtful if presidential assent was ever given to this Bill. While both agencies (NOTAP & NITDA) have contributed to the quality and development of technology in Nigeria, it is submitted that not much has been achieved in regulating disruptions triggered by technological advancement, a fact which may be attributed to the nature of the technologies: they are mostly virtual and accessed through mobile phones and computers. It is also clear that the regulation of ecommerce in Nigeria is still in its infancy (Iyanda, 2016).

4. Reactions To Disruptions In Nigeria

It is clear that disruptive technologies challenge existing traditional models in the society. They also upset existing regulatory environments and Nigeria is no exception. Highlighted below are some of the reactions to these disruptions.

4.1 Nigerian Telecommunication Commission (NCC)

In the case of Telecommunication operators, it was recently reported that aggrieved parties have mooted the idea of using NCC (the body statutorily charged with the administration and regulation of the telecommunication industry), to block Skype, WhatsApp/Voice and Video calls, because of the huge loss of revenue which would ordinarily have accrued to them via traditional voice calls. This revenue loss is estimated at approximately N100tn between 2012 and 2017. Whilst the Telecommunication operators have continued to blame the NCC for not regulating the sector in such a manner as to protect their interests, the NCC has reacted that it is not within their powers to regulate the Internet.

4.2 Need for Regulatory Balance: Disruptors Versus Society

There is little doubt that these new technologies often make life more convenient. OTT applications for instance, have made it possible for Nigerians to make international voice and video calls at extremely low charges when compared to the tariffs charged by the Telecommunication operators such as MTN, Glo, Airtel and 9Mobile. Similarly, social media platforms have also helped Nigerian brands with very low marketing budgets attain global recognition. In the area of trade, buying and selling has never been more convenient. Nigerians sell, purchase and make payments for almost any item from the comfort of their homes and offices, using their phones, computers and other available communication technologies. As already mentioned, it is clear that the traditional malls and markets have to rethink strategies for attracting and retaining customers (Anabaraonye et al., 2019). However, as we enjoy these disruptive offerings, we must be mindful that these new technologies often do not make substantial contributions to our economy in terms of employment, payment of taxes and infrastructure. In most cases, the opposite may be the case. In a recent research conducted by a United Kingdom-based research and analytic company, Ovum, it was stated that a \$386bn loss to Telecommunication operators (Telcos) would accrue over a period of six years (2012 – 2018) from Nigerian customers using OTT voice applications. Whereas Telcos are liable to various taxes in Nigeria, such an obligation is not applicable to OTT service providers as they usually, only pay taxes to the country where their main headquarters are located. Whilst Telcos have invested well over \$50bn in infrastructure and manpower in Nigeria, these OTT providers have not made any such investments, but use the same infrastructure to reach end users (Cheeseman et al., 2020).

Reacting to these drawbacks, some countries like India and Pakistan are reviewing their telecommunications licensing frameworks and plan to issue licences to OTT service providers to operate in their jurisdictions. Similarly, in Singapore, specific licenses are issued for Voice over Internet Protocol (VoIP) connecting to PSTN (Evans, 2017). In the case of Uber, the local cab drivers are not only faced with a loss of income, but the taxes which government collects and income made from issuing permits to mainstream cab operators are also adversely affected. In some countries like Belgium and South Korea, Uber has been banned pending the passage of Uber-specific legislation and regulations. In India, Uber was banned for not following the city's compulsory police verification procedure, following allegations and convictions for rape against Uber drivers. It will therefore not be out of place for the NCC to also review its licensing framework to meet modern trends in telecommunication. The transport regulators should consider issuing licenses to Uber operators and putting in place a framework to guide their activities. These measures will check both the incidence of tax evasion and address security concerns (Muharam et al., 2020).

5. Conclusion

This study x-rayed disruptive technology as it has impacted the Nigerian business environment and government regulatory response to mitigate the challenges. It is however important, for the sake of good order, that legislation and regulations be put in check to address such developments. The aim must not be to stop these disruptions or to over-regulate and thus strangulate them, but to anticipate change, prepare for it and put appropriate regulatory frameworks in place to achieve a good balance in the society. Whilst this study does not advocate or support protectionism, it is wise to address the interests and concerns of both sides of the divide. The ultimate goal must be to achieve a win-win outcome at any given time, taking into consideration any required compromises to be made. Society will continue to evolve and we must evolve with it. At some point in the future, these new technologies will themselves become 'old'; overtaken by newer and/or more advanced ones. That is the circle of life, as there are inherent advantages and disadvantages in every emerging technology. The future work will consider the security implications of disruptive technology and its associated risks.

References

- Agri, E., Kennedy, N., Bonmwa, G., & Acha, O. (2018). Technology Innovation and Sustainable Entrepreneurship Development in Nigeria: Stakeholders' Impact Assessment in Central Nigeria. *Journal of Economics, Management and Trade*, 21(3), 1–16. <https://doi.org/10.9734/jemt/2018/25512>
- Akahome, E. J., & Ozuru, H. N. (2019). Disruptive Technology and Consumer Attitude of Wood Work Firms in Port Harcourt. *Nile Journal of Business and Economics*, 11, 16–31. <https://journal.nileuniversity.edu.ng/index.php/NileJBE/article/download/172/201>
- Anabaraonye, B., Chukwuma, O. J., & Hope, J. (2019). DISRUPTIVE INNOVATION AND OPPORTUNITIES IN GREEN ENTREPRENEURSHIP FOR SUSTAINABLE ECONOMIC GROWTH IN NIGERIA. *3rd Covenant University International Conference on Entrepreneurship (CU-ICE) 2019*, 131–147. [http://eprints.covenantuniversity.edu.ng/13051/1/3rd CU-ICE Conference Proceeding.pdf#page=131](http://eprints.covenantuniversity.edu.ng/13051/1/3rd%20CU-ICE%20Conference%20Proceeding.pdf#page=131)
- Brand Genetics. (2013). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail [Speed Summary]*. <https://brandgenetics.com/the-innovators-dilemma-when-new-technologies-cause-great-firms-to-fail-speed-summary/>
- Cheeseman, N., Fisher, J., Hassan, I., & Hitchen, J. (2020). Social Media Disruption: Nigeria's WhatsApp Politics. *Journal of Democracy*, 31(3), 145–159. <https://doi.org/10.1353/jod.2020.0037>
- Christensen, C. M. (1997). *The Innovator's Dilemma: When New Technologies Cause Great Firms to Fail*. Harvard Business School Press. <https://www.hbs.edu/faculty/Pages/item.aspx?num=46>
- Evans, G. L. (2017). Disruptive technology and the board: the tip of the iceberg. *Economics and Business Review*, 3(17), 205–223. <https://doi.org/10.18559/ebr.2017.1.11>
- Iyanda, O. A. (2016). *Innovation Difussion of Smartphone in Nigeria*. <https://scholarworks.waldenu.edu/cgi/viewcontent.cgi?article=3552&context=dissertations>
- Kabiamawei, A., Jimi-Oni, M., Essien, S., & Ajibola, M. O. (2018). Green Entrepreneurship : An Opportunity for Entrepreneurial Development in Nigeria. *Covenant Journal of Entrepreneurship (CJoE)*, 1(1), 1–14. <https://journals.covenantuniversity.edu.ng/index.php/cjoese/article/download/825/557>
- Kabir, F. S., & Kadage, A. T. (2017). ICTS and educational development: The utilization of mobile phones in distance education in Nigeria. *Turkish Online Journal of Distance Education*, 18(1), 63–76. <https://doi.org/10.17718/tojde.285716>
- Muharam, H., Andria, F., & Tosida, E. T. (2020). Effect of Process Innovation and Market Innovation on Financial Performance with Moderating Role of Disruptive Technology. *Systematic Review Pharmacy*, 11(1), 223–232. <https://doi.org/10.5530/srp.2020.1.29>
- NITEC. (2016). *THE ROLE OF DISRUPTIVE TECHNOLOGIES IN CATAPULTING THE AFRICAN CONTINENT'S GDP - Nigeria Int'l Technology Exhibition & Conference*. <http://nitec.com.ng/events/the-role-of-disruptive-technologies-in-catapulting-the-african-continent-gdp/>
- Ojo, O., & Nwaokike, U. (2018). Disruptive Technology and the Fintech Industry in Nigeria: Imperatives for Legal and Policy Responses. *Gravitas Review of Business and Property Law*, 9(3). <https://doi.org/10.2139/ssrn.3306164>
- Olorundare, J. K., Olorundare, A. O., & Sayyadi, S. (2017). Internet of things prospect in Nigeria: Challenges and

- solutions. *2017 IEEE 3rd International Conference on Electro-Technology for National Development, NIGERCON 2017*, 736–745. <https://doi.org/10.1109/NIGERCON.2017.8281942>
- Omenugha, N. O. (2019). MEDIA MANAGEMENT AND DISRUPTIVE TECHNOLOGY: THE NIGERIAN NEWSPAPER INDUSTRY TODAY. In *Doctoral dissertation, University of Liverpool*. https://livrepository.liverpool.ac.uk/3090800/1/FINAL_APPROVED_THESIS%3B_NELSON_OMENUGHA.pdf
- Owoseni, A., Wakunuma, K., Tolani, A., & Twinomurinzi, H. (2020, May 10). Exploring Gender Gaps: How Nigerian Micro Business Owners Use Mobile Apps for Business. *European Conference on the Social Implications of Computers in Developing Countries*. <https://dora.dmu.ac.uk/handle/2086/19983>
- Zakari, M. (2018). Exploiting the potentials of disruptive technology and disruptive innovation in library and information services. *Nigerian Libraries AFRICAN JOURNALS ONLINE (AJOL)*, 51(2), 28–42. <https://www.ajol.info/index.php/jnla/article/view/184988>