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Published in:
Nordic and Baltic Journal of Information and Communications Technologies

DOI (link to publication from Publisher):
[10.13052/nbjict1902-097X.2017.004](https://doi.org/10.13052/nbjict1902-097X.2017.004)

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Publication date:
2017

Document Version
Publisher's PDF, also known as Version of record

[Link to publication from Aalborg University](#)

Citation for published version (APA):
Osei-Owusu, A. (2017). Policy Foundation of the Ghana Telecom Industry. *Nordic and Baltic Journal of Information and Communications Technologies*, 2017(1), 45-64. Article 004. <https://doi.org/10.13052/nbjict1902-097X.2017.004>

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Policy Foundation of the Ghana Telecom Industry

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Received 13 February 2017;
Accepted 18 July 2017

Abstract

Drawing on institutional theory, the paper aims at improving the understanding and explanation of the processes of reform of Ghana's telecom industry as well as the policy and governance initiatives that have contributed to shaping the industry today. The research question of the paper is concerned with how the developments of the policy and governance foundation have affected the development trends and structures of the telecom industry in Ghana. This involves a periodization of the different policy and governance initiatives.

The paper identifies two major periods and their various levels of governance, from the decentral era where management of the sector was vested in the traditional chiefs followed by the municipalities/districts to the centralization era where powers were moved to, first, the Works and Housing Department and later the Ministry of Communications and the regulatory agency in connection with the liberalization of the sector.

Within the era of liberalization, the paper identifies three main policy directions: 1) A market liberalization period (1997–2007) where Westel Ltd. was introduced into the fixed line market and where Spacefon, Celltell and Mobitel all were introduced to the cellular telephony market; 2) an infrastructure expansion period starting at the beginning of 2008, where the overall policy was increasingly directed towards infrastructure development with infrastructure licensing of international tower companies; and 3) a new period having started recently from the beginning of 2011 and up to date, with

policy initiatives being directed at consumer protection and projects such as mobile number portability and SIM card identification.

The application of institutional theory provides the basis for an improved understanding of the sector reforms including the identification of poor performance of the GP&T, strong government manipulation without any opposition in parliament, weak workers' unions, and a general policy apathy as key endogenous factors affecting the reform process, while international bodies, donor communities and other external agreements constitute important exogenous factors.

Keywords: Institutional theory, telecom reform, transitional reform, nationalization, denationalization.

1 Introduction

Ghana was one of the first African countries to start moving from having a government controlled telecommunication market to a liberalized and competitive market with well-organized private sector participation. As the industry moves closer to a fully private and competitive model, the Government has continued to play an active role in promoting the effective development of the sector.

Telecom reform, regulation and policies of various African countries have been subject to intense debate during the last couple of decades (Tobbin, 2010). The telecommunication industry is among the most dynamic industries in the world and is characterized by a high speed of innovation. Reforms have naturally become part of its process of growth.

The global pursuit of telecom liberalization and regulatory reform which started in the 1990s was non-comparable to any technologically led reform since the beginning of the century and the Ghanaian telecom industry, which is not often mentioned in literature, was among the frontiers in Africa.

The process of reform particularly in Ghana started with corporatization through privatization to total liberalization involving competition. Several researchers have documented different factors that have contributed to telecom reform. Cowhey (1990, 1999) argued that "revolution in telecommunication technology" was the motivating factor for the reforms. In the case of Ghana, Frempong and Atubra (2001), Ahator (2004), and Frempong and Henten (2005) in their various works on the Ghanaian telecom industry mentioned institutional factors that have contributed to the reforms by the government. The most common factor was the performance of the incumbent operator.

A study by Tobbin (2010) identified the influence of the World Bank and other international communities, influence of colonial masters, particularly the United Kingdom (UK), itinerant experts who share a certain view of the world, public outcry, and agitation or pressure by employees of the Ghana Post and Telecommunication (GP&T) as the key underlying factors of the telecom industry reform in Ghana.

Dwelling on the four layer institutional framework by Koppenjan and Groenewegen (2005), the research of the present paper seeks to provide a further dimension to the understanding of the reform processes of the Ghana telecom industry. In addition, the paper seeks to identify the major policy directions and their periods, starting from pre-reform to the present reform days. Different approaches to management of the sector are identified, and a picture of reform activities that have molded the current players and the market competition of the industry today is put forward.

The structure of the paper is as follows: The next section describes the conceptual framework, introducing institutional theory, its approaches and the four-layer model by Koppenjan and Groenewegen (2005). Thereafter there is an institutional analysis, followed by a presentation of the governance and management of the industry from the beginning of the sector or before the reforms (decentralization era) to the present reform process (centralization era). Furthermore, there is an analysis of specific policy directions and their periods and the impact of reforms on the whole industry structure. Finally, there is a discussion section and conclusions and policy recommendations.

2 Conceptualizing Institutional Evolution

On the theoretical and methodological level, there is no clear consensus among modern researchers as to what would constitute an adequate or acceptable explanation of the process of emergence of an institution. This applies from the early works of Menger (1981) on the analysis of how institutions evolve to Hodgson and Knudsen (2001). Williamson (2000), an internationally highly rated contributor to new institutional economics, admits that “we are still very ignorant about institutions”. On this tentative assumption, it is suggested that the real world emergence of institutions is aided by the development of concordant habits, particularly as a result of emerging channels and constraints.

Institutional evolution can be better understood by examining the processes of institutionalization of organizations. Institutionalization defines the process where organizations obtain value and structures. An organization

evolving or changing (thus developing values and structures) develops through its confrontation with its immediate environment or society. This argument is supported by Peters (2000) stating that an institution is a variable not a constant and that different organizations are at different levels of institutionalization. To effectively make sense in explaining or assessing the level of institutionalization of an organization, we must set criteria for an institution in its assumptive variable character.

Several criteria exist for assessing levels of institutionalization of an organization. However, the basic similarity in all institutional criteria is that something identified at a higher level is used to explain processes and outcomes at a lower level of analysis (Clemens and Cook, 1999; Amenta 2005). Koppenjan and Groenewegen's (2005) four-layer model of institutional analysis as shown in Figure 1 presents a framework for assessing how institutionalized a particular organization is. Huntington (1968) also showed that the level of institutionalization of any organization can be measured by autonomy, adaptability, complexity and coherence. For example, the two models for assessing institutionalization according to Koppenjan and Groenewegen (2005) and Huntington (1968) share similarities.

Autonomy represents the independence of the organization. How the organization is able to make its own decisions outside its societal or political

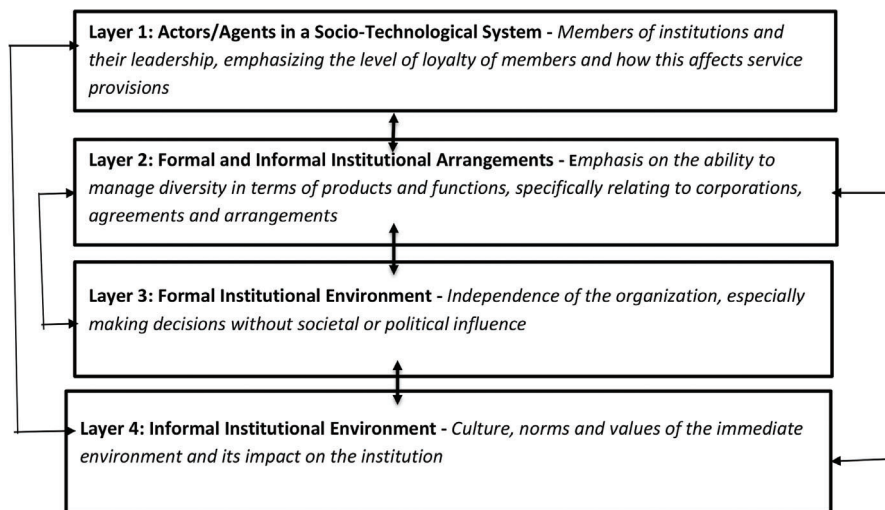


Figure 1 Koppenjan and Groenewegen's four-layer diagram of institutionalization.

Source: Koppenjan and Groenewegen (2005).

influence. This is much related to the layer 3 of the Koppenjan and Groenewegen model, which takes a look at rules, laws and regulations that provide such autonomy of an organization. A more institutionalized organization is determined by how independent it is in decision making which is achieved through the laws and rules that govern the organization and protect it in any society.

Adaptability is a function of an institution's environmental challenges and age. Such challenges include the culture, norms and values of its new immediate environment which are described in layer 4 of Koppenjan and Groenewegen's four-layer model. An organization can only survive if it can adapt to the changing environmental challenges. For instance, regarding the aspect of age, an older institution can be less adaptive than a dynamic young institution. In general, the older an organization, the more rigid it is. Before an organization can adapt well to new trends in the environment as was proposed by Huntington, it is suggested that adaptability can be measured by the age of the organization. An organization is said to be more institutionalized if it has adopted one or more functions other than its primary function.

Complexity demonstrates the capability of the organization to manage diversity in terms of products and functions. This is expressed through corporations, agreements and arrangements as expressed in layer 2 of the Koppenjan and Groenewegen model. The world has become a global village now and such complexities are expected. A well-diversified organization is more robust and likely to survive modernization than a simpler monotonous organization.

Coherence can be measured by the cleavages between members of the institution and its leadership. In layer 1 of the four-layer model, coherence is expressed in terms of the interaction between actors and agents aimed at influencing the provision of services. Huntington's (1968) coherence emphasizes the level of loyalty of the members of the institution.

3 Institutional Factors that Contributed to the Telecom Reform Agenda

The four-layer model based on Koppenjan and Groenewegen (2005) presented in Figure 1 provides a layered approach to analyzing institutions within the Ghana telecom industry. Though it has been argued that the world is moving towards a regulatory convergence through privatization and similar telecom regulatory policies, the ways and means of achieving these goal vary according to the structures and institutions of individual countries, and this paper presents

the ways and means to telecom reform from Ghana's perspective using the four-layered framework.

3.1 Layer 1 – Actors and Agents in Socio-Technological System

The key actors and agents identified in the Ghanaian telecom transition are the World Bank, the World Trade Organization (WTO), the British Government (former colonial masters), the Government of Ghana, the International Telecommunication Union (ITU), international telecommunication giants, the GP&T management and the Ghanaian public. The interaction between these actors and agents determined the transition process and affected the nature and output of the reform.

The World Bank, a major financier of the country's economy and, in particular, financier for most of GP&T's capital expenditures, was interested in the privatization of the GP&T because the model of telecom liberalization was becoming successful in developed countries. Tobbin (2010) reported that there was some suspicion as to the actual motive of the World Bank's support for privatization. In recent interviews performed by Alexander Osei-Owusu with former managers of GP&T, they revealed that privatization was more in the interest of the Western partners rather than Ghana, since it was an opportunity for them to invest in such emerging market. "As to the benefit to the economy of Ghana, perhaps one will say that it stands to gain, but the timing of the whole process was wrong" was a statement from one former manager of GP&T.

The interviewee argued that weak internal structures, Ghana's young democracy, and weak private sector participation meant that any privatization at that time was likely to be managed by a foreign company. Contemporary European experiences and models replicated in Africa would perhaps make the work of the ITU easier than when having to deal with a more nationalized sector where the national nature of it will prevent certain policies which may not favor the government in power from being implemented.

The Government of Ghana (GoG) was to benefit from two fronts within this reform process: 1) No more direct government investment for the management of the GP&T once privatized, and 2) GoG was to control the industry through the various arms of government notably MoTC (Ministry of Transport and Communication), GFRCB (Ghana Frequency Registration and Control Board) and the board of GP&T – a move which made GoG the principal beneficiary of the telecom reform process, according to one interviewee.

The mismanagement of the GP&T was placed on the doorsteps of the leadership or workers employed. For scoring political points and ambitions,

political activists and party foot soldiers without requisite qualification were employed to handle the industry, and this was the major cause of the acclaimed inefficiencies of the management of GP&T. According to some interviewees, these political activists who managed the GP&T teamed up with the GoG and diverted incomes from GP&T meant for infrastructure investment into other politically motivated national projects. Moreover, the inefficiency of the telecom sector was also attributed to poor leadership, costing the government huge sums of money, threatening to derail it from its economic recovery agenda (Tobbin, 2010).

From the above discussions, a combination of poor performance of GP&T, strong government manipulations (without opposition in parliament), weak workers' union and a general public apathy were the key endogenous factors that led to the Ghanaian telecom reform.

3.2 Layer 2 – Formal and Informal Institutional Arrangements

Agreements to liberalize the basic telecommunication market became part of the Uruguay Round trade negotiations at the world trade organization (WTO). At this time, Ghana had just moved into civilian government following years of military rule. Several new policies were initiated by the new civilian government in order to be in harmony with the international donor partners. An initial Structural Adjustment Programs (SAP) had not been successful in reforming the utility sector. Ghana was just recovering from a great economic recession in the 1980s, and in order to put the economy on track, the GoG signed several binding agreements, assuring investors of liberalizing Ghana's market of which the telecom sector was no exception.

Ghana was credited for being one of the few African countries to sign the Uruguay Round agreement in 1997. Some interviewees believe it was a desperate situation of a country wanting to stimulate its economy back on track after very long economic recessions. Other interviewees were of the opinion that for building international trust, it was the best direction of the newly constituted government. Even before the Uruguay Round agreement in 1997 was signed, Ghana Telecom was incorporated in 1995 as a limited liability company separated from the postal services. And, the same year witnessed the sale of the license for the Second Network Operator (SNO) to Western Wireless, an American company. An important implication of the Uruguay Round was to cut open the telecommunication market of developing countries, especially for the companies in the developed economy.

3.3 Layer 3 – Formal Institutional Environment

From the early beginnings of the telecommunication industry, the colonial masters took to a more micro management style of the industry, where traditional leaders were made to secure and manage network transmission lines with close supervision by the colonial masters. Later, the public work department and municipalities were the managers of regional telecommunication operations, reporting to the central government depending on the arrangements.

Several agencies at the national level were assigned parts of the country's telecommunication industry to manage or regulate. Frempong and Atubra (2005) laid the blame of the inefficiencies of the GP&T management to the fact that regulation of the industry was divided among conflicting agencies namely the GP&T, MoTC, Ministry of Finance, and GFRCB. This conflicting task was what the reform process was meant to address. The creation of a single national regulator (the NCA – National Communications Authority) was the means to solve this problem.

Two major Acts of Parliament sought to provide independence for the telecommunication industry management and this was part of the reform process. In 1995, Ghana Telecom was established as a private limited liability company separated from the postal section. And, the December 1996 NCA Act 524 gave the regulator considerable autonomy and powers. However, such independence, sought for by the Act of parliament was put into question since the Ministry of Communication (MoC) was given oversight responsibility over the activities of the regulator. According to some interviewees, even the passage of the Act of parliament to grant full independence to a regulator was passed under full pressure from the international community, and the government has up till now violated the act by making the MoC oversee the NCA. The recent impasse regarding the sale of government share of Ghana Telecom to Vodafone by the former government and the current government wanting to reverse the sale, provides evidence of the political interference within the telecommunication industry in Ghana.

3.4 Layer 4 – Informal Institutional Environment

Ghanaians are very emotional and outspoken when it comes to matters of national interest, and this nature is very common among most people of African origin. Any government, who decides to sell a national asset, normally spells doom for the government's political prospect.

Ahortor (2004) posited that the main endogenous force against the privatization of GP&T was the public's view of GP&T as a national asset. Fear

by government making the government of the day unpopular during the early stages of privatization was a major factor why the then GoG did not totally privatize but rather opted for a regulated sector with controlled private sector participation.

Most political campaigns since 1992 have focused on the opposition accusing the incumbent government of depriving the whole nation by selling or privatizing national companies. The 2000 elections constitute evidence of this when the then incumbent government, National Democratic Congress (NDC), was accused of selling some of the state shares of the then Ghana Telecom to foreign private firm. And, there were other examples, for instance Pwalugu Tomato, Ejisu Jute factory and many more. Interviewees believed and affirmed the general saying that ‘privatizing national companies were the cause of the then government losing in the 2000 general elections’. The New Patriotic Party (NPP) was then elected into power. However, they also faced the same public discontent when they decided to sell the last owed government share of the Ghana telecom (GT) to Vodafone in 2007, causing their shock defeat in 2008 general elections after the then opposition NDC promised the Ghanaian people a re-nationalization of GT, if voted into power. This and many other examples depict how the Ghanaian political culture has greatly affected the decisions concerning the telecom industry.

4 Overview of the Industry Governance and Management – From Decentralization to Centralization

4.1 Decentralization of Governance (Mid-1800s to Mid-1900s)

Ghana’s telegraph lines were often cut down by superstitious locals. Among the Ashanti communities, locals were convinced that the cables were ‘magic’ lines being used by the Europeans to win wars. To win the trust and provide better security of the telecom lines, colonial governors entrusted the safety and management of telegraph lines to tribal chiefs in 1886. Perhaps the colonial masters had learned the Ghanaian culture so well that they knew that before one can gain support to rule, one must involve them. From the institutional analysis, once Ghanaians feel that their national assets are managed by foreigners there is an antipathy and much public resentments. They will find a way to work against the leadership and the project.

The decision to move management and governance of the telecom industry by colonial masters to lower levels of government such as tribal or traditional chiefs, district and municipalities etc. can be classified as a form of privatization. This means that privatization has been tried and tested in the colonial

days before renationalization. And, their support for liberalization may have stem from earlier experiences.

Following the attainment of independence by Ghana in 1957, new telephone exchanges were installed at every regional capital in Ghana, such as Accra, Koforidua, Ho, Tamale, Sunyani and Kumasi. Management of these exchanges or telephone lines was moved from tribal chiefs to newly created public work departments at various municipalities or districts.

4.2 Centralization of Governance (Late-1900- to Present Day)

In the 1970s, telecommunications was administered by a single governmental institution – the government's Post and Telecommunications Department, a department which was later declared a public corporation by the National Redemption Council Decree No. 311 in 1974. The department was placed under the authority of the Ministry of Transport and Communication, responsible for policy formulation and the control of Ghana's telecommunications sector. This was said to be the beginning of the industry reform process.

5 Reform Process

The Ministry of Transport and Communications initiated the reform process of the telecommunication sector by putting together a road map document called the Accelerated Development Program (ADP) subsequently launched in 1994 (Ministry of Transport and Communications, 1999). The program document was developed after an extensive consultation with telecom service providers, the International Telecommunication Union (ITU), financiers, donors and users.

The ADP puts forward aims, policies and measures, which were to serve as a foundation for a spearhead reform process and also address immediate and foreseeable future challenges of the expected reformed telecom sector. The policies and measures include 1) a tariff policy which was expected to allow operators to recover the full cost of service provision, 2) that customers should be able to access services at competitive and affordable prices, which was in the direction of fostering public accessibility in urban and rural areas through the implementation of payable facilities, 3) universal public access for the longer term through the installation of payable facilities to every village of a minimum of 250 inhabitants, 4) expanding the coverage of mobile services, 5) liberalization of value added services, 6) promoting Ghanaian ownership

and control of telecommunications companies, and 7) retaining an overall public regulatory control of the sector through the creation of a single and an independent agency, the National Communications Authority (NCA).

The implementation of the ADP was expected to pave the way for the denationalization and total liberalization of the telecom industry. The primary means to achieve the above policies and objectives documented in ADP was the establishment Ghana Telecom (in June 1995). This was to replace the then telecommunications division of the Ghanaian Post and Telecommunication Operator (PTO). According to a report by (Ghana Telecom, 2000), the newly established operator, Ghana Telecom, did not have any positive effects on either the profitability of the company or its supply of services.

To attract financial investment for the newly established telecommunications operator, a 30% share of Ghana Telecom was sold to a consortium led by Telecom Malaysia Berhad. To introduce competition, the policy on liberalization of the market called for a second network operator, creating a duopoly. The second network operator similar to Ghana Telecom was also to provide services both locally and internationally with a 20 year initial license. The license for the operation of the second network operator was auctioned at the same period when the 30% share of the incumbent (Ghana Telecom) was sold to the consortium led by Telecom Malaysia Berhad. During the first five years, the two carriers were to be given nationwide exclusive rights over fixed line telecom services.

Retaining an overall public regulatory control was a means to achieving the central objectives of the reform process as proposed by the ADP. The National Communications Authority was thus established by an Act of Parliament, NCA Act 524, 1996. The NCA was thus commissioned with the responsibilities of achieving all the proposals within the ADP. Specific responsibilities is presented in Figure 2.

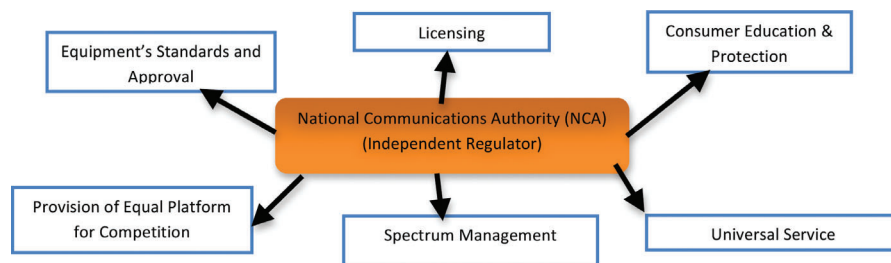


Figure 2 Responsibilities of the NCA.

6 Specific Policy Initiatives and Periods

After the launch of the ADP and the establishment of the independent regulator (NCA), series of policies were rolled out in phases in order to achieve the aims of the Accelerated Development Program and also solve evolving challenges of the industry.

6.1 Market Liberalization (1997–2007)

In order to achieve the ADP objectives of liberalizing the market, a duopoly was created in December 1997 when Westel paid 10.5 million U.S. dollars for the second network operating license. This opened a gate for more liberalization of the cellular markets in Ghana (BMI-T, 1998). Figure 3 shows how the telecom sector responded to the early days of liberalization. A duopoly market created in the fixed line telephony market and an oligopoly market in the cellular telephony area (refer to Figure 3).

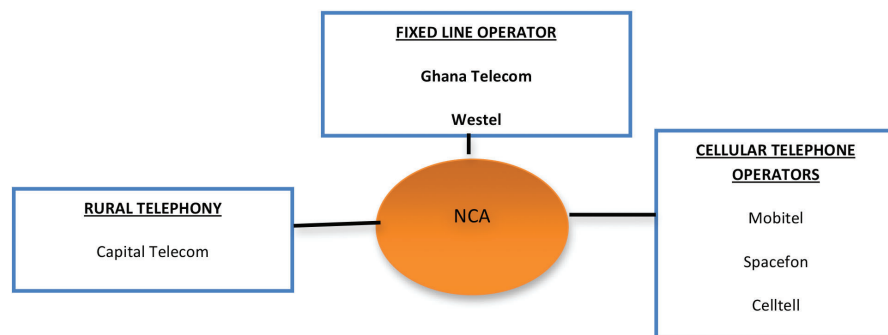


Figure 3 Market Liberalization.

Source: Mirrored from Frempong and Atubra (2001).

6.2 Infrastructure Expansion (2008–2014)

6.2.1 Infrastructure licensing

In Ghana, in tandem with global institutionalization of rights of ways and its numerous benefits especially for unserved market areas and market liberalization, The Electronic Communication Act was passed (Electronic Communication Act 2008). The National Communications Authority (NCA) awarded licenses for the provision of telecom infrastructure in the country.

The act placed communications, networks and services under the rights of way regulation or the statutory wayleaves to facilities and infrastructure, especially to the passive infrastructure.

This many expert believe opened the door for the tower business in Ghana. Tower operators were to build tower infrastructure and rent it out to multiple network operators. The project was aimed at reducing cost of building single infrastructure, leveraging competition among network operators while improving network coverage in remote areas, which under normal circumstances would have been difficult for single operator investment. The law was a response to the massive deficit of telecom infrastructure against the backdrop of sections of the public discontent of not receiving telecom services in some areas.

6.2.2 Emergence of tower companies

In January 2010, Millicom Ghana (Tigo Ghana) agreed to sell 750 base towers to Helios Towers Ghana (HTG). The deal was the first major sales/leaseback to be completed by the major African telecoms operator and an independent tower company on the continent. Vodafone Ghana also signed a ten year deal with Eaton Towers to take over the operations and co-location management of its existing tower infrastructure. In the same year, 2010, MTN rounded off a joint venture deal with American Towers. By September 2014, a press release officially announcing an agreement for the divestment of over 3500 telecom towers from Airtel (across 6 countries in Africa) to Eaton Towers (an independent tower operator) of which Airtel Ghana was part was issued, bringing every major network operator on-board.

However, the emergence and growth of these infrastructures came with a degree of public concern with health, safety and environment – though some of these concerns particularly, with regard to health risk posed by cell towers are not supported by existing scientific findings. That notwithstanding, it is important through education and public awareness to address the concerns of the public and also take appropriate action to harmonize growth and development, on one hand, and public safety, perceived or otherwise, on the other.

To facilitate tower growth and environmental sanity, an Inter-Ministerial Committee (IMC) was inaugurated to champion the development and implementation of the existing solution framework. The IMC instituted an Industry Technical Committee (ITC) headed by the National Communications

Authority (NCA) to collaborate with industry and other stakeholders: Environmental Protection Agency (EPA), Ghana Civil Aviation Authority (GCAA), Ghana Atomic Energy Commission (GAEC), Metropolitan, Municipal and District Assemblies (MMDAs), and Radiation Protection Institute (RPI) to develop a set of guidelines for the institution of a one-stop-shop permitting scheme for the deployment of communication towers.

The Terms of Reference for the ITC are as follows: 1) Provide clear standards and procedures for the installation of towers and also address the issues of environmental sanity; 2) Formulate a cost-effective and efficient mechanism to address administrative and bureaucratic bottlenecks faced by operators; 3) Design a fair and open cost-based fee policy/structure which would ensure that all operators are charged fairly by the relevant permitting authorities; 4) Facilitate the development of infrastructure to enhance the delivery of quality service and also promote the provision of competitive and affordable services nationwide.

6.3 Consumer Protection (2010–2014)

6.3.1 Mobile Number Portability (MNP)

MNP is a system in which a mobile phone customer may change to a different service provider while retaining his entire original mobile phone number, including the old network code. One of the major aims of the NCA is to protect the consumers, especially on quality of use of service and service provision. The MNP policy allows customers to move to another mobile or network provider without necessarily changing their mobile SIM number. Customers normally port, due to quality of service issues or lack of a particular network operator's service in certain areas. The policy, which came into full force in 2010, was to put more pressure on the network operators to pay attention to quality of service issues and also encourage them to spread their coverage if they are to retain and also increase their customer base.

6.3.2 SIM card identification

The National Communications Authority (NCA) announced in July 2010 the start of collection of information by all mobile phone operators aimed at identifying existing and new subscribers to their respective networks. The exercise was to enable the NCA and the mobile operators identify mobile phone SIM cards/chips owners and curb incidents such as loss of phone through theft, nuisance text messages, scams, threats, raising unnecessary alarm or creating panic, deliberately or otherwise.

Although this project was aimed to protect the consumer, one will say that this particular project was seen as a more political project than a regulatory project. In the run-up to the 2012 general elections, the country was so much tensed with unidentified threat and panic messages circulating to some political leaders and the general public. The then government blamed it on their political foes, saying it was a scheme to make the government unpopular. Some interviewees said that ‘the project was motivated by the incumbent government to witch hunt political opponents and also tap in their conversations for political gains’.

7 Impact of Reform Process and Policy Directions on the Ghana’s Telecom Industry

The foundation of the various specific policy directions and the creation of structures were to enhance quality of services provided by the telecom industry. There was very strong public outcry and concern. As the institutional analysis reveals, governments upon governments have always moved to quench public outcry and concerns in order to win power or cult public support: Putting structures to promote more private participation and infrastructure development (which was expected to drive quality of service) while addressing other public concerns related to health, safety and environment. Structures and institutions to address these concerns were much dominating in industry reforms.

In Figure 4, MoC still overseas the activities of the NCA. The emergence of network towers brought so much public concerns especially on health and safety issues; and environment pollution, the ITC was formed by the government and includes institutions such environmental Protection Agency (EPA), Ghana Civil Aviation Authority (GCAA), Metropolitan, Municipal and District Assemblies (MMDAs) and the Radiation Protection Institute (RPI) to deal with these concerns. The NCA on its own overseas the NOs, EMs, PPIs and ISPs and other functions established by an Act of Parliament, NCA Act 524, 1996.

Equipment standards and type approvals are administrative but technical requirement for vendors, manufactures, dealers and network service providers to proof that their communications equipment that are sold, used and meant to be connected to the public networks have met the required national and international standards. It is the mandate of the NCA under Section 3(n) of NCA Act 769 of 2008 to authorize such approvals. Some equipment manufacturers or vendors in Ghana include Ericson and Huawei.

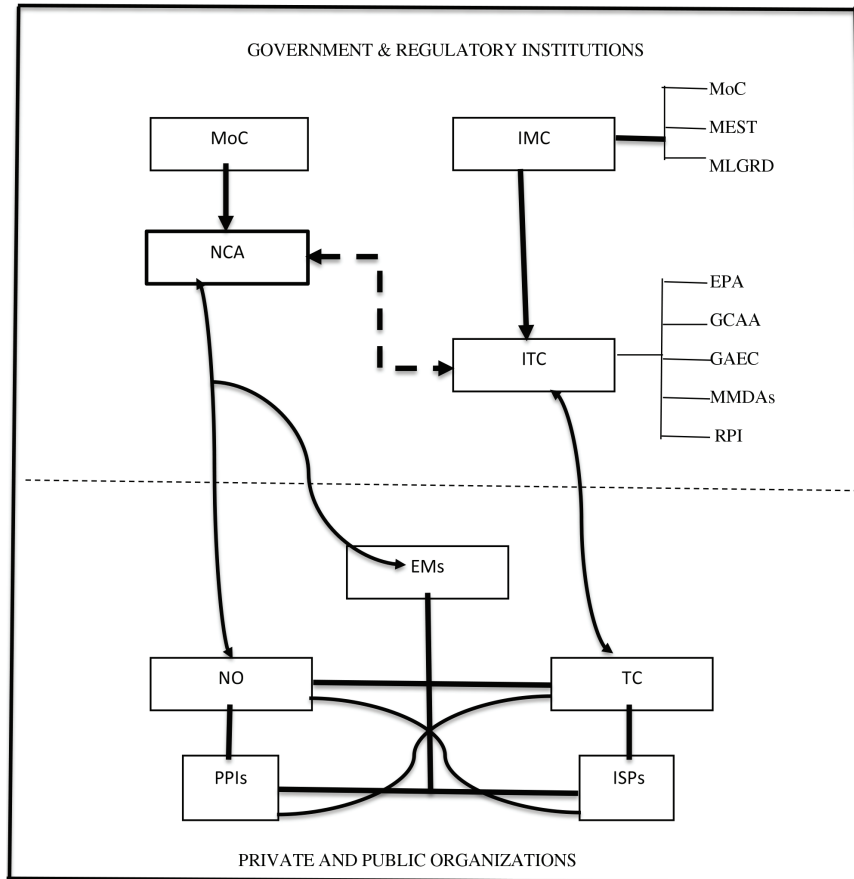


Figure 4 How the Ghana's telecom industry looks today.

Source: Author's.

NCA – National Communication Authority, EMs – Equipment Manufacturers, ITC – Industry Technical Committee, EPA – environmental Protection Agency, GCAA – Ghana Civil Aviation Authority, MMDA's – Metropolitan, Municipal and District Assemblies, NOs – Network Operator, IMC – Inter-Ministerial-Committee, MoC – Ministry of Communication, MEST – Ministry of Environment, Science and Technology, MLGRD – Ministry of Local government and Rural Development and the Radiation Protection Institute (RPI).

8 Conclusions

The study has identified two major periods and the level of governance, from the decentral period where management of the sector was transferred to traditional/tribal leaders, later to municipalities/districts, to the centralization

period where management has been solely in the hands of the Works and Housing Department, and finally to the Ministry of Transport and Communication as the single national entity in charge of the management of the telecom sector. An independent and national regulatory authority was created later to lead the liberalization era.

The research also has shown three key policy directions across the period of reform: Market liberalization (1997–2007) where Westel Limited was introduced into the fixed line market, and Spacefon, Celltell and Mobitel all were introduced into the cellular telephony market. At the beginning of 2008, national policy was directed towards infrastructure expansion, and as a result, infrastructure licensing was introduced opening the door for international tower companies. From the beginning of 2011 up to date, policy is directed at consumer protection and projects such as Mobile Number Portability and SIM card identification have been rolled out.

The use of institutional theory has provided further understanding of the sector reforms. The research of the institutional framework has identified poor performance of GP&T, strong government manipulations (without opposition in parliament), weak workers' union and a general public apathy as the key endogenous factors for reform. International bodies, donor communities and other external agreement have been identified as exogenous factors. In summation, the research has provided a better picture of how the Ghanaian telecom industry looks today.

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Biography



Alexander Osei-Owusu is a Telecommunications management expert heavily involved in telecommunications research. Alex's interests are mainly in the areas of telecommunication's policy formulation and research. He is currently a PhD students at Aalborg University, Copenhagen-Denmark where he is researching on a topic "Policy framework to facilitate access to telecom infrastructure for Ghanaian mobile network operators". He hold a BSc in Computer science from University of Cape Coast, Ghana. Alex is an exceptional scholar. He was adjudged the overall best student and was also presented with the best thesis award during his MSc studies at Ghana Technology University where he successfully completed with distinction. Alex has conducted extensive research work in the area of Information and Communications Technology (ICT). Some of his research work has been accepted at international conferences such as International Telecommunication society held in Spain (Madrid) and the United Kingdom (Cambridge); 37th meeting of (wwrf) world wireless conference held in Germany (Kassel); the Global Development Network (GDN) conference in Accra, Ghana; the 7th International Research Conference organized by Koforidua Polytechnic in Koforidua, Ghana and the African Finance and Economics Association (AFEA) conference in Boston in March 2014. His recent publications were on "The land rental system and diffusion of telecom infrastructure in Ghana – an institutional and transaction economics approach" published as a special issue in Eurasia business review; "Network tower sharing and telecom infrastructure diffusion in Ghana – a Structure-Conduct-Performance approach" and "Leveraging TV white spaces as a tool for improved rural broadband connectivity in developing countries: An Operational Perspective published as a book chapter in ICT Handbook in 5G published by River publishers. Alexander has also co-edited special issue on ICT and developments in Africa for Telecom policy Journal. Alex Osei-Owusu is highly motivated to contribute his quota to the world and his country through cutting edge research.

