

**NIGERIA'S RESPONSE TO THE DYNAMIC TELECOMMUNICATIONS
ENVIRONMENT: A POLICY BASED-STUDY**

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ABSTRACT

IT SEEMS APPROPRIATE TO ASK WHAT IS SPECIAL ABOUT INFORMATION AND INFORMATION TECHNOLOGY BEFORE ONE SETS OUT TO ANSWER THE QUESTION OF HOW INVESTMENTS IN INFORMATION INFRASTRUCTURE SHOULD BE VALUED AND REGULATED. THIS PROJECT THEREFORE DISCUSSES THE THEORETICAL AND PRACTICAL CONCEPTS UNDERLYING RECENT DEVELOPMENTS IN THE REGULATION OF TELECOMMUNICATIONS IN NIGERIA WITH RESPECT TO EFFICIENCY AND WELFARE. IT FOCUSES ON ANALYSING STANDARDIZATION PROBLEMS, PRICING RULES AND ENTRY CONDITION RELATED TO NETWORKS AND NETWORK EFFECTS AND DERIVES PRELIMINARY POLICY RECOMMENDATIONS FOR THE NIGERIAN TELECOMMUNICATIONS INDUSTRY. IN THIS WAY, THE PROJECT PLANS TO CONTRIBUTE TO A LEGITIMATE AND SUSTAINABLE POLICY ENVIRONMENT THAT MAXIMISES THE PUBLIC BENEFITS OF INFORMATION AND COMMUNICATION TECHNOLOGIES THROUGH AN EMERGING NATIONAL INFORMATION INFRASTRUCTURE FRAMEWORK.

1.0 **BACK GROUND AND RESEARCH PROBLEM**

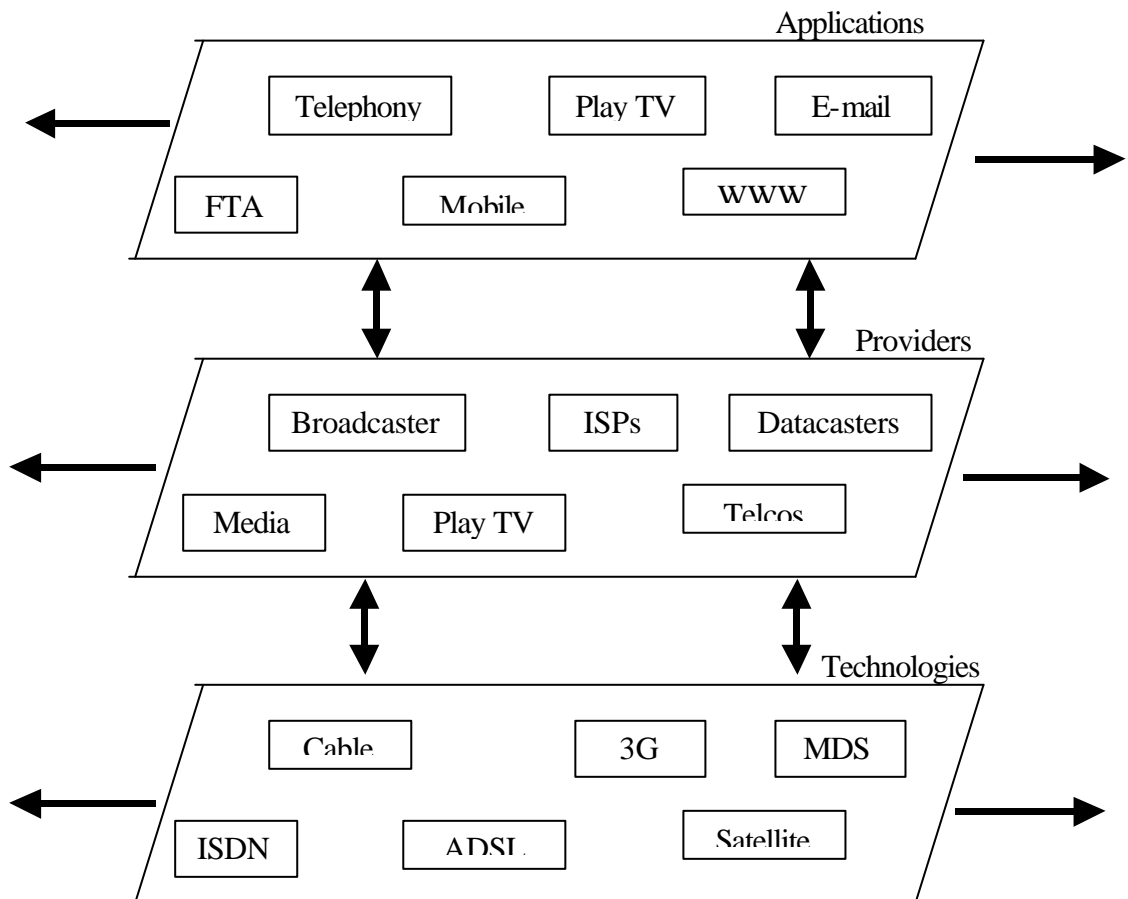
The reform of the information and communication technology (ICT) sector has fueled major changes at the regulatory and institutional levels. One of the most striking changes has been the rise of the ICT sector specific regulatory agency. As at 2001, there were 110 such agencies operating separately from telecommunications service providers. Many of these agencies have been created only in the last five years and they mark a true departure from the way countries around the world approach economic regulation, in general, and the regulation of communication industries, specifically. It is one thing for countries to make a policy decision to create an independent regulatory agency, and quite another to empower the agency to act independently and effectively. Regulatory agencies are not created in vacuums. Heritable, they are the products of political, social, legal and economic conditions that exist at fixed points in time in each country. Nor are these conditions static; regulatory approaches and policies change, and agencies change with them. Nevertheless, the means by which each country creates, structures and

implements its regulatory body is one of the most important factors in the success of its reform process. Thus, newly appointed and responsible regulators are searching for models and best practices as guideposts for their own actions.

Indeed, there are many forces for change in communications, but a handful can be seen as key drivers. Many countries have opened their markets to competition, leading to substantial infrastructure investment, price declines, greater services diversity and product innovation. There has also been an enormous expansion of data traffic compared with voice traffic, and increasing demand for digital networks, leading to a change in network design philosophy from fixed-path circuit switching to variable-path packet switching. The traditional consortium approach to cable and satellite investment is being eroded, and with it the traditional settlements systems. Again, the new wholesale capacity markets are turning bandwidth into a commodity, with various carriers' carriers and bandwidth exchanges emerging. These and other changes, can be characterized as a transition from a telephony world in which technologies, applications and providers operated in

separate 'store pipes', to an IP world in which an ever increasing variety of combinations of technologies, applications and providers is possible (as shown in figure I.I)

Figure I.I Convergent Communications Technologies, Providers and Applications



In this new environment, the regulatory and policy tools from the telephony world are in many cases no longer adequate. The underlying challenge therefore, is to develop new policy and regulatory tools for the new environment.

Telecommunications in Nigeria was established in 1886 by the colonial administration, to promote (mainly) administrative functions and the socio-economic development of the country. Since independence, there have been a number of development plans for expansion and modernization of the telecommunication networks and services. Between 1960 and 1985, the management consisted of the department of posts and telecommunication (P&T) in charge of the Internal network and the Nigerian External Telecommunications (NET) responsible for the external telecommunication services. Telecommunications development during this period was characterized by serious shortfalls between planned targets and their realization, principally because of poor management, lack of accountability and transparency and low-level indigenous technical know-how. However, in 1985, the posts and telecommunication department was split into the postal and

Telecommunications Divisions. The latter was merged with the NET to form Nigerian Telecommunications Limited (NITEL). The main objective of NITEL was to harmonize the planning and coordination of the Internal and external telecommunications services, rationalize investments in telecommunications development and provide easy-access, efficient and affordable services. However, they were numerous shortcomings and it was in order to tackle these shortcomings that the industry was deregulated. Moreover, the industry was deregulated by the establishment of the Nigerian communications Commission (NCC) by decree 75 of 1992 whose main objectives include: creating a regulatory environment for the supply of telecommunication services and facilities, facilitating entry of private entrepreneurs into the market; and promoting fair competition and efficient market conduct among all players in the industry. Other types of telecommunication service operators may provide service within Nigeria, subject to NCC rules and regulations on licensing (if any), service and technical standards, interconnection, and reporting obligations. These operators may include providers of non-basic, value added, and specialized services, such as paging, private voice, and data networks, public

pay telephones and call offices, phone-shops and telecentres, Internet access, and such other services as may be identified and proposed to NCC by industry participants.

However, the global trend is to evolve telecommunications policies that integrate the advantages of rapid technological developments in telecommunications, broadcasting, and the global information super highway. Consequently, Nigerian communications laws should be reviewed and made more all-encompassing in line with the international best practices, towards convergence of technological and market forces in the communications and information technology. Thus, consistent with the philosophy that the private sector will lead the future development of the Nigeria telecommunications sector to the greatest extent possible, controlling ownership interest in NITEL (M-TEL) shall be transferred from government to private investors. As part of the process of privatization, the board of directors of NITEL (M-TEL) shall be granted the authority to reform their organizational, management, and operational structure towards more efficient and market oriented business practice.

As a technology, GSM continues to evolve, with high-bandwidth services becoming a reality for the current 2nd Generation technologies. The GSM network will evolve, with wireless, satellite and cordless systems offering greatly expanded services, including high speed, multimedia data services, in-built support for parallel usage of such services and seamless connection with the Internet and wire line networks. This will see the true convergence between various communications means and networks becoming a reality. With 3G, communications have moved from the traditional voice kiosk to a data hypermarket thus making the Internet accessible through mobile devices. The result will be mobile Internet that allows point-of-sale transactions and location-based services in a way that differs completely from today's Internet.

Indeed, the development path into the 3rd Generation is clearly mapped out and brings with it possibilities for new age data and multi-media applications in critical need by developing countries. Better, fast and instant telecommunications is behind the worldwide globalization process. Even though certain progress has been made in the Nigerian telecom sector in the past, the lack of

foresight and good policies have deprived the economy of the maximum benefits it could have derived from the introduction of new telecommunications technologies. The sector therefore needs to be analyzed, with new policies, programs and projects designed to position it to take advantage of the opportunities provided by new technologies.

2.0 OBJECTIVES OF STUDY

The revolution in communications and computing technology is producing a massive surge in the development of electronic information, education and financial services. While these services continue to sweep through developed economies, inadequate telecommunication infrastructures have isolated most African countries from these developments. The situation is most severe in Nigeria (a federation of 36 states, a federal capital territory (FCT) and 774 local government areas) where the penetration of telephones is the lowest in the world and her economic growth is an

all-time low. However, Nigeria has the potential to leapfrog the development of fixed-network into new technologies such as 3G with its massive potential for communication and data transmission. It is therefore the broad objective of this project to map out the development path into the 3rd Generation technologies.

Specifically, this project shall seek:

- (1) To address the issues created by the unprecedented changes occurring in Nigeria's social, political, economic and legal systems as a result of expanding computing power, convergence, and the rise of a networked world.
- (2) To facilitate the public opinion in the consideration and resolution of domestic and international policies that needs to be addressed in this new communications environment.
- (3) And to develop the Nigerian's National Information infrastructure Framework (NIIF)

3.0 METHODOLOGY

Network fundamentalists would argue that we have seen the invention of computers and their adoption and diffusion while networking lagged behind for a longtime and has become effective only in recent years. Indeed, as long as network effects do not prevail, it does not seem likely that IT investments provide a competitive advantage to an individual firm even though they do not increase overall productivity. In fact, it would well be that the competitive advantage of one firm depreciates the capital of other firms at all excessive rate so that these firms cannot earn the amortization their previous investments and have to cut down future investments. In the end, the competitive edge triggers a retrace which, on the one hand, leads to over-investment in IT and, on the other, to a reduction of complementary investment in IT and, on other, to a reduction of complementary investment and overall output.

In compatibilities in computer hardware and software, the lack of common standards and coordinating institutions and the fundamental problem of excess inertia and inefficient lock-ins,

existing price and entry regulations, on the one hand, and the want of mechanisms to internalize network effects, on the other, are likely factors to explain deficiencies in networking. To some extent, it is the telecommunications component that makes the networking problem in IT prominent. If the telecommunications network does not work properly, then, in general, one computer cannot 'speak' to another computer and the network effects of IT limited to local performance. For this reason, our methodology focuses mainly on telecommunications (as a component of IT) in order to clarify the problems of market regulation and efficiency that are embedded in IT and its network dimension.

Essentially the information industry covers a large range of activities and the question as to whether this is good or bad is irrelevant from an economic point of view. What we are interested in is how it performs (i.e. whether it is efficiently organized) and how its performance can be improved so that it meets the social welfare target. A special feature of information technology is that success is, by and large, determined by relative rather than absolute performance. Often the relatively better information renders the

relatively lesser information absolutely invalid. The winner-takes-all result that seems to be inherent to information technology and can often be only countered by substantial regulation, is correlated with critical mass constraints and network effects. However, in case of critical mass constraints and substantial network externalities, the corresponding information technology may not prevail and there might be no winner at all. Market failure could be corrected by regulation and public support.

On the one hand, it has been argued that pricing rules are static in as much as they do not specify a procedure for revising prices if costs or benefits are subject to change overtime. On the other hand Tye (1993) and many others consider regulations as just temporary events on the way to perfect deregulation. History, however, shows that regulations persist. Again, there are good theoretical arguments as to why some sectors should be regulated at least as long as they constitute monopolistic bottlenecks. Price cap regulation is one way of responding to this problem by-and large, all price cap regulations follow the principles proposed by Littlechild (1983). The price cap sets any percent rise in prices that the

supplier proposes, equal to the general inflation rate minus an 'X-factor' that may be identical to the percent increase in productivity. More specifically, an average price increase of some bundle of the firm's output must not exceed the increase in the retail price index (RPI) minus an exogenously fixed constant X which reflects the firm's potential for price reduction, i.e. X should be high if productivity increases lead to a substantial reduction of costs. The idea is that this reduction should be passed from the firm to the customer.

In conclusion, Waverman and Sirel (1997) ask the question: should incumbent firms be required to unbundle their services as the American model and in a hope of encouraging entry by firms who will add value in some way and resell? Or should regulators follow the British model of not focusing on unbundling in the hope of encouraging facilities-based entry? This is a fundamental question and its answer by and large determines how the telecommunications industry, with its productivity impact on other information technology items, is organized and how the corresponding markets perform. Developing countries, which often

suffer from a negligible installed basis in telecommunications, have virtually no possibility to derive efficiency gains from a policy pattern, at least in the short run. If there is no mechanism to help them escape from this short-term perspective and if no change can be introduced to the regulatory policy, then they will remain in the inefficiency trap. Most case studies indicate that the British model seems more appropriate to trigger substantial investments in telecommunications. However, there is the danger of inefficient duplication of network facilities. The related over-investments, although implying a misallocation from the microeconomic perspective, could nevertheless be beneficial from a macro perspective, enhancing overall economic activities, providing employment for skilled labor and creating human capital.

4.0 EXPECTED OUTPUT AND DISSEMINATION PLAN

The expected outputs will include dissemination outputs such as publications, papers and Nigeriatel conference. This project can, it is hoped, add value to the process of change, particularly by linking what is leered from research to the development outcomes. Essentially, our research output is expected to follow the following format.

A. INTRODUCTION

- B. NIGERIA: COUNTY BACKGROUND**
 - B.1 OVERVIEW**
 - B.2 HISTORY AND POLITICAL ENVIRONMENT**
 - B.3 DEMOGRAPHY**
 - B.4 ECONOMY**
 - B.5 HUMAN DEVELOPMENT, EDUCATION AND HEALTH**

- C. SECTOR REFORM**
 - C.1 History of sector reform**
 - C.2 Public consultation on sector reform**
 - C.3 Telecommunication policy and legislation**
 - C.4 Telecommunications market players**
 - C.5 The Internet in Nigeria**
 - C.6 World Trade Organization commitments**
 - C.7 Broad casting in Nigeria**
 - C.8 Effects of sectoral reforms**

- D Nigeria communication commission (NCC): Institutional and organization structure**
 - D.1 Legislation creating NCC**
 - D.2 Finance**
 - D.3 NCC Board**
 - D.4 STAFF**

- E General Regulatory Powers**
 - E.1 Rulemaking and public consultations**
 - E.2 Arbitration and Dispute Resolution**
 - E.3 Enforcement and IMMUNITY**

- F. Nigeria's Network Characteristics**

- G. LICENCING REGIMES**
 - G.1 The GSM licensing process**
 - G.2 Commercial Radio licensing**
 - G.3 International Data Gateway licensing**
 - G.4 ISP licensing**
 - G.5 Spectrum licensing**

- G.6 Licensing of Networks
- G.7 Current Roaming operator

- H. CRITICAL INFRASTRUCTURE DEPENDENCIES**
 - H.1 The national telecommunication infrastructure
 - H.2 The electricity industry
 - H.3 The Internet Services
 - H.4 The oil and Gas Industry
 - H.5 Surface transportation
 - H.6 Air transportation and airports
 - H.7 Food production and Distribution
 - H.8 Health Care

- I NETWORK SECURITY**
 - I.1 It security zones: a common solution for perimeter defense
 - I.2 Securing the Data: Beyond perimeter defense
 - I.3 Risk of Network infrastructures
 - I.4 Impact of Network-based threats
 - I.5 Application of cyber-crime Laws

- J. International Telecommunication Environment: Evolution Costs and scenarios**
 - J.1 International traffic patters
 - J.2 NCC international business in context
 - J.3 Price elasticity of demand for international calls
 - J.4 Prospects for international competition
 - J.5 Information on NCC costs
 - J.6 Immediate effects on Nigeria
 - J.7 Nigeria Reaction Function

- K. FIXED-MOBILE INTERCONNECTION**
 - K.1 Nigeria Interconnection policy
 - K.2 Interconnection and long-distance networks
 - K.3 Interconnection between local and long-distance Networks
 - K.4 Interconnection between local and mobile networks
 - K.5 Interconnection between local networks
 - K.6 Calling-party-pays

- K.7 Fixed-to-mobile tariff
- K.8 Mobile-to-fixed tariff
- K.9 Billing and collection charge

- L. IP TELEPHONY: Advent, Impact and Regulatory Aspects
 - L.1 IP telephony service market
 - L.2 IP telephony service providers
 - L.3 Facilities-based service providers
 - L.4 Classification scheme and Regulations

- M. BROADBAND REGULATION AND RELATED ISSUES

- N. FEDERAL MINISTRY OF COMMUNICATION (FMC)
 - N.1 Universal service
 - N.2 Private sector consultations
 - N.3 Appeals, public learning and connects
 - N.4 NCC p privatization and relationships

- D. CONCLUSIONS
 - O.1 Structural independence of NCC
 - O.2 Future Institutional structure plans
 - O.3 Proposed changes to the Telecommunications Act and Regulations
 - O.4 Best Practices and challenges

- ANNEX: ACTION PLANS AS PER STRATEGIC BUSINESS PLAN 2003-2010.

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