A Look at the GSM/Telecommunications Revolution in Nigeria. Possible Applications in Nigeria's Electricity Industry

BY ADEWALE EYITAYO MOULD

Introduction

Poor electricity supply has been proven to be the major infrastructure constraint confronting the business sector in Nigeria today. Electricity supply is both un-stable and of very low quality. Black out and brown outs are common features of electricity supply in Nigeria. In fact, the average Nigerian firm experiences power failure or voltage fluctuations about 7 times per week, each lasting for about 2 h, without the benefit of a prior warning (Adenikinju, 2003; Graber, Mong and Sherwood, 2018). This has contributed to the low productivity and low competitiveness of the Nigerian manufacturing sector.

On the other hand, information and communications have always formed the basis of human existence. This fact has driven man to continuously seek ways to improve the processing of information and communicating such information to one another, irrespective of distance and on a timely basis. Perhaps the greatest legacy that the 20th century scientists have bequeathed to mankind is the "Information Revolution" made possible by rapid development and advances in telecommunications and computer technology. That no modern economy can be sustained today without an integral telecommunications infrastructure is widely acknowledged. In fact, World Bank studies indicate that for every US $1 invested in telecommunications infrastructure, more than US $6 is generated in economic returns by its impact on local employment and general economic growth (Ndukwe, 2011; Nwakanma et al., 2014).

Access to telecommunications is therefore critical to the development of all aspects of a nation's economy including manufacturing, banking, education, agriculture and government.

The Nigerian telecommunications industry and the national business landscape has no doubt been revolutionised by the introduction of the Global System for Mobile (GSM) Telecommunications.

The electricity and telecommunications Industries in Nigeria were established within ten years of each other. Both have equally gone through extensive reform processes in the last twenty years.

However, despite the Electric Power Sector Reform Act (ESPRA) 2005 being hailed as the most comprehensive in Africa, (Iwayemi, 2017) its effects are not as visible at the grassroots as the reforms in the telecommunications Industry by way of the Global System for Mobile Telecommunications (GSM).

This write up attempts to examine relevant applicable lessons from the GSM/ Telecommunications success story which can fit into the context of the Nigerian electricity industry and help turnaround that sector.

It also tries to explain why such an Electricity/ Energy dependent venture like Mobile Telecommunications succeeded better than Power supply in an otherwise Energy deficient or Energy poor environment

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Background

Electricity production and supply in Nigeria started in 1896 barely 15 years after its introduction in The United Kingdom when the first power generating plant was installed in Lagos Nigeria by the British Colonial Government of the time (Babatunde,2011, Adenikinju, 2017)

The Nigerian Electric Power Authority (NEPA) established in 1972 was a fusion of both the earlier established Electricity Corporation of Nigeria (ECN) and the Niger Dam Authority (NDA). ECN was responsible for the generation, transmission, distribution and sales of electricity. NDA on the other hand was responsible for the construction and maintenance of dams for hydropower across the country and subsequent sale of electricity to ECN. (Adenikinju et al.2016).This merger made NEPA a wholly state owned monopoly responsible for both policy formulation and regulation of electricity generation, transmission and distribution.

Realising the importance of the critical role of electricity in the nation's economic activities and growth, the Nigerian Government in 1999 set in motion a process of transferring the government owned electricity sector to the private sector introducing the National Electric Power Policy. By March 2005, the Electric Power Sector Reform Act (EPSRA) was passed. This process culminated in the transformation of the Nigerian Electric Power Authority (NEPA) into The Power Holding Company of Nigeria (PHCN) and its subsequent handing over to private investors.

Other entities created from the defunct NEPA include one power transmission company, six power generation companies and eleven power distribution companies.

There have been mixed reactions to the extent to which power supply has improved following this transfer of power to the private sector. (Adenikinju et al 2016).

By way of comparison, telecommunication facilities in Nigeria were first established in 1886 by the colonial administration. This sector has undergone very rapid change and explosive growth in recent years and has been argued to have contributed positively to Nigeria's

economic growth (Nwakanma et al 2014).

The Telecommunications revolution transformed the Nigeria society in divers' ways since the dawn of the new millennium. A breakthrough in telephone infrastructure emerged in January 2001 when the sector was totally liberalized with the licensing of MTN and ECONET, now Airtel (mobile phone Company). They injected over a million lines into Nigeria within a year. Also Globacom came into existence later that year. The Global System of Mobile Communication (GSM) spread in a highly competitive manner from state to state and city to-city. (Isabona,2013).

Some stylized facts showing the results pre and post reforms of the Nigerian Telecommunications and electricity industries are presented below:

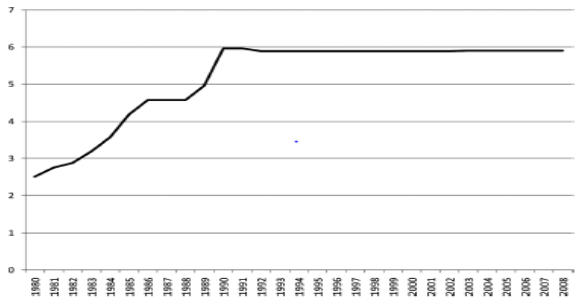

Figure 1.Total Electricity Installed Capacity in Nigeria 1980-2008 (Source: Babatunde, 2011)

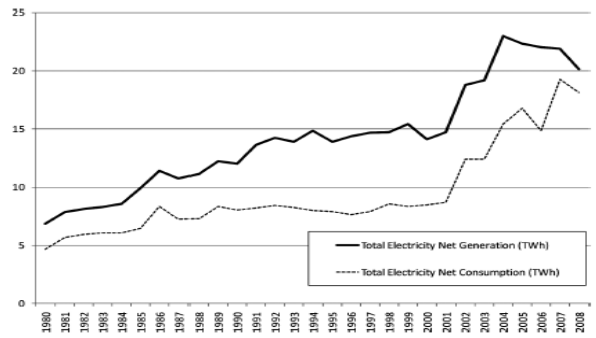

Figure 2.Total Electricity Generation and Consumption in Nigeria 1989-2008 (Source: Babatunde,2011)

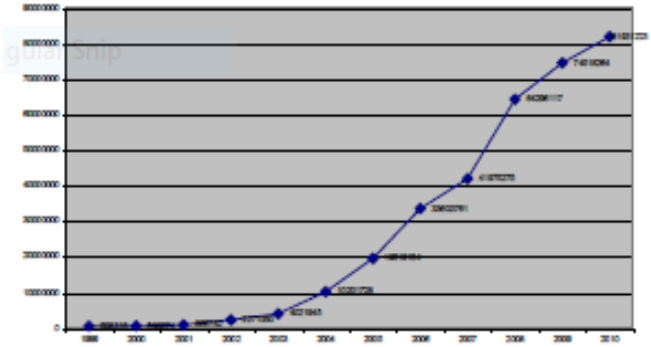

Figure 3. GSM Subscriber Growth in Nigeria 1999-2010 (Source: Hassan,2011).

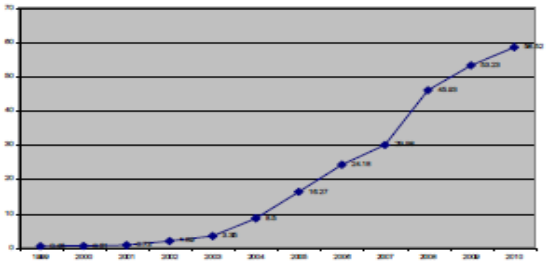

Figure 4.Teledensity Growth in Nigeria 1999-2010 Source: Hassan,2011

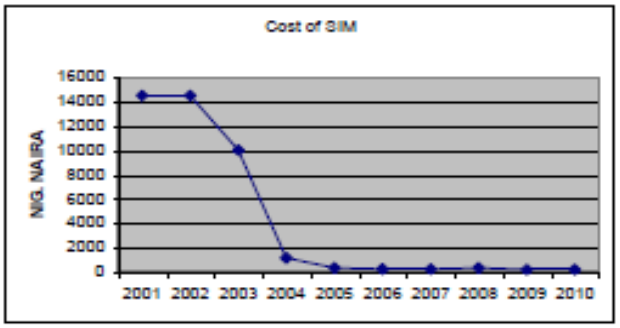

Figure 5.Cost of SIM Cards in Nigeria 2001- 2010 Source: Hassan, 2011

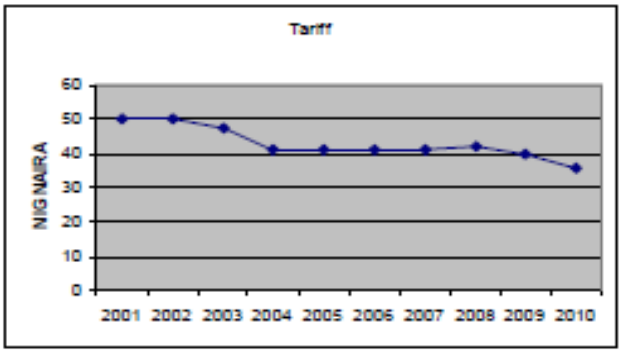

Figure.6 GSM Tariffs in Nigeria 2001-2010 Source: Hassan,2011

These graphs and stylized facts presented above give an indication of the relative success story of the telecommunications revolution in Nigeria by way of the Global System for Mobile Telecommunications as compared with those resulting from the electricity industry reforms in Nigeria.

Discussion

Prior to 1999, Telecommunication services were expensive to acquire, difficult to obtain and expensive to use. Tele-density stood at 0.04% (about 400,000 users) in a country with an estimated population of over 100 million people which was one of the lowest in the world. Investment in the sector was below $50 million U.S. dollars. This state of affairs had adverse consequences on the nation; more pressure on other infrastructure such as roads, inability to make emergency calls in life threatening situations leading to the loss of lives in some cases. Business efficiency was not maximized, social cohesion was reduced, and there was

an inability to leverage the potentials being promised by ICTs in different aspects of human endeavour (NCC, 2014)

Some dividends of the Telecommunications GSM Revolution include (Ndukwe, 2004):

- Positive contribution to Nigeria's GDP.
- Foreign capital inflow.
- Stimulation of local investment
- Job creation (direct and indirect).
- Economic empowerment of Nigerians.
- Indigenous skills acquisition and technology transfer.
- Increased tax revenue for the Nigerian government.
- Increased Banking sector turnover through loans, advances, e-commerce and e-banking.

This apparent success of the Telecoms GSM Revolution has been linked to some factors including but by no means limited to the following: (Ndukwe, 2004 &2011)

- A large 'ready-made' market: Nigeria's large well educated and 'tech savvy' population.
- A good business and economic model by the operators.
- Appropriate technology (the GSM and other wireless modes of telecommunications as against the fixed wire service in place at the time.)
- Timely decision making, for example, the prompt response in 1999 by the government in office to calls for reform in the Nation's telecommunications sector.
- Effective regulation by the Nigerian Communications Commission leading to the NCC being widely acknowledged as a model telecommunications regulatory institution in Africa.
- Consumer Protection Revolution by the Telecommunications regulatory Agency (NCC). Examples are the Telecommunications Consumer Parliament (TCP), Consumer Outreach Programs, Customer Care Centres and collaboration with Consumer Advocacy Groups in addition to various CSR Initiatives by some of the Telecommunications Service Providers.

Some Recommendations

It can be seen from the above that reforms in Nigeria's telecommunications sector have been more successful those in the nation's electricity industry. While the reforms in the electricity industry have been lauded to have been very comprehensive in the African context (Babatunde, 2011; Iwayemi, 2017), arguments have also been put forward for further reforms so as to achieve the desired expectations (Iwayemi, 2017).

Bearing in mind the current governance structure of Nigeria's electricity industry/ power sector as provided by the 2005 EPSRA (Electric Power Sector Reform Act), such further reforms should include the following (Dikko and Omisanjo, 2016):

- Re-orientation of the public perception of electricity as a public good.
- Appropriate or cost reflective pricing of electricity services (Graber, Mong and Sherwood, 2018).
- Open access/open transmission access for more eligible market participants. This would involve improving the state of the national grid and/or better integration of the mini-grids utilized by the concerned players to deliver their services.
- Regulation of the National Grid keeping in mind its strategic nature and the need for electricity access by all.
- Appropriate feed in tariffs for independent power producers especially those making use of renewable energy technologies (R.E.T.'s).
- Reforms at the power distribution level. The current structure makes the distribution companies (DISCO's) effectively monopolise their zones of distribution disallowing any competition.
- Introduction of electricity retailing in addition to the currently applicable governance structure of electric power generation, transmission and distribution. This is to further facilitate competition in the Nigerian Electricity Industry/ Power Sector and theoretically give the consumer the ability to choose between service providers. (Biggar and Hesamzadeh, 2014).
- Incorporation/Integration of communications/ telecommunications technology in the provision of electricity services (e.g., the collaboration between MTN and LUMOS to deliver solar generated electricity). (Allgrove, Dajani, Curnow 2018; All-On, 2018).
- Use of communications and telecommunications technology in monitoring electricity use/electricity theft using for example M2M (Machine to Machine Technology, 4G/5G Telecoms Technology, IOT (Internet of things) (Allgrove, Dajani, Curnow, 2018;Wikipedia, 2018 a & b).
- The adoption or development of contextualized Energy Business Technology models such as Bangladesh's Grameen Shakti Model for rural electrification/ provision of affordable sustainable energy (Sovacool and Drupardy, 2011). Such business and technology models should include the adoption of various renewable energy technologies e.g., solar PV and biogas generation (All-On, 2018). They should also seek to involve grassroots financial institutions such as micro-finance banks and co-operative societies in the financing of micro to medium scale energy projects.
- Greater efficiency in the regulation of the Nigerian electricity industry/power sector bearing in mind the internationally acclaimed successes of regulatory bodies such as the Nigerian Communications Commission (NCC) and the National Agency for Food and Drugs Administration and Control (NAFDAC).
- Related to the above is a closer look at the

regulatory governance provided for by the 2005 Nigerian Electric Power Sector Reform Act to determine the necessity or otherwise of more than one regulatory body in the sector (CPEEL, 2014).
- Corporate Social Responsibility (C.S.R.) and Consumer protection initiatives by both the electricity service providers and regulatory authorities.

Conclusion

It is a fact that the telecommunications reforms in Nigeria has been very successful with visible grassroots impact in spite of any real or perceived hiccups.

It can be also be argued that the electricity market in Nigeria needs to be made more competitive especially as the provision of electricity services is very key to industrial development in Nigeria and also the attainment of a number if not all the sustainable development goals (SDG's).

Steps being taken in this direction by various categories of independent power producers should be encouraged however with effective regulation (Biggar and Hesamzadeh, 2014)

Further studies will be needed to critically compare and examine the reforms in the telecommunications and electricity/energy sectors in Nigeria. Studies will also be needed to empirically determine the need and/or effectiveness of current/further reforms in the electricity Industry. These should be done with a view to achieving the goal of clean affordable energy supply and security in Nigeria and Africa as a whole.

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