PROLIFERATION OF UNPROFESSIONAL INFORMATION AND COMMUNICATION TECHNOLOGY OUTLETS AND ITS IMPACTS ON ICT PROFESSIONALISM, PRODUCTS/TECHNOLOGY QUALITY IN NIGERIA

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DEDCLARATION

I, Anietie Ben Essien, do hereby declare that this Dissertation Project is entirely my own composition, and that where works of other persons have been used or refered to, such sources have been duly acknowledged. I further declare that this Dissertation project has not been previously submitted to any institution in anticipation of any award.

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CERTIFICATION

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DIRECTOR OF STUDIES

DEDICATION

This research is dedicated to the Almighty God, the giver of wisdom and knowledge and to Jesus Christ who died to bring salvation to my soul. Through Him I inherit all things on earth and in heavenly places and have hope of being with him when He shall appear the second time to take His people home.

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ABSTRACT

This research was brought to a focus in an attempt to examine the resultant effects of the growth of Information and Communications Technology (ICT) over the years, particularly in Nigeria. The growth has been adjudged to have resulted in the proliferation of ICT outlets in the Country driven by the considered business boom associated with it. This has made room for entry of both trained and the untrained into the ICT business. Does this proliferation have any effect on the quality of goods sold in the market? Does it affect professionalism? What effect does it have on the economy of Nigeria? The researcher therefore tried to resolve these questions.

After extensive literature review, field studies were carried out and data generated and analysed. The findings showed that indeed, the proliferation has brought about very keen competition in the sector, in particular in the open market dominated by “quacks” resulting in drastic fall in prices of the products. To match the prices, products of low quality are brought into the country mainly in the open market. The regulatory Bodies are not doing much to avert this trend and that of entry of all shades of people into the field. Professionalism in ICT is on the way out. Importation is now dominant with no manufacturing plans in focus. This is actually not helping the economy of Nigeria.

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1.0.0 INTRODUCTION

Information and Communications Technology (ICT) is a term which is currently used to denote a wide range of services, applications, and technologies, using various types of equipments and software, often running over telecom networks. ICTs include well known telecom services such as telephone, mobile telephone and fax. Telecom services used together with computer hardware and software form the basis for a range of other services, including e-mail, file transfer from one computer to another, and in particular, the internet, which potentially allows all computers to be connected, thereby giving access to sources of knowledge and information stored on computers worldwide through a common link known as the World Wide Web (www).

1.0.1 ICT DEFINED

The World Bank defines ICTs as “the set of activities which facilitate, by electronics means the processing, transmission and display of information distribution” (Rodriguez and Wilson 2000). ICT is a collection of related technologies defined by their functional usage in information and communication of which a major player is the internet.

ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on, as well as the various services and application associated with them, such as video conferencing and distant learning. It also refers to technologies people use to share, distribute and gather information and to communicate through computers and computer networks.

The importance of ICT is not the technology as such, but it's enabling function in access to knowledge, information and communication which are increasingly important elements in today's sustainable development, economic and social interaction.

1.0.2 IMPORTANCE OF ICT

Dr. Mahmound Reza Delavar, Dr Abbass Rajabifard and Hani Rezayan in their article on *IT Evolution* say that Sustainable Development has been introduced as the first priority of societies. Also Information and Communication Technology (ICT) has played an important role in sustainable development. Sustainable development as the comprehensive and simultaneous development in social, economical and environmental aspects by optimum utilization of limited available resources of societies has been introduced as the first priority of developed and developing societies, affecting all their activities

pervasively. This situation has created a valuable opportunity for developing societies towards taking a huge step towards reducing the gap existing between them and developed societies. Therefore, any activity which could accelerate the sustainable development trend potentially, is under a special consideration and act as priority of societies.

Information and Communication Technology is one of these accelerators that have allocated itself special roles in sustainable development presenting considerable capabilities in Nigeria and the world over. ICT which is created through digital era manifestation is seen as the technology which affords facilities and expedites data creation, utilization, contribution and dissemination to societies and brings the possibility of communication between societies through computer networks.

1.1.0 BACKGROUND OF THE STUDY

Some evolutionary changes have taken place in ICT in Nigeria. In the early 1990, there was manageable size of ICT vendor outfits of between 20 and 50 mainly controlled and managed by computer and communication professionals. Computer and communication Professionals were considered as those that have a formal University or

Polytechnic education in Computer Sciences, Electrical/Electronics Engineering, Computer Engineering, Communication, Data processing and Information Technology. As computer and improved communication systems enter into homes and offices, many people were engaged in the business of rendering services in the ICT industry. This necessitated the establishment of ICT Professional and regulatory bodies, the aim of which was to oversee the whole operations on the industry and ensure that sanity and standards are maintained.

1.1.1 **THE ICT BODIES**

The following are some of the regulatory bodies:

1.1.2 THE NIGERIAN COMPUTER SOCIETY (NCS).

The early brains behind the advent of ICT industry in Nigeria came together in 1978, to form The Computer Association of Nigeria (CAN) now Nigerian Computer Society (NCS). The Nigerian Computer Society is a society for Nigerians around the world in the ICT industry from students to professionals. The aims are:

- To bring together Nigerians around the globe working or interested in computer technology.
- To promote computer and internet technologies within Nigeria. To promote a forum for technology development and utilisation in Nigeria.

- To help businesses and government agencies in Nigeria better understand the benefits of today's technologies and prepare for tomorrow's advances.
- To provide an independent forum for discussion on the provision and implementation of a robust, scaleable and secure Internet infrastructure in Nigeria.
- To support and encourage ICT in Nigeria.
- To provide an online learning and development knowledge base accessible to all Nigerians.
- To ensure that all Nigerians within Nigeria have access to computers and the internet.

1.1.3 THE COMPUTER PROFESSIONALS REGISTRATION COUNCIL OF NIGERIA.

The Computer Professional (Registration Council of Nigeria) was established by a decree of the same name, promulgated as Decree No 49, 1993, with the objective to advance the knowledge of Computer Science and the use of computational machinery and techniques related thereto.

The Computer Professional (Registration Council of Nigeria) was inaugurated on Friday, March 31, 1995 with the responsibility to control and supervise the profession, and is to perform the following duties:

(1.) To determine what standards of knowledge and skills that are to be attained by persons seeking to be members of the profession and improving those standards from time to time as circumstances may permit;

(2.) To secure in accordance with provisions of the Decree, the establishment and maintenance of a register of persons seeking to be registered under the decree to practice the profession and the publication from time to time, of the list of those persons.

(3.) To perform any other function conferred on it by the Decree.

In respect of (3), other functions conferred on the Council, inter alia:

(a) To accredit institutions for the purpose of offering courses approved by council as meeting standards set by council;

(b) To approve courses or programme of courses deemed by Council to meet its standards, and which are designed to confer on persons successfully completing them sufficient knowledge and skills for admission into the profession.

(c) To supervise instructions in institutions accredited by Council.

(d) To conduct professional examinations and award certificates thereof;

(e) To conduct and maintain a library comprising of books and publications for the promotion and advancement of the knowledge of the profession;

(f) To encourage research into Computer Science, allied subjects, and computational machinery to the extent that Council may from time to time, consider necessary;

(g) To receive each year the person in charge of each university or other institution of higher learning in Nigeria having a faculty by whatever name called, at which there is held courses of training in Computer Science or Computer Technology for persons who are seeking to become registered under the Decree, a list of names and such other particulars as the Council may specify, of all persons who attended any such courses at the institution at any time during the last preceding year;

(h) To set standards of behaviors for the members of the profession and ensure compliance therewith, discipline erring members, including removing their names from the register, if in the opinion of Council the offence of such members warrant it.

The Decree makes it illegal for any person (individual or corporate) who is not registered by Council and does not hold a valid current license to:

- Engage himself in the practice of computing and hold himself out to the public as a member of the profession; or

- Render professional service or assistance in or about matters of principle or detail relating to the use of computational machinery and the techniques related thereto;
- Render any other service, which may regulations made by the Council, with the approval of the secretary; to be designated as service constituting practice as a registered member of the profession.
- It is equally illegal for any person (individual or corporate) to hire such a person or employ his services.

In spite of the stated roles of the bodies, the influx of different shades of people into the profession still continues unabated. Thus, this research sets out to highlight the effect the influx has on the ICT industry. It would also seek to highlight the dangers associated with unprofessional attitudes in ICT.

1.1.4 THE STANDARDS ORGANIZATION OF NIGERIA (SON)

The Standards Organisation of Nigeria (SON) was established by Act No. 56 of 1971 which vested it with the authority for standards elaboration, specifications, and quality assurance system of commodities, manufactured industrial and imported products and services generally, including metrology. The Act No. 20 of 1976 which amended the previous one conferred on the Honourable Minister of

Industry the power to declare Mandatory Industrial Standards in respect of products or processes recommended by the Nigerian Standards Council.

The Act No. 32 of 1984 changed the name of the Organisation to Standards Organisation of Nigeria (SON) from Nigerian Standards Organisation (NSO) to eliminate conflicting identity with the then Nigerian Security Organisation. Finally, the Act No. 18 of 1990 conferred on SON partial autonomy from the Industry. This amendment gave far-reaching transformation to the Organisation and its corporate image. The Organisation became a body corporate with succession and a common seal, and may sue or be sued in its corporate name. The following represent the high points of the Act:

a. The elevation of the position of the Chief Executive from Director to Director General.

b. Provision for the positions of Directors, Secretary/Legal. Adviser and such other Staff as may be required to assist the Director General in the performance of the duties of the Organisation under the Act.

c. The appointment, remuneration and other conditions of service of the Directors and Staff of the Organisation shall be determined or prescribed by the Council after consultation with the Federal Civil Service Commission

d. The appointment of the Chief Executive shall be by the President and Commander-in-Chief of the Armed Forces of Nigeria on the recommendation of Honourable Minister of Industry.

e. The Director General shall be the Chief Executive of the Organisation and is subject to the Council's directive on financial, operational, and administrative programs. He shall be free to manage the Organisation in accordance with this Act. The Council shall not interfere with his methods or manner in which he employs the materials and human resources of the Organisation in order to obtain results.

f. This amendment also provides for the strict enforcement of Powers of seizure, confiscation and destruction of sub-standard products including powers to seal up premises where defective products are manufactured or stored. Severe penalties for offending manufacturers, importers and sellers of sub-standard products were also provided for in that Act.

1.1.5 THE NIGERIAN STANDARDS COUNCIL

The Nigerian Standards Council is the governing body of Standards Organisation of Nigeria (SON) established by section 3, subsection 1, of Act No 56 of 1971. The functions of the Nigeria Standard's Council are:

(a) To advise the Federal Government generally on the national policy on standards, standards specification, quality control and metrology;

(b) To designate, establish and approve standards in respect of metrology, materials, product structures and processes for the certification of products in commerce and industry throughout Nigeria;

(c) To provide the necessary measures for quality control of raw materials and products in conformity with specification;

(d) To determine the overall policy of the Organisation in particular with regard to the financial, operational and administrative programmes and to ensure the implementation of the said policy,

(e) To determine appointments, remuneration and other conditions of service of Directors, Secretary and staff of the Organisation;

(f) To carry out other functions imposed on it under this Act or any other written law.

1.2.0 STATEMENT OF THE PROBLEM

The uses of Information and Communication Technology (ICT) have multiplied in size and complexity over the past decade in Nigeria. People are becoming more aware and dependent on ICT for the day to day running of their affairs.

As new technology such as internet services, internet telephone, e-mail and other products and services relating to ICT evolve; the market becomes expanded and attractive. As ICT products such as computers

and it related products and services become more users friendly, a lot of people are acquiring them for their homes, schools and offices. This market expansion is observed to have caused a major shift of people from other distributive businesses in other sectors of the economy, (noticeable from auto parts sales) to the sales and distribution of ICT products in Nigeria. Many ICT Vendor outlets are springing up exponentially especially in the Otigba Market area of Lagos. These are not necessarily owned and run by people with ICT know-how. A good number of them are run by unprofessionals. One of the biggest trouble spots is the distribution of fake products to teaming and in most cases unsuspecting population. Another is the production of half baked young people that parade the road as ICT resource “engineers” which is a terrible blow on Professionalism and quality of service delivery. What effect does this exponential growth cause to the ICT industry and to the economy? Is it a healthy development or not? Are any form of controls and regulations applied to the ICT industry as is the case with Accounting and other professions? The research hopes to address those questions.

1.3.0 OBJECTIVES OF THE RESEARCH

The objectives of the research are:

1. To determine the effect of the proliferation of these quack ICT outlets in the industry and to use the outcome of the research to formulate workable suggestions for the establishment of effective control mechanisms to be introduced into the IT and communication Technology distribution, management and engineering outlets in Nigeria.

2. To determine the professional level of people currently running ICT outlets and to determine the way it affects the profession and the economy and the way forward.

3. To determine the current role played by any ICT regulatory body in the industry and to suggest positive ways for ICT development and enhancement.

1.4.0 THE RESEARCH PROBLEM (WHAT WILL BE STUDIED)

The researcher intends to look into the *mode operandi* of the different Information and Communication Technology channels with the aim of ascertaining:

- The position of ICT industry in Nigeria
- Standard of professionalism in the ICT industry few years back.
- Current level of professionalism in the ICT industry
- The categories of people and organizations engaging in ICT business now and for few years ago
- Whether there are changes and the things that are responsible for the changes if any.
- Whether there are standards that were and are still required before any entry is allowed into the business. If any, what are they?
- The role of professional bodies, if any, in the circumstances
- The role of Standards Organizations and consumer Protection Agencies
- The buyers' requirements and attitudes as contributive factors to the circumstance
- The effect (negative or positive) of the *modus operandi* in the ICT industry in Nigeria and on the quality of technology and service delivery in the sector.
- The impact on professionalism and on the economy of Nigeria
- The way forward.

1.5.0 THE RESEARCH METHODOLOGY (HOW IT WILL BE STUDIED)

The researcher will make use of survey research method for the study. The survey researcher will select sample from a subset of the population of well established ICT vendor outlets who have been in existence for many years before the current development. Other samples from the subsets of the populations of medium and the new entrants ICT Vendor outlets and those of the ICT devices and service users and professional bodies will also be used.

The researcher will design questionnaires using ordinal scale of summated rating scale (A Likert scale) and administer them to the identified populations in equal proportions. The summated rating scale easily transforms feelings into a seemingly interval scale which is amenable to statistical analysis. The (Chi-square) X^2 analysis will conveniently be used to analysis the data collected.

1.6.0 SCOPE OF THE STUDY

The study is expected to run through a period of three (3) years from 2005 to 2007. It will pay more attention to the growth of ICT and its attendant gains and problems in Nigeria with particular emphasis on

Computer and computer products, Data communications and computer related services.

The first chapter will cover the introduction to the study. Chapter Two will deal with Literature Review. Chapter Three will focused on the methodology used. Chapter Four will be Data Presentation, analysis and hypothesis testing. Chapter Five will dwell on the discussion of the results while the summary of the findings, conclusions, recommendations will come under Chapter Six. Bibliography will immediately follow Chapter Six.

1.7.0 RATIONALE FOR THE RESEARCH (ITS IMPORTANCE, WHO WILL BENEFIT FROM THE RESEARCH)

The need to study the effect of the influx of entrants into the ICT business cannot be overemphasized. Consequently, this will lead to the identification of the problems and merits associated with it. These will be translated into a documented contribution to the existing ICT Policies and regulations in Nigeria.

The rationale for the research therefore is to establish, highlight and address the effects (if any) of the entry of quack ICT outlets into the Nigerian ICT market and the resultant effect on professionalism, employment and quality of services/technology delivery. The

beneficiaries cut across the whole spectrum of the economy as ICT is deployed across every sector of the Nigerian economy.

1.8.0 HYPOTHESIS (WHAT WILL THE RESEARCH TRY TO SHOW OR PROVE?)

The following Hypotheses are developed and will be tested in the course of the research.

1.8.1 FIRST HYPOTHESIS

NULL (HO): The birth of quack ICT outlets in Nigeria has affected ICT Professionalism in Nigeria.

ALTERNATIVE (HI): The birth of quack ICT outlets in Nigeria has not affected ICT Professionalism in Nigeria.

1.8.2 SECOND HYPOTHESIS

NULL (HO): The birth of quack ICT outlets in Nigeria has affected the quality of ICT goods distributed in the Country.

ALTERNATIVE (I): The birth of quack ICT outlets in Nigeria has no effect on the quality of ICT goods distributed in the Country.

1.8.3 THIRD HYPOTHESIS

NULL (HO): The birth of quack ICT outlets in Nigeria has positive effects on the economic indices of the country.

ALTERNATIVE (HI): The birth of quack ICT outlets in Nigeria has negative effects on the economic indices of the country.

1.9.0 DEFINITION OF TERMS USED

BODY LANGUAGE: Body language is a broad term for forms of communication using body movements or gestures instead of, or in addition to, sounds, verbal language, or other forms of communication.

BROADBAND: Broadband in telecommunications is a term which refers to a signaling method which includes or handles a relatively wide range of frequencies which may be divided into channels or frequency bins. Broadband is always a relative term, understood according to its context. The wider the bandwidth, greater is the information carrying capacity.

BROADCASTING: Broadcasting is the distribution of audio and/or video signals which transmit programs to an audience. The audience may be the general public or a relatively large sub-audience, such as children or young adults.

CHAT ROOM: A chat room is an Internet area where you can communicate via text and have real-time conversations with many people at the same time The encounter is anonymous. There are different levels of supervision in chat rooms. Some are completely unsupervised, some have leaders who moderate the discussion; while others have monitors who assess what people write before anyone else gets to see it. There are also private chat rooms in which those who participate do so by invitation

COMPUTER SOFTWARE: A set of computer programs, procedures, and possibly associated documentation concerned with the operation of a data processing system.

ELECTRONIC COMPUTER: An electronic (ICT) device that has the ability to accept data, internally store, and execute a programme of instructions, perform mathematical, logical, and manipulative operations on data, and report the results.

EMAIL: Electronic mail (abbreviated "e-mail" or, often, "mail") is a store and forward method of composing, sending, storing, and receiving messages over electronic communication systems. The term "e-mail" (as a noun or verb) applies both to the Internet e-mail system based on the Simple Mail Transfer Protocol (SMTP) and to intranet systems allowing users within one organization to e-mail each other.

GESTURE: A gesture is a form of non-verbal communication made with a part of the body, used instead of or in combination with verbal communication.

HTML: HTML, short for *Hypertext Markup Language*, is the predominant markup language for the creation of web pages. It provides a means to describe the structure of text-based information in a document — by denoting certain text as headings, paragraphs, lists, and so on — and to supplement that text with interactive forms, embedded images, and other objects.

INTERNET EXPLORER: Windows Internet Explorer (also called Microsoft Internet Explorer) is a series of proprietary graphical web browsers developed by Microsoft and included as part of the Microsoft Windows line of operating systems starting in 1995.

MAILING LIST: A mailing list is a collection of names and addresses used by an individual or an organization to send material to multiple recipients. The term is often extended to include the people subscribed to such a list, so the group of subscribers is referred to as "the mailing list", or simply "the list.

NETWORK: A computer network is multiple computers connected together using a telecommunication system for the purpose of communicating and sharing resources.

NON VERBAL COMMUNICATION: Nonverbal communication is usually understood as the process of communication

through sending and receiving wordless messages.

OPERATION SYSTEM: Software that controls the execution of computer programs and that may provide scheduling, debugging, input/output control, accounting, compilation, storage assignment, data management, and related services.

OTIGBA MARKET: This is an area in Ikeja where former residential buildings have been converted to shops and stores for the marketing of all shades of ICT products.

PEER TO PEER: A peer-to-peer (or P2P) computer network relies primarily on the computing power and bandwidth of the participants in the network rather than concentrating it in a relatively low number of servers. P2P networks are typically used for connecting nodes via largely *ad hoc* connections.

PROCEEDURE: A procedure is a specification of the series of actions, acts or operations which have to be

executed in the same manner in order to obtain always the same result in the same circumstances.

SATELLITE: Satellite is any object which has been placed into orbit by human endeavor. They are sometimes called artificial satellites to distinguish them from natural satellites such as the Moon.

SIGN LANGUAGE: A sign language (also signed language) is a language which uses manual communication, body language and lip patterns instead of sound to convey meaning—simultaneously combining hand shapes, orientation and movement of the hands, arms or body, and facial expressions to express fluidly a speaker's thoughts.

SOFTWARE PACKAGE: A computer program supplied by computer manufacturers, independent software companies, or other computer users. Also

known as canned programs, proprietary software, or packaged programs.

TECHNIQUES: Technique may be defined as communicable procedures; ways of carrying out conscious activities, which can potentially be understood by others.

TECHNOLOGY: A technology can be defined as a bundle of techniques, as a set of communicable procedures surrounding some general activity.

TELECONFERENCING: The use of video communications to allow business conferences to be held with participants who are scattered across a country, continent, or the world.

TELEPATHY: Telepathy is direct transference of thought from one person (sender or agent) to another (receiver or percipient) without using the usual sensory channels of communication, hence a form of extrasensory perception.

VERBAL COMMUNICATION: Verbal communication is usually understood as the process of communication through sending and receiving messages in words.

WEB BROWSER: A web browser is a software application that enables a user to display and interact with text, images, and other information typically located on a web page at a website on the World Wide Web or a local area network.

WEB PAGE: A Web Pageis a document, typically written in HTML, that is almost always accessible via HTTP, a protocol that transfers information from the website's server to display in the user's Web browser.

WEBSITE (OR WEB SITE): This is a collection of Web pages, images, videos and other digital assets and hosted on a particular domain or subdomain on the World Wide Web.

WORK STATION: A workstation is a high-end desktop or deskside microcomputer designed for technical applications. Workstations are intended primarily to be used by one person at a time, although they can usually also be accessed remotely by other users when necessary.

WORLD WIDE WEB: The World Wide Web (or the "Web") is a system of interlinked, hypertext documents that runs over the Internet. With a Web browser, a user views Web pages that may contain text, images, and other multimedia and navigates between them using hyperlinks.

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CHAPTER TWO

2.0.0 LITERATURE REVIEW

2.0.1 INTRODUCTION

Trends in the global evolution of Information and Communication Technology (ICT) have widely been commented on by different authors, scholars and researchers. Impact of such evolution on society, sustainable development, employment, economy, quality of goods and services, education and social life have also been looked into by different authorities but a consensus is yet to evolve.

The Nigerian Society is conscious of the impact Information and Communication Technology has on the overall development and growth of the nation. The deployment of related goods and services are critical to the impact itself. Hence it is desirable to examine the origin, the growth and the relevance of ICT in the context of national growth. In so doing, some critical terms need to be discussed.

2.1.0 INFORMATION

Information is a term with many meanings depending on context, but is, as a rule closely related to such concepts as meaning, knowledge, instruction, communication, representation, and mental stimulus. Simply stated, Information is a message received and understood. In terms of data, it can be seen as a collection of facts from which conclusions may be drawn. There are many other aspects of information since it is the knowledge acquired through study or experience or instruction. But overall, information is the result of processing, manipulating and organizing data in a way that adds to the knowledge of the person receiving it.

Information is a basic resource in today's world. We are living in an information society whose economy is heavily dependent on the creation and distribution of information by knowledge workers who harnessed information resources to benefit society, including finding ways to use information to make better use of our limited supplies of resources. A major, even revolutionary, tool in the production and use of information is the electronic computer. The use of computer is widespread and vital to business, government and society. It has become even more so due to the rapidly growing use of

microcomputers both at work and at homes. This tool is used to properly harness the information resources in today's dynamic society.

According to Shiralee Saul (2001) in his article "Telegraph and Samuel Morse Page", Today's information age began with the Samuel Morse's telegraph transmitter and receiver invented in 1837. It "was the first instrument to transform information into electrical form and transmit it reliably over long distance. Today, the pace of change brought about by new developments in this sector has had significant effect in the way of life of the people generally. In Nigeria today, increased access to information processing devices in the home, at work, and in educational institutions has actually enhanced the standard of information delivery. The world has now become a global village.

2.1.1 INFORMATION AGE

National museum of American History commenting on the History of Computer says that Information Age centers on the technical evolution of electrical and electronic information technology. The telegraph began a revolution in communications by transmitting information in electrical form instantly to distant locations. This new phenomenon of instant information was later expanded by the telephone, radio and television. Then the digital electronic computer made it possible to process

information instantly. As the computer developed and matured, communication and processing technologies were joined into networks that now stretch around the world, affecting all areas of global society.

R. A. Fisher (2002), in his estimation theory say: “An important characteristic of information is that there is a definite sender and at least one receiver. Many refinements of this assume the existence of a common language understood by the sender and at least one of the receivers. An important variation identifies information as that which would be communicated by a message if it were sent from a sender to a receiver capable of understanding the message. However, in requiring the existence of a definite sender, the "information as a message" model does not attach any significance to the idea that information is something that can be extracted from an environment, e.g., through observation, reading or measurement”.

2.2.0 COMMUNICATION

Communication is a kind of social interaction where at least two interacting agents share a common set of signs and a common set of semiotic rules. **“**Wikipedia Online Encyclopedia”, *Communication,* (Retrieved on February 2, 2006). <http://www.wikipedia.org/information>. In a simplistic form, information

is sent from a sender or encoder to a receiver or decoder. Communication development is the development of processes enabling one to understand what others say (or sign, or write) and speaks (or signs, or write), translate sounds and symbols into meaning and learn the syntax of the language. Specialized fields focus on various aspects of communication and include the following:

- Non-verbal communication, the act of imparting or interchanging thoughts, opinions or information without the use of words

- Symbolic communication, the exchange of messages that change *a priori* expectation of events

- Animal communication, the discipline of animal behavior that focuses on the reception and use of signals

- Mass communication

- Telecommunication

- Development communication

- Communication studies

- Interpersonal Communication

- Organizational communication

Nonetheless, communication is usually described along three major dimensions:

(i) Content

(ii) Form

(iii) Destination

There are many theories of communication and a commonly held assumption is that communication must be directed towards another person or entity. Plato Stanford, *Theories of Commun ication*, <http://www.plato-stanford.edu/entries>. Retrieved on February 8, 2006.

Ludwig Wittgenstein (2002), states that there are many different areas of communication. A few are: nonverbal communication, verbal communication, and symbolic communication. Nonverbal communication deals with facial expressions and body motions. 93% of “emotional meaning” we take from other people is found in the person’s facial expressions and tone of voice, the other 7% is taken from what the person actually says (More Than Talk). Verbal communication is

when we communicate our message verbally to whoever is receiving the message. Symbolic communications are the things

that we have given meaning to and that represent a certain idea we have in place, for example, the American flag is a symbols that represent freedom for the Americans themselves, or imperialism and evil for some other countries.

Communications media impact more than the reach of messages. Modern communication media now allow for intense long-distance exchanges between larger numbers of people (many-to-many communication via e-mail, Internet forums). On the other hand, many traditional broadcast media and mass media favor one-to-many communication (television, cinema, radio, newspaper, magazines).

The adoption of a dominant communication medium is important enough that historians have folded civilization into "ages" according to the medium most widely used. A book titled "Five Epochs of Civilization" by William McGaughey (Thistlerose, 2000) divides history into the following stages: Ideographic writing produced the first civilization; alphabetic writing, the second; printing, the third; electronic recording and broadcasting, the fourth; and computer communication, the fifth. The media affects what people think about themselves and how they

perceive people as well. What we think about self image and what others should look like comes from the media.

While it could be argued that these "Epochs" are just a historian's construction, digital and computer communication shows concrete evidence of changing the way humans organize. The latest trend in communication, termed smart mobbing, involves ad-hoc organization through mobile devices, allowing for effective many-to-many communication and social networking.

2.3.0 TELECOMMUNICATION

In Online Encyclopedia Britannica, Telecommunication is described as the transmission of signals over a distance for the purpose of communication. Today this process almost always involves the sending of electromagnetic waves by electronic transmitters but in earlier years it may have involved the use of smoke signals, drums or semaphores. Today, telecommunication is widespread and devices that assist the process such as the television, radio and telephone are common in many parts of the world. There is also a vast array of networks that connect these devices, including computer networks, public telephone networks, radio networks and television networks. Computer communication across the Internet, such as e-mail and instant

messaging, is just one of many examples of telecommunication. <http://www.britannica.com/eb/article-9110258>.

Nowadays, the use of technology to aid and enhance distance communications, telecommunications in short, is usually taken to represent communication technology in general. In telecommunications, the first transatlantic two-way radio broadcast occurred on July 25 1920. As the technology evolved, communication protocol also had to evolve. The real mail or postal system devised by the ancient Romans in the field of communication also evolved. In virtual management, an important issue is the evolution of computer-mediated communication. The view people take toward communication is changing, as new technologies change the way they communicate and organize. In fact, it is the changing technology of communication that tends to make the most frequent and widespread changes in a society - take for example the rise of web cam chat and other network-based visual communications between distant parties. The latest trend in communication, decentralized personal networking is termed Smart mob/smart mobbing.

Communication can therefore be described in summary as the process of transmitting and receiving ideas, information and messages. It is the

human process of exchanging information usually via a common protocol. The human communications are the sharing of knowledge and experiences, the giving or receiving of orders and cooperation. Common forms of human communication include telepathy, body language, sign language, speaking, writing, gestures, and broadcasting. Communication varies considerably in form and style when considering scale. Internal communication, within oneself, is intrapersonal while communication between two individuals is interpersonal. Interpersonal communication in the form of conversation plays an important role in learning. At larger scales of communication both the system of communication and media of communication change.

The root of communication by artificial means, i.e. not using biologically immediate means like vocalization (or *speech* when occurring between humans), is generally believed to be the art of writing that most probably goes back to the more ancient arts of drawing and painting.

These successive world civilizations are also associated with the institutional mix of society. World history is told accordingly

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2.4.0 TECHNOLOGY

Online Encyclopedia Britannica (retrieved on February 7th 2007) states: "Technology as the development over time of systematic techniques for making and doing things. The term technology, a combination of the Greek techne, "art, craft," with *logos*, "word, speech," meant in Greece a discourse on the arts, both fine and applied. When it first appeared in English in the 17th century, it was used to mean a discussion of the applied arts".

Technology is the application of scientific knowledge to the practical aims of human life or, as it is sometimes phrased, to the change and manipulation of the human environment.

According to the involved science fields and engineering domain where it is developed, Wikipedia Online Encyclopedia (retireved February 7th 2007) states that there are many kinds of technologies. Generally, the following distinctions can be made:

- "Science is the formal process of investigating natural phenomena. It produces information and knowledge about the world."
- "Engineering is the goal-oriented process of designing and building tools and systems to exploit natural phenomena for a practical human means. Engineers work within the constraints of natural laws and societal needs to create technology."

- “Technology is the consequence of these two processes and societal requests. Most commonly, the term technology is used as the name of all engineering products”.

For scientists and engineers, technologies are: conceptual tools - as methods, methodologies, techniques; instruments - as machines, apparatus, software programs; as well as, different artificial materials which they normally use.

Until recently, it was believed that the development of technology was a concept akin and restricted only to human beings, but recent studies show that other primates (such as chimpanzees), and certain dolphin communities, have developed simple tools and learned to pass this knowledge to other generations, what would constitute a form of non-human technological development.

For human beings this does not only mean that it is possible to learn how to use tools from one's parents, but that the past is in general inscribed in objects and remains. Whether purposely or incidentally, every manufacture is a primitive tool about the life of the person whose gesture is inscribed in the flint from which it is fashioned. As Stiegler puts it, "humans die but their histories remain." According to Stiegler this interrupts the ordinary processes of natural selection, and it is therefore no more true to say that humans invented technology than it is to say that technology invented humanity.

“It is important to understand that technology is practice, it is the way we do things around here. This definition takes machines and devices into account, as well as social structures, command, control, and infrastructures. It is helpful for me to remember that technology is practice. Technology, as a practice, means not only that new tools change, but also that we can change the practice. If we have the political will to do so, we can set certain tools aside, just as the world has set slavery and other tools aside. It is also the nature of modern technology that it is a system. One cannot change one thing without changing or affecting many others.” This is the view of Technology by Ursula Franklin (1989).

2.4.1 HISTORY OF TECHNOLOGY

From a renowned Scientist, Mandel (2004) in his article in the Annual Periodicals on the History of Technology, Mandel elaborates that history of Technology is at least as old as humanity. Some primitive forms of tools have been discovered with almost every find of ancient human remains. The history of technology follows a progression from simple tools and simple (mostly human energy sources to complex high-technology tools and energy sources.

The earliest technologies converted readily occurring natural resources (such as rock, wood and other vegetation, bone and other animal byproducts) into simple tools. Processes such as carving, chipping, scraping, weaving, knotting, rolling (the wheel), and sun-baking are simple means for the conversion of raw materials into usable products. Anthropologists have uncovered many early human habitations and tools made from natural resources. Birds and other animals often build elaborate nests and some simple tools out of various materials. We normally don't consider them to be performing a technological feat, primarily because such behavior is largely instinctive. There is some evidence of occasional cultural transference, especially among the other, nonhuman primates. Nevertheless, there is now considerable evidence of such simple technology among animals other than humans.

Tools include both simple machines (such as the lever, the screw, and the pulley), and more complex machines (such as the clock, the engine, the electric generator and the electric motor, the computer, radio, the telephone handsets, ICT devices and products, and the Space Station, among many others).

Bunch, Bryan and Alexander (1993) agree that as tools increase in complexity, so does the type of knowledge needed to support them. Complex modern machines require libraries of written technical

manuals of collected information that has continually increased and improved their designers, builders, maintainers, and users often require the mastery of decades of sophisticated general and specific training. Moreover, these tools have become so complex that a comprehensive infrastructure of technical knowledge-based lesser tools, processes and practices (complex tools in themselves) exist to support them, including engineering, medicine, and computer science. Complex manufacturing and construction techniques and organizations are needed to construct and maintain them. Outlets are also needed to distribute them to the people. Entire industries have arisen to support and develop succeeding generations of increasingly more complex tools.

Hughes (1995) therefore concluded that, Technology may be looked at as a social space within which structuring of institutions and people (in terms of their material positions and mental states) occur in relation to a bundle of techniques. A technology may be identified by characteristics of artifacts that are produced from that activity. The former view of technology is emphasized with the technology field, the latter with the technological paradigm and with the early phases of the evolution of technological systems.

2.4.2 INFORMATION TECHNOLOGY

Information Technology (IT) is concerned with the use of technology in managing and processing information, especially in large organizations.

Ben Meadowcroft (2002), in his paper on *Impact of Information Technology on Work and Society,* writes: “Information technology is the technology used to store, manipulate, distribute or create information. The type of information or data is not important to this definition. The technology is any mechanism capable of processing this data.” Kathleen Guinee (2004) wrote, "By information technology, is the tools used to perform calculations, to store and manipulate text, and to communicate. Some of these twentieth century tools include: the adding machine, slide rules, and calculator for performing calculations, the typewriter and word processor for processing text, and the telephone, radio, and television for communicating”. <www.cs.princeton.edu/~kguinee/thesis.html>

The information technology may then be seen as the social space structured around the production, use, definition and control of information technology. Information technology is the base technology for information systems (IS). It includes the designs and characteristic materials used in computer hardware, software and peripheral

equipment as well as the bundle of techniques for developing, implementing and maintaining computer-based information systems.

2.4.3 IDENTIFICATION OF MAIN DEVELOPMENTS

Ben Meadowcroft (2002), in his paper on *Impact of Information Technology on Work and Society* stated that the identification of significant developments in IT begins chronologically in 1969. He further stated: “It was decided to arrange the developments in a chronological order. The advantages of this approach for this section of the report are that the developments are presented in a logical order. A development in the sphere of information technology often was dependent upon other developments that preceded it. The chronological order therefore provides a simple and commonly understood framework in which to present the summary”. Ben Meadowcroft then stated the chronological developments as follows:

2.4.4 TIMELINE

a) 1969: The Arpanet was introduced, and was funded by the department of defence. <http://www.tuxedo.org/~esr/ writings /hacker-history/hacker_history/2.html>

b) 1970: The first automatic teller machine was introduced. <http:www.warbaby.com/FGtest/Timeline.html>. <http://www.computer.org/computer/timeline/timeline.pdf>

c) 1971: The first single chip central processing unit was introduced, the Intel 4004. <www.co.umist.ac.uk/services/academic/ resources/>. The first network e-mail message is sent by Ray Tomlinson of Bolt Boranek and Newman. <http://www.computer.org/computer/timeline/timeline.pdf>.

d)1972: Lexitron, Wang and VYTEC introduce Word Processing systems.<http://www.computer.org/computer/timeline/timeline.pdf>

e) 1973: The Xerox Paulo Alto Research Centre developed the Alto, an experimental computer that uses a graphical user interface and a mouse.

f) 1978: Ron Rivest, Adi Shamir and Leonard Adelman introduce the RSA cipher as a public key cryptosystem.

g) 1979: The first electronic spreadsheet program is introduced.

h) 1981: IBM introduces its first personal computer with an operating system developed by Microsoft.

i) 1983: The switchover to the TCP\IP protocol marks the beginning of the global Internet.

j) 1985: Microsoft releases the Windows operating system.
<http://www.co.umist.ac.uk/services/academic/resources/l>

k) 1989: The world wide web project is proposed to the European Council for Nuclea Research (CERN).
<http://www.computer.org/computer/timeline/timeline.pdf>

l) 1990: Windows version 3.0 is released bringing a stable graphical user interface to the IBM Personal Computer.

m) 1993: The Mosaic NCSA is developed by the National Centre for Super computing Applications.

n) 1995: The first full length feature movie created by a computer is released. Toy Story.

o) Late 1990's: The emergence of electronic commerce." Nigeria, at this time had been into the use of IT in corporate institutions. Few IT channels were in operation. Most IT products were sourced from the vendor company directly from the manufacturers. Electronic commerce was gradually gaining ground and was being appreciated in the country but very few vendors were in existence because Nigerians at that time prefered to be gainfully employed by either the Government or by the few multinational companies that existed then.

A. L. Friedman (1994) in his work: *Rhythm and the Evolution of Information Technology,* stated that the history of the IT may be divided into four phases. Each can be thought of as dominated by a particular problem that was generally thought at that time to be the major constraint on further growth of the field. During the transition from one phase to another, efforts at developing new technology shifted towards

alleviating the new constraint (though certainly all efforts did not shift). In addition the character of the dominating constraint during any one phase affected other aspects of IT; such as the sort of people sought after to carry out systems development work, the way such people were managed, the way developers related to their organizational 'environment'.

Friedman further asserted that the first phase lasted until the mid-to-late 1960s. Then the dominant problem was computer hardware capacity. The second phase was dominated by software constraints or by what came to be known as the software productivity gap. This phase lasted until the early 1980s. In the third phase the dominant constraint has been the problem of user relations. Arguably at the end of the 1990s which was the fourth phase, there is a turning point with the new constraint being problems with systems such as security and standards.

The transition from one phase to another, Friedman stated, can be identified only roughly. In some organizations the changes associated with new phases have been delayed or they have not occurred at all. The factors which lead to changes in what is perceived to be the dominant constraint on the field's growth, which have therefore 'driven' the field from one phase to another, are a complex combination of technical and social factors. Successful innovation, technical change

itself, has been a primary factor. This gives the history of the development a trajectory-like appearance. However the character of the users and of the uses to which IT has been put, as well as the nature of the labor market for IT-specialists, and the actions of certain key groups of opinion-formers, have also been essential features. These factors are themselves influenced by general social conditions. They vary with different social contexts.Wikipedia Online Encyclopedia. **<**http://www.wikipedia.com/information> (retrieved 8th February, 2007), however explained elaborately that the first commercial business computer was developed in the United Kingdom in 1951, by the Joe Lyons catering organization. This was known as the 'Lyons Electronic Office' - or LEO for short. It was developed further and used widely during the 1960s and early 1970s. (Joe Lyons formed a separate company to develop the LEO computers and this subsequently merged to form English Electric Leo Marconi and then International Computers Ltd.)

Early commercial systems according to Wikipedia, were installed exclusively by large organizations. These could afford to invest the time and capital necessary to purchase hardware, hire specialist staff to develop custom software and work through the consequent (and often unexpected) organizational and cultural changes.

Wikipedia further asserted that at first, individual organizations developed their own software, including data management utilities, themselves. Different products might also have 'one-off' custom software. This fragmented approach led to duplicated effort and the production of management information needed manual effort. High hardware costs and relatively slow processing speeds forced developers to use resources 'efficiently'. Data storage formats were heavily compacted, for example. A common example is the removal of the century from dates, which eventually lead to the 'millennium bug'. Data input required intermediate processing via punched paper tape or card and separate input to computers, usually for overnight processing. Data required validation in batches. All of this was a repetitive, labour intensive task, removed from user control and error-prone. Invalid or incorrect data needed correction and resubmission with consequences for data and account reconciliation. Data storage was strictly serial on paper tape, and then later to magnetic tape: the use of data storage within readily accessible memory was not cost-effective. Results would be presented to users on paper. Enquiries were delayed by whatever turn round was available.

Today, as with other industrial processes , commercial IT has moved in all respects from a custom, craft-based industry where the product was tailored to fit the customer; to multi-use components taken off the shelf

to find the best-fit in any situation. Mass-production has greatly reduced costs and IT is available to the smallest company or one-man band - or school-kid. IT has also become a major source of employment .

LEO, according to Wikipedia was hardware tailored for a single client. Today, Intel Pentium and compatible chips are standard and become parts of other components which are combined as needed. One individual change of note was the freeing of computers and removable storage from protected, air-filtered environments. Microsoft and IBM at various times have been influential enough to impose order on IT and the resultant standardizations allowed specialist software to flourish. Software is available off the shelf: apart from Microsoft Office or IBM Lotus Notes, there are also specialist packages for payroll and personnel management, account maintenance and customer management, to name a few. These are highly specialized and intricate components of larger environments, but they rely upon common conventions and interfaces.

Data storage has also standardized. Relational databases are developed by different suppliers to common formats and conventions. Common file formats can be shared by large main-frames and desk-top personal computers, allowing online, real-time input and validation.

In parallel, software development has fragmented. There are still specialist technicians, but these increasingly use standardized

methodologies where outcomes are predictable and accessible. At the other end of the scale, any office manager can dabble in spreadsheets or databases and obtain acceptable results (but there are risks) according to Wikipedia.

Information technology (IT) therefore is a broad subject concerned with technology and other aspects of information processing/managing and processing information, especially in large organizations.

In particular, IT deals with the use of electronics/electronic computers and computer software to convert, store, protect, process, transmit, and retrieve information. For that reason, computer professionals are often called '"IT specialists"', and the division of a company or university that deals with software technology is often called the '"IT department"'. Other names for the latter are information systems/information services (IS) or management information system/management information services (MIS). The manufacturers of IT resources are known as Computer Manufacturing Companies and the marketers are called Vendors or IT Outlets.

2.5.0 THE INTERNET

The Internet has revolutionized the computer and communications world like nothing before. The invention of the telegraph, telephone, radio, and computer set the stage for this unprecedented integration of capabilities. The Internet is at once a world-wide broadcasting capability, a mechanism for information dissemination, and a medium for collaboration and interaction between individuals and their computers without regard for geographic location.

The Internet represents one of the most successful examples of the benefits of sustained investment and commitment to research and development of information infrastructure.

Interactions between individuals have been enhanced by the development of information and communication technologies. New channels of communication have been opened between people in the last thirty years. These developments have been assisted by such projects as the Arpanet, the forerunner to the Internet. The Arpanet was commissioned as an aid to research between various institutions. This institutional use was also accompanied by an unofficial use between individuals. The Arpanet hosted mailing lists, some of which individuals used to communicate with each other on non-institutional business. These included the science fiction mailing list.

The Internet therefore started in 1969 as the ARPAnet. Funded by the U.S. government, the ARPAnet became a series of high-speed links between major supercomputer sites and educational and research institutions worldwide, although mostly in the U.S.

As other developments occurred, such as the widespread availability of modems and personal computers became more widespread, the general population was integrated into what is known as the Internet. Individuals then have the ability to interact with other individuals through such developments as e-mail, chat-rooms and the Usenet.

2.5.1 DESCRIPTION OF THE INTERNET

The Internet is millions of computers around the world connected to each other. “When you're on the Internet, your computer is connected to others by networks of telephone wire, cable and satellite. The Web, e-mail, chat, and newsgroups are things you can do on the Internet. It was first developed for military purposes by the U.S. Department of Defense in the 1960's”. So says Foldoc Online Dictionary of Computing. <www.tekmom.com/buzzwords/zdinternet.html.> (retrieved 30th January 2007).

On October 24, 1995, the Federal Network Council of America (FNC) unanimously passed a resolution defining the term Internet FNC Webmaster@arpa.mil. (retrieved 12th December 2006). This definition was developed in consultation with members of the internet and intellectual property rights communities. RESOLUTION: The Federal Networking Council of America (FNC) agrees that the following language reflects their definition of the term "Internet". "Internet" refers to the global information system that:

(i) Is logically linked together by a globally unique address space based on the Internet Protocol (IP) or its subsequent extensions/follow-on.

(ii) Is able to support communications using the Transmission Control Protocol/Internet Protocol (TCP/IP) suite or its subsequent extensions/follow-ons, and/or other IP-compatible protocols.

(iii) Provides, uses or makes accessible, either publicly or privately, high level services layered on the communications and related infrastructure described herein.

The Online TechEncyclopedia, http://www.techweb.com/encyclopedia/, retrieved on February 2007 has the following to say on the description of the internet:

“(1) Lower case ‘i’nternet): A large network made up of a number of smaller networks”.

”(2) (Upper case ‘I’nternet): The largest network in the world. It is made up of more than 350 million computers in more than 100 countries covering commercial, academic and government endeavors. Originally developed for the U.S. military, the Internet became widely used for academic and commercial research. Users had access to unpublished data and journals on a variety of subjects. Today, the ‘Net’ has become commercialized into a worldwide information highway, providing data and commentary on every subject and production earth”.

“Until the advent of the World-Wide Web in 1990, the Internet was almost entirely unknown outside universities and corporate research departments. Since then it has grown to become an almost-ubiquitous aspect of modern information systems, becoming highly commercial and a widely accepted medium for all sort of customer relations such as advertising, brand building, and online sales and services. Its original spirit of cooperation and freedom has, to a great extent, survived this explosive transformation with the result that the vast majority of information available on the Internet is free of charge”.

“There are several bodies associated with the running of the Internet, including the Internet Architecture Board, the Internet Assigned

Numbers Authority, the Internet Engineering and Planning Group, Internet Engineering Steering Group, and the Internet Society." There is also the Nigeria Internet Group.

2.5.2 THE BEGINNING OF THE INTERNET

The use of the internet for electronic mail (E-Mail) Was the Beginning. The Internet's surge in growth in the mid-1990s was dramatic, increasing a hundredfold in 1995 and 1996 alone. There were two reasons. Up until then, the major online services [American Online (AOL), CompuServe, etc.] provided e-mail, but only to customers of the same service. As they began to connect to the Internet for e-mail exchange, the Internet took on the role of a global switching center. An AOL member could finally send mail to a CompuServe member, and so on. The Internet glued the world together for electronic mail, and today, SMTP, the Internet mail protocol, is the global e-mail standard.

2.5.3 THE INTERNET AND THE WORLD WIDE WEB (WWW)

Secondly, with the advent of graphics-based Web browsers such as Mosaic and Netscape Navigator, and soon after, Microsoft's Internet Explorer, the World Wide Web took off. The Web became easily available to users with PCs and Macs rather than only scientists and

hackers at Unix workstations. Delphi was the first proprietary online service to offer Web access, and all the rest followed. At the same time, new Internet service providers (ISPs) rose out of the woodwork to offer access to individuals and companies. As a result, the Web grew exponentially, providing an information exchange of unprecedented proportion. The Web has also become "the" storehouse for drivers, updates and demos that are downloaded via the browser as well as a global transport for delivering information by subscription, both free and paid. Nigeria ICT outlets and businesses are benefiting immensely from this storehouse of drivers

2.5.4 ADVENT OF COMMERCIAL INTERNET

In 1995, the Internet was turned over to large commercial Internet service providers (ISPs), such as MCI, Sprint and UUNET, which took responsibility for the backbones and have increasingly enhanced their capacities ever since. Regional ISPs link into these backbones to provide lines for their subscribers, and smaller ISPs hook either directly into the national backbones or into the regional ISPs. Many Nigeria ICT companies are actively involved in the provision of internet services.

2.5.5 FUTURE OF THE INTERNET

Barry M. Leiner, Vinton G .Cerf ,David D. Clark Robert E. Kahn, Leonard Kleinrock, Daniel C .Lynch, Jon Postel, Larry G. Roberts, Stephen Wolff *in their article on A brief History of the Internet, commented:*" The Internet has changed much in the two decades since it came into existence. It was conceived in the era of time-sharing, but has survived into the era of personal computers, client-server and peer-to-peer computing, and the network computer. It was designed before local area networks (LANs) existed, but has accommodated that new network technology, as well as the more recent Automated Teller Machine (ATM) and frame switched services. It was envisioned as supporting a range of functions from file sharing and remote login to resource sharing and collaboration, and has spawned electronic mail and more recently the World Wide Web. But most important, it started as the creation of a small band of dedicated researchers, and has grown to be a commercial success with billions of dollars of annual investment."

"One should not conclude that the Internet has now finished changing. The Internet, although a network in name and geography, is a creature of the computer, not the traditional network of the telephone or television industry. It will, indeed it must, continue to change and evolve

at the speed of the computer industry if it is to remain relevant. It is now changing to provide such new services as real time transport, in order to support, for example, audio and video streams. The availability of pervasive networking (i.e., the Internet) along with powerful affordable computing and communications in portable form (i.e., laptop computers, two-way pagers, cellular phones), is making possible a new paradigm of nomadic computing and communications."

"This evolution will bring us new applications - Internet telephone and, slightly further out, Internet television. It is evolving to permit more sophisticated forms of pricing and cost recovery, a perhaps painful requirement in this commercial world. It is changing to accommodate yet another generation of underlying network technologies with different characteristics and requirements, from broadband residential access to satellites. New modes of access and new forms of service will spawn new applications, which in turn will drive further evolution of the net itself."

Barry M. Leiner (1998) further noted that the most pressing question for the future of the Internet is not how the technology will change, but how the process of change and evolution itself will be managed. As this paper describes, the architecture of the Internet has always been driven by a core group of designers, but the form of that group has changed as

the number of interested parties has grown. With the success of the Internet has come a proliferation of stakeholders - stakeholders now with an economic as well as an intellectual investment in the network.

The Internet today is a widespread information infrastructure, the initial prototype of what is often called the National (or Global or Galactic) Information Infrastructure. Its history is complex and involves many aspects - technological, organizational, and community. And its influence reaches not only to the technical fields of computer communications but throughout society as we move towards increasing use of online tools to accomplish electronic commerce, information acquisition, and community operations.

2.6.0 INFORMATION AND COMMUNICATION TECHNOLOGY

The European Union states that Information and communications technologies (ICTs) is a term currently used to denote a wide range of services, applications and technologies, using various types of equipments and software, often running over telecoms networks. ICT include well known telecom services such as telephone, mobile telephone and fax. Telecom services used together with computer hardware and software form the basis for a range of other services, including e-mail, the transfer of files from one computer to another, and,

in particular, the Internet, which potentially allows all computers to be connected, thereby giving access to sources of knowledge and information stored on computers worldwide.

Information and Communication Technology is also known as the hardware, software, processes and people working together when storing, processing, transferring and using data to communicate information and ideas; both at site and across large geographical areas with the intention of reaching a single goal.

It is also seen as the convergence of information technology, Telecommunications and Data Networking Technologies into a single technology. <www.dream-catchers-inc.com>

It is the catch all phrase used to describe a range of technologies for gathering, storing, retrieving, processing, analyzing and transmitting information and also as a fusion of computers and communications. <www.smartstate.qld.gov.au>

ICT is seen as an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer and network hardware and software, satellite systems and so on as well as the various services and applications associated with

them, such as videoconferencing and distance learning. <http://searchsmb.techtarget.com>

According to the European Commission in the article to the Council and European Parliament on Information and Communication Technology in Development, Information and communication applications include videoconferencing, teleporting, distance learning, management information systems and stock taking. technologies can be said to include a broad array ranging from “old” technology such as radio and TV to “new” ones such as cellular mobile communications; while networks may be comprised of copper or fiber optics cable, wireless or cellular mobile links, and satellite links. Equipments include telephone handsets, computers, and network elements such as base stations for wireless service; while software programmes are the lifeblood of all these components, the set of instructions being everything from operating system to the internet.

The Commission further stated: “The importance of ICTs is not the Technology as such, but its enabling function in access to knowledge, information and communications: increasingly important elements in today’s economic and social interaction”.

Some evolutionary changes have been created in ICT nature conserving its fundamental specifications. This process is carried out through utilization of new concepts in strategy and policy making, which entails the contribution of all the stakeholders in the sector.

2.7.0 INFORMATION AND COMMUNICATION TECHNOLOGY IN NIGERIA

In Nigeria, some evolutionary changes have actually affected the face of ICT in the country. A survey by Ubogu and Gupta (1987) revealed that computer market in Nigeria has been growing rapidly. Computer is becoming a household word in Nigeria. The industry which started with three computer vendors in 1977 has myriad of vendors, distributors, dealers and resellers today. This shift in emphasis has also resulted in the change of names of most IT Departments in the industries to ICT Departments. Computers and Communication resources Vendors are therefore now referred to as ICT Vendors or ICT Outlets.

This evolution has also resulted in the effort to regulate and control the activities of all the players in the industry. Professional and Regulatory bodies were set up. National ICT Policy was formulated. These were the move of the Government in the direction of controlling and

regulating the ICT industry for a healthy operation. The Professional and regulatory bodies include:

1). The Nigeria Computer Society
2) Computer Professionals Registration Council of Nigeria
3) Nigerian Information Technology Development Agency (NITDA)
4) Standards Organisations of Nigeria
5) Computer Vendors Association of Nigeria

2.7.1 AIMS OF NIGERIA ICT POLICY

According to the Nigeria ICT Policy publication, Government recognizes ICT as a strategic imperative for national development and taking cognisance of its immense benefits, government has resolved to provide considerable national resources, both financial and otherwise for the realization of the National ICT Vision statement which is to make Nigeria an ICT capable country in Africa and a key player in the Information Society by the year 2005, using ICT as the engine for sustainable development and global competitiveness.

One of the aims of Nigeria's ICT policy is for Nigeria to be an exporter of information technology products. India, which has already led other developing nations in this regard, benefits tremendously from the

performance of its information technology industry. India is today the recognized and leading IT outsourcing hub in the world. With the global trend indicating phenomenal growth in outsourcing Nigeria can't afford to be left behind.

Another aim of the National ICT policy and the National Information Technology Development Agency (NITDA) is to ensure that Nigeria as a nation, does not just benefit from the advances in information technology, but also becomes a key player in information technology.

2.7.2 CURRENT DEVELOPMENTS

Dr Joseph O Sanusi (2003), one time Governor of Central Bank of Nigeria, remarked: “We are all aware that, by developing and executing a robust ICT strategy, many developing nations and companies have enhanced their cutting edge and vastly improved their core competencies in these areas. Some of these nations and companies have achieved competitive edge because the improvements in their ICT had allowed them to leverage the benefits of network economies, knowledge management and the advantages of rapid, frictionless, information flow. “

Sanusi further added that some of these countries and companies have optimized the full spectrum of their capabilities and have from it, realized significant gains in sharing information, products, ideas, and intellectual capital. They have, in that way, positioned themselves in leadership roles in the global market place of the new millennium. There is no gainsaying that, the evidence with independent initiatives all over the world, has revealed the potentials of Information and Communication Technology in, namely:-

(i) Empowering people to help themselves in a very broad range of applications, irrespective of their age, gender, race or level of education;
(ii) Addressing the multi-dimensional nature of poverty; and
(iii) Transferring the initiatives for development from outside sources to individuals, communities, local authorities and nations.

SESAN, O. O in his publication in This Day Newspaper of July 5, 2001 observed that Diverse development opportunities have opened up due to the influence of ICT and developing nations now have the opportunity of leapfrogging into the information age by employing the powers of Information and Communication Technology. Areas such as Software development and Satellite Communications can provide opportunities for youths of developing nations. Nigeria, for example, has reacted to

the global challenge by indicating its interest in the mass production of ICT experts in the tune of almost a million young people.

Job creation is also an opportunity provided by ICT. Presently, the whole global village is experiencing a shortage of ICT skills and tackling the challenge would obviously promote development. Wealth creation and economic growth opportunities are also offshoots of the impact of ICT on developing nations, among others.

ICT also poses a challenge to the creative abilities of individuals, groups and governments. The launch of Nigeria SAT2, the Japanese technological hijack and India's IT revolution are examples of ICT's challenge to innovation and creativity.

Dr Joseph O. Sanusi (2003) said: "May I state that poverty sits like an open sore on the consciences of the Nigerian elites. We should remember that many of the South East Asian countries who have leapfrogged their stages of development and are today, part of the emerging economies, were at the same level of development with Nigeria some three decades ago. With a mono-cultural economy totally dependent on oil, the diversification of the Nigerian revenue base becomes a compelling necessity and this can only be achieved through massive investments in Information and Communications Technology (ICT). India currently earns twice as much from software exports as Nigeria earns from oil. The time for us to act is now"

Dr Ernest Ndukwe, Executive Vice chairman of the Nigeria Communications Commission (NCC) during the commissioning of Information and communication Center and digital Parks at the Federal Polytechnics, Nekede, Owerri in Imo state of Nigeria stated: "With over 30 million connected telephone subscribers and an unprecedented fast growth in wireless interconnectivity by the end of 2006, Nigeria could be said to have joined the global digital revolution. Indeed, Nigeria is one of the leading lights in sub-Saharan Africa and we at the NCC will do what is humanly possible to promote the growth of these technologies in the country". The Guardian Newspaper, Wednesday January 21st, 2007.

In agreement with Dr Ernest Ndukwe on ICT growth, Senator Iya Abubarkar, Chairman, Senate Committee on Population while speaking at the 20th yearly Conference of the Nigerian Computer Society (NCS) recently in Yola, Adamawa State of Nigeria pointed out that the Federal Government of Nigeria has taken various steps to promote ICT in the country, noting that the National Telecommunication Act enacted by the present administration was responsible for the introduction of variety of new services and increased Foreign and domestic Investments. He further urged government, individuals and private sectors to invest heavily in the information and communication Technology (ICT) sector, saying that ICT industry generates revenue and employment higher

than the oil sector. The Guardian Newspaper of Wednesday June 21st, 2006.

As the growth curve in Nigeria's ICT sector continues on the upwards direction, it has been predicted that the Country will continue to be the choice maiden for investment in ICT in Africa for another five years at the very least. This was the prediction of Mr Wale Ajesebutu, while analyzing the last six years of the country ICT boom. He further said: "with a population of 140 million and with a rising profile of disposable income available to the citizenry, the revolution will definitely continue in Nigeria for another five years, before we can begin to think of a downward slope, if any". The Guardian Newspaper of Wednesday, January 24 2007. This prediction can be reckoned with as the Nigeria ICT space is still witnessing a tremendous growth. As at May 2007, more International organizations are still coming into the Nigeria ICT sectors to invest.

2.8.0 ICT PIRATING AND FAKING

Pirating is the use of or the reproduction of the work of another without authorization. This is a dominant activity in the film and computer software sectors in Nigeria. By Faking it means: falsification,

counterfeiting and forging of any existing product of another patent. This is what ICT products have been subjected to in the country.

Growth in ICT industry in Nigeria has actually attracted major computer and Software manufacturers like HP, DELL, Microsoft and many others to open up their offices in Nigeria. The growth rate is so geometrical in nature that the Software Giant, MICROSOFT Corporation, during the release of a new operating system (Windows Vista) plans to write the operating system in three Nigerian major languages also. Abimbola Tooki (2007) reports: “Windows Vista, Microsoft’s new operating system, will be available in more than 70 countries in 19 languages with 99 languages anticipated by the end of the year including Hausa, Igbo and Yoruba. The localisation of the new software is believed by many analysts as a major breakthrough that would be witnessed in the Nigeria’s information technology industry in the new year”. There is also increase in the number of local manufacturers, assemblers, distributors and dealers of the various ICT products in the country.

According to Abimbola, as Nigerians prepare to receive Window Vista, there were reports that pirated copies of the new product are already available in China. US companies are reportedly still suffering “unacceptably high” losses in China due to counterfeiting and piracy. With pirated copies said to be already available in Beijing, Microsoft

took some steps to protect its $6 billion investment in its first major upgrade since Windows XP in 2001. “We have done a lot of things on Vista to reduce the impact of piracy on the product,” Scott Di Valerio, Microsoft vice president, told reporters in Beijing. There will be reduced functionality that will occur if you run non-genuine versions of the software”.

“Although the activities of pirates in Nigeria are believed to have reduced drastically, there are fears that pirated copies of the new software might soon creep to the country. One analyst said the availability of pirated Vista in Nigeria will also depend on the price which Microsoft wishes to sell the product in the country. “If the product is too expensive for ordinary Nigerian to buy, I’m afraid some Nigerians will find a short cut to getting the new operating system,” he said.

It follows therefore that the craze for “cheap things” is one of the causes of pirating products in Nigeria and other countries of the world. Benson Kathuri of Nairobi posted to the web on January 27, 2007 that rampant trade in fake goods in Kenya is putting the local consumers in danger. This, he stated was a warning by the US ambassador, Mr Michael Ranneberger, to Kenya. Speaking in Nairobi during this year's International Customs Day, Ranneberger said the illicit trade was denying the Government of Kenya Sh6 billion in revenue annually.

"Pirating is a malicious form of deception which preys on low income families, Ranneberger said. “With limited purchasing power, these families look for the cheapest prices when they go shopping. But instead of getting a bargain or a good deal, they are routinely cheated and sold inferior, often near worthless, rip-offs."

Ranneberger warned that unless the vice is controlled, foreign investors would shun the country, while local industries close shop or cut production.

"By combating illegal importation or domestic manufacture of bogus products, you protect the country's industries," he said. Investors are not going to open offices, build factories, create jobs and pay taxes where they are likely to compete with dishonest manufacturers of fake goods.

In agreement with Ranneberger, Kenya Revenue Authority Commissioner General, Mr Michael Waweru, said infiltration of counterfeit and pirated products into the market creates barriers of entry for genuine products since they cannot compete fairly in the market place resulting in erosion of industrial base and employment.

"Unsuspecting consumers who are duped into buying fake and substandard products end up blaming genuine manufacturers when products fail performance standards," said Waweru.

In contribution to “faking”, MEHDI HASSAN on December 30, 2006 posted following assertions: “ Say, you just bought a popular brand perfume paying a good amount of money. After one or two days, you notice a sticker on the perfume. Removing it, you find that the perfume is not actually a brand perfume rather a fake one produced in local factory. Your initial reaction is easily understood. I do not know whether the citizens in western countries face these kinds of problems but in many developing countries like those of South Asia, this is a very common thing. Recently, the government of West Bengal, India, has started an operation on the popular shopping malls of the city to find out whether they were selling fake goods. Quoting from the report published in Khaleej Times of West Bengal, India he further stated:

> “The West Bengal government has come down hard on malls and marts selling spurious products in Kolkata and elsewhere in the Left Front-ruled state.
>
> Low-priced spurious products flying off the shelves in newly-opened air conditioned malls range from chocolates and perfumes to clothes and accessories.”

“We have conducted raids at some malls in Kolkata and in district towns after receiving complaints from consumers. We will conduct more raids, as we have found truth in these complaints”, said K. Sathiavasan, Secretary, Consumer Affairs Department. He said that the department has conducted 27 raids since early November. A wide range of

consumer products have been seized for violating the Consumer Protection Act, 1986”

The faking and pirating situation is not peculiar to Kenya and India. As Hassan puts it, many developing countries like those of South Assia and Africas including Nigeria have the prevalence of these nefarious activities. Unfortunately, the ripple effect of this on the national growth can be imagined. These activities prevail in the parts of the world where standard organizations are neither in existence or are not effective.

Some countries in the world are waging war against these activities.
The success of this war is left to be desired. Its attendant effect in the world market especially in the third world, and in particular Nigeria, which depends on the importation of the ICT products mainly from China, is also left to be imagined.

Going by available records and in response to the trend, the Nigerian Information Technology Development Agency (NITDA), Standards Organisations of Nigeria, the Computer Professional Registration Council of Nigeria, the Nigeria computer Society and the Computer Vendors Association have some challenges to face.

The World Information Technology Services Alliance, has stated that technology will continue the growth path that began slowly in 2002, an

immediate positive impact of the Y2K Millennium Bug Global IT re-tooling strategies. Nigeria is likely to follow suite. It is also expected that with the growth, problems associated with growth shall be part and parcel of it and Nigeria will need to set up strategies to manage these problems.

At this level, it is clear that the ability to create, manage, distribute and control all the stake holders, products and services in the ICT industry is becoming increasingly important in maintaining and enhancing international standard of qualitative inputs. Success in this regard is dependent on the ability of the role players to take full advantage of the controlling institutions and agencies. Mere 'buying and selling' of evolving technologies will not become a policy, because any unprofessional decision at some level will be enough to buy and sell technology. In such a case technology will become a disabling rather than an enabling tool.

Understanding the necessities of dealing with such developmental evolution will give a clear direction for policy development towards a healthy ICT deployment in the country.

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CHAPTER THREE

3.0.0 RESEARCH METHODOLOGY

3.1.0 INTRODUCTION.

In proceeding with the research, steps were taken to explore various sources of information and data. This section of the dissertation aims at providing information on:

(i) Selection of the data collection methods

(ii) Selection of the research instruments

(iii) Selection of the sample size

(iv) Determination of the sample size

(v) Selection of the analytical approach.

This chapter will therefore, examines the various strategies and techniques to be used for achieving the aims and objectives of the research. It is hoped that through the methods that are to be adopted the impact of the proliferation of “quack” ICT outlets in the ICT industry in Nigeria will be established.

Explanation to the various techniques adopted in sourcing for data, information or research materials will be adequately given. In addition, various sources of data and techniques used in extracting information are equally stated.

3.2.0 RESEARCH DESIGN

Research Design is the way the researcher used in the structuring of investigation aimed at identifying variables and their relationships to one another. This is used for the purpose of obtaining data to enable the researcher test hypotheses, or answer research questions. It is an outline or a scheme that servede as a useful guide to the researcher in his effort to generate data for his study.

Through research design primary data were generated. During the design process, the researcher, like an architect, chose from many design alternatives and pondered over the trade-offs of each approach and decided on the best possible solution. Generally speaking, the research design decisions were influenced by the questions the investigator was trying to answer, by the resources such as time, trained personnel, and money that the researcher had at hand, by the characteristics of the research sites, and also by the researcher's personal preferences.

Some of the popular research design method include experimentation, survey and ex post facto. In experimentation, the research explores whether relationships exist among some identifiable variables and what the nature of this relationships is. A contrived situation may occur where certain variables existing in the situation seem to be either controlled or

eliminated. This creates an artificial situation in which the experiment is performed the way the researcher wants it.

Ex post facto is a systematic empirical study in which the researcher does not, in any way control or manipulate independent variables because the situation for the study already exists or has already taken place.

Survey research focuses on population or the universe. Data are collected from the population for intensive study or analysis. The researcher selects a sample from, or a subset of the population using some techniques of sampling.

This research is predominantly a survey type of research judging from the type of information required. The researcher therefore made use of survey research to gather the data from the population required for this research.

3.2.1 SURVEY RESEARCH

Survey Research has to do with the population or the universe of the subject of the research. Since the researcher cannot possibly study all

the subjects or items in the population, a random sample or subset of the population was selected for the research.

3.2.2 METHODS OF THE RESEARCH

Principally, the research has to do with gathering of information or data from the population of the research. The population of the research constitutes all ICT outlets and ICT users in Nigeria. It was not possible to reach out to the total population. Sample population Methods of data collection are very crucial in this case. Sample populations were therefore selected in Lagos, Abuja and Port Harcourt. These are major cities where ICT activities are quite many and varied. Two kinds of data namely Primary and secondary data are needed.

3.2.3 PRIMARY DATA

Primary data mainly comes from direct observation of the event, manipulation of variables, contrivance of research situations including performance of experiments and response to questionnaires. In this research, response to the questionnaires, personal and telephone interviews generated primary data. The answers given by respondents to questionnaires administered, personal and telephone interviews constitute the main type of primary data.

3.2.4 SECONDARY DATA

Data collected from secondary sources are secondary data (Asika 2006). The Secondary Data consists of information that already exists somewhere, having been collected for another purpose (Kotler 1997).

The researcher obtained secondary data from published articles, textbooks, Magazines, Journals, Newspapers, Seminar Papers Previous Project works carried out in this areas of study, and other relevant materials in the subject matter, including materials from Internet.

3.3.0 RESEARCH INSTRUMENTS/SOURCES OF DATA

For the purpose of this research, the researcher gave main attention to primary data. However, any available secondary data was also used. The following instruments for gathering data for analysis were used:

(i) Questionnaire

This is one of the primary methods of data collection. The researcher administered both the open and close ended questionnaires to the respondents with questions covering every aspects of the research presented in an unbiased manner. An open-ended questionnaire is the one in which the

respondent is free to answer in his own words. A close-ended questionnaire is one in which the possible answers are supplied.

The open ended questions was designed to create some level of freedom of expression of views and opinions without hindrance or reservation, thereby guaranteeing unbiased or restricted supply of information or data. The close-ended questions were also designed to guide the respondents in order to supply only the relevant answers and information for the study.

The questionnaire therefore had a section for a brief profile data on each respondent. The researcher personally administered and collected most of the completed questionnaires from the respondents especially in Lagos areas. Some other hands were however used by the researcher to assist in the administration of the questionnaires in Port Harcourt and Abuja.

(ii) Personal interview

The researcher also conducted an in-depth inter-personal interview with at least Twenty (20) Chief Executives and opinion leaders in all areas of ICT domain and regulatory bodies.

(iii) Telephone survey.

The researcher made use of telephone to contact some important personalities in the ICT domain. The telephone interview was mainly for people that could not easily be reached during the period of the research. It was essentially targeted at Nigerians in Diaspora and any foreigner whose contribution was considered critical to the findings of the research.

3.4.0 SAMPLE SIZE DETERMINATION

To determine the sample size the researcher made use of judgmental sampling size determination technique. The researcher was guided by what he considered typical cases which are most likely to provide him with the requisite data or information. The researcher randomly sampled a total of Five hundred (500) respondents from the population of all categories of ICT Outlets, ICT users selected from different strata of the economy and other related bodies. Questionnaires were administered to them. Differently framed and targeted questionnaires were prepared for corporate bodies. Choice of respondents was restricted to the three major cities in Nigeria. These cities are considered to be the hubs of ICT activities in the different Regions that they exist. These cities are:

(i) Lagos for the western Region of Nigeria and the adjoining neighboring Countries

(ii) Abuja for the Northern Region of Nigeria

(iii) Port Harcourt for the Eastern Region of Nigeria

(iv) Special attention was given to “Otigba” ICT market in Ikeja, Lagos and those that patronize it.

Of the Five Hundred population size considered, 100 questionnaires were administered to the people in Abuja, 100 to the people in Port Harcourt and the remaining 300 were administered in Lagos.

The researcher administered questionnaires to, and had an intensive interview with, each of the regulatory agencies particularly agencies such as:

(i) The Nigeria Computer Society

(ii) Computer Professionals Registration Council of Nigeria

(iii) Nigerian Information Technology Development Agency (NITDA)

(iv) Standards Organisations of Nigeria

(v) Computer Vendors Association of Nigeria

Many Blue Chip companies, financial institutions and Government were not left out.

3.5.0 VALIDITY AND RELIABILITY OF RESEARCH STUDY

Research generated data which was subsequently analysed, and the results were used to answer research questions and test hypothesis. The assumption in the use of data was that the data sources are reliable and the data themselves are of the highest possible quality. To ensure that the data gathered from the research were of high quality, the researcher ensured that the measuring instruments were valid and reliable. Therefore, in planning for the study, issues such as subject error, subject bias, time factor, Financial problems, Lack of modern research facilities were considered to be factors that could affect the study.

To address the issues, the researcher gave a considerable attention to these identified factors in relation to the environment of the research to ensure that the research design is valid by eliciting the type of responses that it is designed to generate and that the instrument is reliable by giving similar, close or the same result if the study to which the instrument is applied is replicated.

The researcher used the simple Chi-Square Statistical method to analyse and test the reliability of the measuring instrument. The chi-square formula is stated in section 3.7.0

For the subject bias, the researcher was fully aware that in some organizations, information dissemination is highly restricted as a result of fear or threat of unemployment, insecurity and as such anonymity of respondents to questionnaires was maintained.

3.6.0 METHOD OF DATA ANALYSIS

After data from any survey is collected and collated, there is the need to analyse the data to arrive at a particular result. The methods of analysis are many and varied. The one to be used depends on the type of study that was carried out and the expected result. For this survey, the researcher made use of simple proportion and the “Chi-Square Statistical Method” in analyzing the data.

The chi-square test is basically a nonparametric technique (that is a technique which require fewer or less stringent assumptions concerning the nature of the probability distribution) that can be used on nominal data (qualitative data that can be expressed as categories) or ordinal data (qualitative data, but differs from the nominal data in that its ordering of categories is meaningful).

The test statistics, which is the chi-square statistics, is computed as follows:

$$X^2 = \sum_{i=1}^{k} (O_i - E_i)^2/E_i$$

Where O_i = the observed frequency

E_i = the expected frequency

X^2 = the chi-square statistics

The chi square statistics essentially measures the difference between the observed frequency O_i and the expected frequency E_i. When the sample size for a region is small, then the difference between the observed and expected will also tend to be small. If the sample for a region is large, then the squared difference between the observed and expected frequencies will also tend to be large.

If the NULL Hypothesis were true, then what we observed would be very similar to what we expected and the chi-square statistics will be small. If there are no sampling errors, then $X^2=0$ and we will immediately accept the NULL hypothesis.

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CHAPTER FOUR

4.0.0 DATA PRESENTATION AND ANALYSIS

This chapter deals with the analysis of the results of the findings of the research. Attempt was made to analyze the responses to the questionnaires used in the survey as well as the personal and telephone interviews.

The aim of the research is to establish the impact that the entry of unprofessionals into the ICT business have on ICT Professionalism and on ICT products quality and the impact on the economy of Nigeria. In pursuance of this, 250 questionnaires were prepared and administered to staff of various departments including ICT departments of corporate bodies including financial Institutions, Oil Companies, and the manufacturing sectors seeking their views on the subject matter of the research. 200 questionnaires were also prepared and administered to individuals and proprietors of all cadres of businesses including the operators of computer independent ICT outlets. 50 questionnaires were also administered to ICT Professional and regulatory organizations. A total of 500 questionnaires were administered. 30 people were also personally interviewed and 5 people were contacted by phone.

It is important to point out here that, the researcher made use of the data that are directly relevant to the various hypotheses stated in the research. This helped to reduce the bulkiness of the data. Based on this; the most important data are used in the analysis of this research.

4.0.1. DETERMINATION OF THE RESPONSE RATE

The response rate and the margin of error of the sampling, were calculate using the simple proportion formula stated below:

Response Rate = (Total No. of Responses / Total number administered) x 100

4.1.0 EVALUATION OF RESPONSES

This section deals with the collation and evaluation of all responses received from the administered questionnaires, and from the personal and Telephone interviews. Responses are presented in table form to enhance clarity. Responses from descriptive questions are also stated in descriptive formats where necessary.

4.1.1 PATTERN OF RESPONSES

Ways that the administration of questionnaires and interviews were carried out and their corresponding responses are shown in this section. The rate of response is also determined and analysed.

Table 4.1.1 Administration Of Questionnaire, Interview And Response Rate

S/N	Respondents	# of Questionnaire administered	# of Questionnaire Returned completed	# Of Questionnaire not returned or improperly completed	Response Rate
1.	Corporate Questionnaire	250	235	15	94%
2.	Individual Questionnaire	200	150	50	75%
3.	Regulatory Bodies	50	45	5	90%
4.	Personal Interview	30	30	0	100%
5.	Phone interview	5	5	0	100%
6.	TOTALS	535	465	70	86%

Source: Field Study 2007

Table 4.1.1 shows the pattern of administration of the questionnaires to the sampled population. Questionnaires were administered to corporate bodies and private Individuals. Personal and Telephone interviews were also carried out. The response rates are also determined. From the

table, an average response rate of 86% was recorded. The response is adjudged by the researcher to be representative enough and is considered a good response for this research finding.

4.1.2 EFFECT OF RESPONDENTS LEVEL OF EDUCATION ON THE INFORMATION SUPPLIED

Table 4.1.2 Respondent's Level Of Education

Respondents	WASC/ SSC	NCE/ OND	B.Sc./ HND	M.Sc/ Ph.D	Others	Total
Corporate Questionnaire		20	150	50	15	235
Individual Questionnaire	20	30	80	10	10	150
Regulatory Bodies	0	0	30	10	5	45
Personal Interview	0	0	10	20	0	30
Telephone Interview	0	0	0	5	0	5
Frequency	20	50	270	95	30	465
Percentage	4.3%	10.8%	58.1%	20.4%	6.5%	

Source: Field Study 2007

Table 4.1.2 shows that over 58% of the respondents have a first degree and over 20% have Masters and Doctorate degrees. Some of the respondents in these groups were identified to be Managing Directors of organizations. Some were General Managers, Accountants, ICT Managers, Executive Secretaries, Engineers, Office Managers and Senior Staff of the organizations involved. Those that are classified as 'others' are mainly those with Professional Qualifications that rank very

well with a higher degree and they constitute 6.5% of the respondents. Middle levels of people constitute 15% of the population sampled. These were mainly experienced workers who have put in many years into their different areas of work but without formal university degrees.

This result implies that the populations selected are enlightened and that they fully understand the subject matter of the research. Their responses can therefore be sufficiently relied upon.

4.1.3 KNOWLEDGE OF ICT

This section is mainly to ascertain whether the respondents have knowledge of Information and Communication Technology (ICT).

Table 4.1.3 Respondents Knowledge of ICT

S/N	Respondents	Core ICT Professional	Have knowledge of ICT	Do Not have knowledge of ICT	Total Respondents
1.	Corporate Questionnaire	80	155	0	235
2.	Individual Questionnaire	60	90	0	150
3.	Regulatory Bodies	32	13	0	45
4.	Personal Interview	15	15	0	30
5.	Phone interview	3	2	0	5
4.	TOTALS	190	275	0	465
	Percentage	40.9%	59.1%	0	100%

Source: Field Study 2007

Table 4.1.3 indicates that 100% of the respondents have knowledge of ICT. Their responses are therefore considered authentic for the purpose of this research as they are talking about something they know about.

About 40.9% of the respondents were core ICT Professionals while about 59.1% have full ICT knowledge and are aware of the trends in ICT. All respondents have knowledge of ICT for a period of three years and above.

4.1.4 INVOLVEMENTS IN ICT BUSINESS

This section is set out to determine whether those that operate ICT outlets are necessarily ICT Professionals.

Table 4.1.4 Respondents Involvements In Operations of ICT Outlets

S/N	Respondents	Have ICT and related Outlets	Do Not have ICT and related Outlets	Total Respondents
1.	**ICT Professionals**	**70**	**120**	**190**
2.	**None ICT Professionals**	**220**	**55**	**275**

Source: Field Study 2007

From Table 4.1.4, it is seen that 36.8% of the ICT Professionals have ICT outlets while 63.2% do not have and are employed. Most ICT Professionals are in employment.

80% of the Non ICT professionals have ICT outlets while 20% do not have. That means that most of the ICT Outlets are operated by Non ICT Professionals. 80% of the Individual respondents (120 respondents) including core ICT professionals and those that have knowledge of ICT are operators of ICT outlets.

4.1.5 REGISTRATION WITH ICT REGULATORY BODIES

Table 4.1.5 Respondents Registration With Any ICT Regulatory Body

S/N	Respondents	Registered with CPRCON	Registered with NCS	Other Bodies	Not aware of any.	Total
1.	ICT Professionals	0	5	0	65	70
2.	None ICT Professionals	0	0	0	220	220

Source: Field Study 2007

From Table 4.1.5, it is seen that 93% of the respondents that are ICT Professional are not aware of the need to register with any regulatory bodies for the operations of ICT Outlets. 7% of the respondents in this group are Members of the Nigerian Computer Society.

100% of the respondents who are not ICT Professional are not aware of the existence of any regulatory bodies. This goes on to show that though there are some regulatory bodies such as Standards Organisations of Nigeria, Computer Professionals Registration Council

of Nigeria and the Nigeria Computer Society; their impacts are not felt in the ICT industry.

4.1.6 EFFECT OF ICT LITERACY ON ICT PRODUCTS MARKETING

This section is set out to determine whether there is need to be educated in the ICT area where an individual intends to do business.

Table 4.1.6 Knowledge or Not in ICT Literacy does not affect marketing of ICT products

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	**8**	**7**	**5**	**85**	**130**	**235**
Individual Questionnaire	**1**	**18**	**0**	**33**	**98**	**150**
Regulatory Bodies	**0**	**0**	**0**	**33**	**12**	**45**
Personal Interview	**0**	**0**	**0**	**25**	**5**	**30**
Telephone Interview	**0**	**0**	**0**	**5**	**0**	**5**
Totals	**9**	**25**	**5**	**181**	**245**	**465**
Percentage	**1.9%**	**5.4%**	**1.1%**	**38.9%**	**52.7%**	**100%**

Source: Field Study 2007

From Table 4.1.6, it is observed that ICT education, literacy and knowledge are necessary pre-requisites for the marketing of ICT products. 91.6% of the respondents attested to that fact. Only 7.3% of the respondents agreed that ICT Literacy and knowledge is not required

for the marketing of ICT products. 1.1% of the respondents do not fit into any of the two categories.

From the responses above, it can be deduced that any ICT product marketer must, of necessity, have sound education, knowledge and be adequately literate on the products that they are marketing because it is not possible to effectively market what somebody does not have adequate knowledge of.

4.1.7 TRAINING AND THE OPERATION OF ICT OUTLETS RELATIONSHIP

This section is set out to determine the roles that training on a particular ICT area plays on the effective operations of the ICT outlet.

Table 4.1.7 Operating An ICT Outfit Does Not Require Training

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	**5**	**10**	**0**	**95**	**125**	**235**
Individual Questionnaire	**2**	**17**	**0**	**36**	**95**	**150**
Regulatory Bodies	**0**	**11**	**0**	**20**	**14**	**45**
Personal Interview	**0**	**0**	**0**	**20**	**10**	**30**
Telephone Interview	**0**	**0**	**0**	**5**	**0**	**5**
Totals	**7**	**38**	**0**	**176**	**244**	**465**
Percentage	**3.4%**	**8.2%**	**0%**	**37.9%**	**52.5%**	**100%**

Source: Field Study 2007

On Table 4.1.7, over 90% of the entire respondents agreed that there is need for those that are operating ICT outlets to be adequately trained to enhance their knowledge of the ICT products and services that they are dealing with. This correlates with Table 4.1.6 where respondents attested to the fact that ICT product marketers should be knowledgeable in the product they are marketing. Knowledge and literacy evolve through adequate training.

4.1.8 RELATIONSHIP BETWEEN EXPERIENCE AND THE OPERATION OF ICT OUTLETS

Table 4.1.8 Experience Is Not A Yardstick For Excelling In ICT Business

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	0	6	8	151	70	235
Individual Questionnaire	0	10	0	97	43	150
Regulatory Bodies	0	0	0	26	19	45
Personal Interview	0	5	0	15	10	30
Telephone Interview	0	0	0	5	0	5
Totals	0	21	8	294	142	465
Percentage	0%	4.5%	1.7%	63.3%	30.5%	100%

Source: Field Study 2007

On Table 4.1.8, over 93% of the entire respondents agreed that experience is necessary for one to excel in ICT business while 4.5% do not see the need for experience before entering into ICT business. This has a correlation with Tables 4.1.6 and 4.1.7 where over 90% of the respondents agreed in each case, that there is need for adequate literacy, knowledge and training for ICT Channel operators. The implication is therefore that for excellent ICT operations, the operators must be adequately trained and experienced in the area of ICT operations the operator is engaged in. It can therefore be adduced from Tables 4.1.6, 4.1.7 and 4.1.8 that if sound education, literacy, knowledge and experience in the area of service concerned is devoid, one is not expected to be engaged in the effective and efficient ICT trade otherwise the issue of quackery comes in to play.

4.1.9 THE GROWTH OF ICT OUTLETS IN NIGERIA

This section is set out to show whether there is a noticeable growth in the number of outlets engaged in ICT businesses in the country than it was in the past five to ten years.

Table 4.1.9 Are there More People In ICT Business Now in Nigeria than 5 to 10 years ago

Respondents	Yes	No	Do Not Know	TOTAL
Corporate Questionnaire	225	0	10	235
Individual Questionnaire	150	0	0	150
Regulatory Bodies	45	0	0	45
Personal Interview	30	0	0	30
Telephone Interview	5	0	0	5
Totals	455	0	10	465
Percentage	98%	0%	2%	100%

Source: Field Study 2007

Table 4.1.9 shows that 98% of the respondents stated that there are more people in the ICT business than there were in the last five to ten years. 2% of the respondents claimed they cannot say whether there are more people in ICT industry now than before.

4.1.9a REASONS FOR RESPONSES IN TABLE 4.1.9

Responding to a follow up descriptive question asked on the reason for such a growth, the summary of the responses was that the rapid growth is due to the fact that the market itself is growing and is becoming very attractive with lots of profitability and prospects. The ICT products themselves are becoming more user friendly than what they were in the

last ten years. Entrants into the market in the last ten years would have needed a rigorous technical training in addition to a formal education in the line of the career relating to ICT to be able to function in the trade. That is no longer the case with present day ICT products hence the influx of many people into the area.

4.1.10 EFFECT OF GROWTH IN ICT BUSINESS AND THE ISSUE OF QUACKERY.

Growth has its attendant problems. This section is set out to determine whether this growth has anything to do with Quackery.

Table 4.1.10 The booming of ICT trade makes the issue of unprofessionals very prominent

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	50	150	10	20	5	235
Individual Questionnaire	40	92	5	13	0	150
Regulatory Bodies	10	25	0	8	2	45
Personal Interview	8	22	0	0	0	30
Telephone Interview	0	5	0	0	0	5
Totals	108	294	15	41	7	465
Percentage	23.3%	63.2%	3.2%	8.8%	1.5%	100%

Source: Field Study 2007

From Table 4.1.10, it is observed that 86% of the respondents agreed that the boom in ICT trade makes the issue of unprofessionals very prominent. The boom comes with the influx of people into ICT business. It also allows entry, of all shades of people, trained and untrained, into it. This includes those without any formal education, training, experience and background in ICT contrary to the conclusions tabulated on Tables 4.1.6, 4.1.7 and 4.1.8 that formal education, training, experience and ICT background are required for qualitative and effective ICT outlet operations otherwise the issue of quackery could be considered prevailing.

4.1.11 ENGAGEMENT OF TRAINED AND UNTRAINED ON EMPLOYMENT

This section is set to establish the effect the engagement of both trained and untrained in ICT Business has on employment of the people.

Table 4.1.11 Engagement of Trained and Untrained in ICT Business has Greatly reduced unemployment.

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	**68**	**102**	**5**	**50**	**10**	**235**
Individual Questionnaire	**90**	**45**	**0**	**13**	**2**	**150**
Regulatory Bodies	**10**	**10**	**0**	**20**	**5**	**45**
Personal Interview	**3**	**15**	**2**	**10**	**0**	**30**
Telephone Interview	**0**	**5**	**0**	**0**	**0**	**5**
Totals	**171**	**177**	**7**	**93**	**17**	**465**
Percentage	**36.7%**	**38.1%**	**1.5%**	**20%**	**3.7%**	**100%**

Source: Field Study 2007

From Table 4.1.11, it is observed that over 75% of the respondents are of the view that the boom and the subsequent engagement of both trained and untrained in ICT Business has actually created employment opportunities more in the informal sector in the Country. Over 23% assert that the contrary is the case. From the follow up questions and interview, most of the respondents were of the opinion that the engagement has a positive effect on self employment through distributive ICT trading Channels. Mainly the lower class of people is impacted in the Country while the core professionals are affected adversely.

From the foregoing analysis, it can be deduced that non availability of employment opportunities in other sectors of the economy pushes many people into the informal sector of ICT distributive businesses. This drastically expands the market to include all categories of people thus creating employment opportunities to a teaming population of people, mainly in the unskilled self employed sectors of Nigeria economy.

4.1.11a EFFECT OF THE OUTCOME OF THE RESPONSES IN TABLE

4.1.11b ON PROFESSIONALISM

On addressing the descriptive question on the effect that the proliferation has on ICT Professionalism, about 95% of the respondents in the five groups, in summary made it clear that the influx has dealt a serious blow on ICT Professionalism which is causing it to be fading away gradually. It is established from the responses that the influx has resulted in lower standard of practices and that the ICT terrain is now an “all comers affair”. The professionalism in it is gradually dieing out and if nothing is done to address it by way of control; issue of ICT Professionalism will be a forgotten one in the nearest future in Nigeria.

4.1.12 THE ROLE OF AVAILABILITY OF FUNDS IN ICT BUSINESS

This section is set out to show the effect of availability or otherwise of funds in the operations of ICT Business and the necessary influence funds have on the Outlet Operators.

Table 4.1.12 A Major Determinant in ICT Trade Is Funds Not Skill

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	65	105	0	60	5	235
Individual Questionnaire	45	90	0	15	0	150
Regulatory Bodies	10	17	0	25	3	45
Personal Interview	3	25	0	2	0	30
Telephone Interview	0	5	0	0	0	5
Totals	123	242	0	100	5	465
Percentage	26.4%	52%	0%	21.5%	1.1%	100%

Source: Field Study 2007

From the result in table 4.1.12, over 78% of the respondents agreed that ICT trade is basically driven by availability of funds not skill while about 26% stated that skill is needed not only funds. One striking discovery here is that though education, experience and skill are needed as derived from Tables 4.1.6, 4.1.7 and 4.1.8, funds dictates the pace of operation of ICT outlets. This principally explains why ICT channels are dominated by those who can mutter the necessary funds

needed for the operations. This, in most cases are not people with any know how on ICT. These large funds without adequate knowledge on the product are used to bring in sub standard product quality into the market. In most cases these are fake and adulterated products manufactured according to the specifications given by the money bags to the manufacturers.

4.1.13 SOURCE OF ICT PRODUCTS

This section which is set up to establish whether any ICT product is manufactured in Nigeria started with a descriptive question on the ICT products manufactured in Nigeria. The summary of all the responses was that Nigeria does not manufacture any of the ICT products. All ICT Products that are available in the Country are brought in from different countries of the world by importers. Most local users and outlets get these products from the importers within the country to the local markets. Nigeria being the destination of the imported products, it is included as a source of ICT products in this research for that matter. This section is set out to show the different sources where users in Nigeria get ICT products from.

Table 4.1.13 Respondents Sources of ICT Products

Respondents	Nigeria	China	Singapore	Malaysia	USA	UK	Dubai	TOTAL
Corporate Questionnaire	98	50	40	2	6	9	30	235
Individual Questionnaire	20	80	10	5	5	10	20	150
Regulatory Bodies	20	5	0	5	0	0	15	45
Personal Interview	20	0	0	0	0	0	10	30
Telephone Interview	3	1	0	0	0	0	1	5
Totals	161	136	50	12	11	19	76	465
Percentage	34.6%	29.3%	10.8%	2.5%	2.4%	4.1%	16.3%	100%

Source: Field Study 2007

From all the responses, it was observed that no ICT products are manufactured in Nigeria up to the time of this research. From Table 4.1.13, it is observed that 34.6% of the respondents are either end users of ICT products or ICT outlets that buy their products from those that import them into the Nigerian ICT market. 56% of the respondents are importers with 29% importing from China, 10.8% importing from Singapore and 16.3% from Dubai. The Table also clearly shows that most of the ICT products in the Country are imported from China followed by Dubai. United States and Britain that are known for very high quality ICT product standards have only 2.4% and 4.1% respectively importation into Nigeria.

4.1.13a REASON FOR THE RESPONSE IN TABLE 4.1.13

In an answer to the descriptive question on the reasons for Importing from those Countries, 100% of the importers respondents claim that ICT products are cheaper in the countries of their choice than countries like the United States and the United Kingdom. The respondents further added that ICT products from The United States and The United Kingdom are more expensive because goods sold in those countries are manufactured to high standards due to control. This gives high product quality which, understandably, attract higher prices.

From the responses, 90% of Nigerian ICT buyers prefer cheap products. Respondents further indicated that cheap products are in most cases, fake and pirated products.

4.1.14 RELATIONSHIP BETWEEN PRODUCT QUALITY AND THE PRODUCT OUTLET

This section is set out to determine the type of ICT channels that sell fake, adulterated and products of lower quality and those that sell high quality products.

Table 4.1.14 Quality of ICT Products is not dependent on outlet of purchase

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	5	60	0	105	65	235
Individual Questionnaire	0	15	0	90	45	150
Regulatory Bodies	3	15	0	17	10	45
Personal Interview	0	2	0	25	3	30
Telephone Interview	0	0	0	5	0	5
Totals	8	92	0	242	123	465
Percentage	1.7%	19.8%	0%	52%	26.5%	100%

Source: Field Study 2007

From Table 4.1.14, it is observed that over 78% of the respondents assert that the purchase of fake and low quality ICT products depends on the channel of purchase. This implies that all ICT outlets do not sell fake ICT products. This observation is reasonable because some manufacturer's direct outlets, dealers and distributors do not sell fake ICT products as they deal principally on the brand of the manufacturers. Only about 21% of the respondents said that fake products are prone to be sold by any outlet. Though there is a cogent point here, the percentage is however too low to make a convincing case for it.

4.1.15 RELATIONSHIP BETWEEN PRODUCT BRAND AND ITS QUALITY

This section sets out to determine whether product brands have anything to do with the quality of the ICT products.

Table 4.1.15 Brand of ICT Product Parts Does Not Determine Quality

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	**7**	**63**	**0**	**100**	**65**	**235**
Individual Questionnaire	**0**	**10**	**0**	**95**	**45**	**150**
Regulatory Bodies	**0**	**2**	**0**	**30**	**13**	**45**
Personal Interview	**0**	**0**	**0**	**5**	**25**	**30**
Telephone Interview	**0**	**0**	**0**	**5**	**0**	**5**
Totals	**7**	**75**	**0**	**235**	**148**	**465**
Percentage	**1.5%**	**16.2%**	**0%**	**50.5%**	**31.8%**	**100%**

Source: Field Study 2007

From Table 4.1.15, it is observed that over 80% of the respondents asserted that brands are principal determinants of quality of goods. This goes on to show that some products brands like HP, DELL, MOTOROLLA, NOKIA are of higher quality than some others. Their prices are also higher. It is observed that these known brands are channeled through accredited distributors and dealers and there are not very many of such outlets in the market.

This is a clear confirmation of the result of Table 4.1.12 where over 76% of the respondents specifically said that fake and adulterated products are not sold by all ICT channels. It is reasonable to conclude that

adulterated products are therefore the handiwork of the massive entrants into the ICT market without specific attachment to any particular brand or manufacturers.

4.1.16 FAKE ICT PRODUCTS IN THE NIGERIAN ICT MARKET

This section is to determine whether there are fake ICT products in Nigeria and the reason for the response.

Table 4.1.16 There are Fake (Pirated) ICT Products in Nigeria

Respondents	Yes	No	TOTAL
Corporate Questionnaire	235	0	235
Individual Questionnaire	150	0	150
Regulatory Bodies	45	0	45
Personal Interview	30	0	30
Telephone Interview	5	0	5
Totals	465	0	465
Percentage	100%	100%	100%

Source: Field Study 2007

From Table 4.1.16, 100% of the respondents stated that Fake (Pirated) ICT products actually dominate Nigeria ICT market.

4.1.16a REASON FOR THE RESPONSE OF TABLE 4.1.16

Responding to a follow up descriptive question on the reasons for the presence of fake products in Nigeria according to their responses, the respondents adduced that there were no standards or regulations of the sector hence there are no Laws governing the general practice of ICT business and the distribution of ICT products. Respondents also indicated that Nigerian have preference for cheap products. This tends to gear some of the importers towards bringing into the country, those products that are cheap which are not necessarily of good or high quality.

The earlier reason correlates with section 4.1.5 where the research reveals that though there are ICT regulatory bodies in Nigeria, they do not seem to be known to be performing their statutory functions as their counterparts in other parts of the world. It can therefore be adduced that the ICT industry is affected adversely because of these inactivity of the bodies.

4.1.17 EFFECT OF UNPROFESSIONALS ON THE QUALITY OF ICT PRODUCTS IN NIGERIA

This section is looking into the influence that the quack outlets have on the much acclaimed distribution of fake and pirated ICT products in the Country.

Table 4.1.17 The issue of inferior ICT Products in the Country is not because unprofessionals are in the Business

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	3	5	5	152	70	235
Individual Questionnaire	12	15	3	95	25	150
Regulatory Bodies	0	0	0	30	15	45
Personal Interview	2	8		15	5	30
Telephone Interview	0	0	0	5	0	5
Totals	17	28	8	297	115	465
Percentage	3.7%	6.0%	1.7%	63.9%	24.7%	100%

Source: Field Study 2007

Table 4.1.17 reveals that the circulation of inferior ICT products in the country is influenced by the presence of unprofessionals in the ICT channels. Over 88% of the respondents agree that the issue of inferior ICT products in the country is because unprofessionals are in the

business. A minimal population of about 9% defends the fact that unprofessionals are not responsible for the circulation of inferior products in the country.

This finding has direct correlation with the result of Table 4.1.12 where it was established that those with large sums of money who may not have any know how in ICT (unprofessionals) may have the capacity of flooding the ICT market with ICT products of predictable quality including fake and adulterated ICT products.

4.1.18 RESULTANT EFFECT OF THE PROLIFERATION ON ICT PRODUCT PRICES

This section is set out to examine the effect of all the afore going results of the research on ICT product prices and on the Nigerian society

Table 4.1.18 Position of ICT Products Prices

Respondents	Falling	Rising	TOTAL
Corporate Questionnaire	**235**	**0**	**235**
Individual Questionnaire	**150**	**0**	**150**
Regulatory Bodies	**45**	**0**	**45**
Personal Interview	**30**	**0**	**30**
Telephone Interview	**5**	**0**	**5**
Totals	**465**	**0**	**465**
Percentage	**100%**	**100%**	**100%**

Source: Field Study 2007

From Table 4.1.18, it is established that 100% of the respondents stated that ICT products prices are generally falling.

4.1.18a REASON FOR THE RESPONSES OF TABLE 4.1.18

A follow up descriptive question was asked on the reasons for the price level observed. The summary of the responses was that increase awareness, competition, increasing level of production and general availability of different grades of products in Nigeria due to massive importation, including the importation of genuine and adulterated products, are responsible for falling prices of ICT products in the country.

4.1.19 EFFECT OF THE PROLIFERATION ON AFFORDABILITY AND AVAILABILITY OF ICT PRODUCTS.

Table 4.1.19 The Influx of Persons into ICT Business has made the

Respondents	Strongly Agree	Agree	Unsure	Disagree	Strongly Disagree	TOTAL
Corporate Questionnaire	60	110	0	55	10	235
Individual Questionnaire	95	40	0	15	0	150
Regulatory Bodies	18	9	0	10	8	45
Personal Interview	5	25	0	0	0	30
Telephone Interview	2	3	0	0	0	5
Totals	180	187	0	80	18	465
Percentage	38.7%	40.2%	0%	17.2%	3.9%	100%

trade competitive
Source: Field Study 2007

The Research shows that the influx of people into ICT outlets has created an era of competition. This has resulted in massive availability of products which leads to very low prices. This has made ICT products affordable in Nigeria. This reveals why many people could afford ICT products ranging from computers to phones which has highly enhanced the living standard of the people in Nigeria. The economy is also boosted because of the availability and affordability of these products as many people, distributive, service and productive sectors are able to

acquire and apply them. This is what Table 4.1.19 which over 79% of the respondents agreed that the trade is competitive due to influx of people into the trade clearly implies.

4.2.0 TESTING OF HYPOTHESIS AT 5% LEVEL OF SIGNIFICANCE

(α = 5%)

The responses received from the questionnaires have given the researcher sufficient research data for the testing of the three Hypotheses of the research using Chi-Square Method. These are done in the section that follows.

4.2.1 FIRST HYPOTHESIS

4.2.1a Null (Ho): The birth of quack ICT outlets in Nigeria has affected ICT Professionalism in Nigeria.

4.2.1b Alternative (HI): The birth of quack ICT outlets in Nigeria has not affected ICT Professionalism in Nigeria.

In the research study, during the sampling of the opinions of the five groups of respondents on the impacts of proliferation of 'quack' information and communication technology on ICT professionalism, it is assumed that all the respondents (μ=100%) believe that the proliferation of ICT outlets brings "unprofessionals' along with it and that this has

actually affected ICT professionalism. From the research findings, the actual responses were as follows:

Table 4.2.1 Proliferation of Quack ICT Outlet has affected ICT Professionalism

Respondents	Has Affected	Has Not Affected
Corporate Respondents	**215**	**20**
Individual Respondents	**140**	**10**
Regulatory Bodies	**39**	**6**
Personal Interview	**28**	**2**
Telephone Interview	**5**	**0**
Totals	**427**	**38**

Source: Field Study 2007

The general formulae used in computing Chi-Square (X^2) values is:

$$X^2 = \sum_{i=1}^{k} (O_i - E_i)^2/E_i$$

Where O_i = the observed frequency

E_i = the expected frequency

X^2 = the chi-square statistics

Calculation of the X^2 can be summarized as follows:

Table 4.2.1a Summary of X^2Calculation

Respondents	Oi	Ei	O – E	$(O – E)^2$	$O – E)^2/E$
Corporate Respondents	**215**	**235**	**-20**	**400**	**1.7021**
Individual Respondents	**140**	**150**	**-10**	**100**	**0.6667**
Regulatory Bodies	**39**	**45**	**-6**	**36**	**0.8**
Personal Interview	**28**	**30**	**-2**	**4**	**0.1333**
Telephone Interview	**5**	**5**	**0**	**0**	**0**
Total					**3.3021**

Source: Field Study 2007

$$\mathbf{X^2 = \sum_{i=1}^{k} (O_i - E_i)^2/E_i = 3.3021}$$

For degree of freedom (df):

n = 5 (number of rows), c = 2 (number of columns)

df = (n-1) (c-1) = (5-1) (2-1) = 4x1 = 4.

$X^2_{table} = X^2_{(0,.05,4)} = 9.48773.$ This value is obtained from Chi-Square Statistical Table with coordinates (df = 4 and α = 0.05) See Appendix C1.

4.2.2 GRAPHICAL PRESENTATION OF X^2

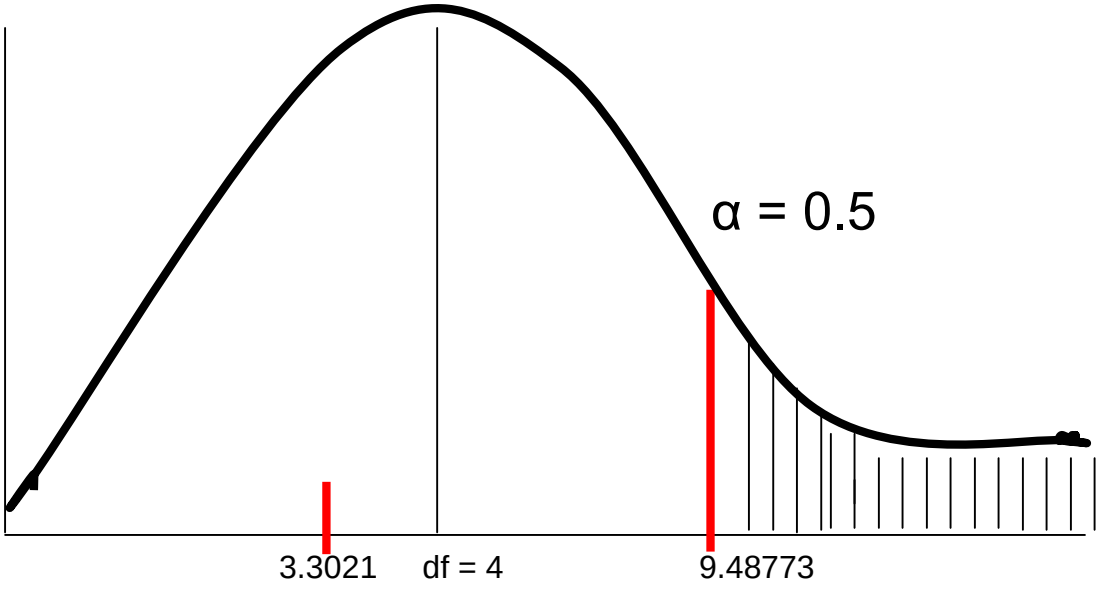

Fig 4.1 – Graphical presentation on professionalism

From Fig 4.1, it is observed that calculated Probability (3.3021) falls within the accepted area with level of significance of 5% and a degree of freedom of 4.

Since $X^2(3.3021)$ Calculated $<$ $X^2_{table}(9.48773)$, the difference between the expected responses and the actual responses calculated is very small and hence very insignificant, hence the null hypothesis (H0) that the birth of quack ICT outlets in Nigeria has affected ICT Professionalism in Nigeria is accepted.

4.2.3 SECOND HYPOTHESIS

4.2.3a Null (H0): The birth of quack ICT outlets in Nigeria has affected the quality of ICT goods distributed in the Country.

4.2.3b Alternative (HI): The birth of quack ICT outlets in Nigeria has no effect on the quality of ICT goods distributed in the Country.

Applying the methods used in section 4.1.20 to determine the effect on the quality of ICT goods in the country, it is assumed that all the respondents (μ=100%) are expected to agree that the proliferation of quack ICT outlets has actually affected the quality of ICT goods in Nigeria. From the research findings, the actual responses were as follows:

Table 4.2.3 Proliferation of Quack ICT Outlet has affected ICT Products in Nigeria

Respondents	Has Affected	Has Not Affected
Corporate Respondents	**230**	**5**
Individual Respondents	**138**	**12**
Regulatory Bodies	**42**	**3**
Personal Interview	**30**	**0**
Telephone Interview	**5**	**0**
Totals	**445**	**20**

Source: Field Study 2007

Applying the formulae for the computation of Chi-Square (X^2) values shown in section 4.1.20, we have the results summarized in Table 4.2.3a as follows:

Table 4.2.3a Summary of X^2 Calculation

Respondents	Oi	Ei	O – E	$(O – E)^2$	$O – E)^2/E$
Corporate Respondents	**230**	**235**	**-5**	**25**	**0.1064**
Individual Respondents	**138**	**150**	**-12**	**144**	**0.96**
Regulatory Bodies	**42**	**45**	**-3**	**9**	**0.2**
Personal Interview	**27**	**30**	**-3**	**0**	**0**
Telephone Interview	**5**	**5**	**0**	**0**	**0**
Total					**1.324**

Source: Field Study 2007

From Table 4.2.02b, $\mathbf{X^2}$ = **1.3240**

$X^2_{table} = X^2_{(0,0.05,4)} = 9.48773.$ This value is obtained from Chi-Square Statistical Table with coordinates (df = 4 and α = 0.05) See Appendix C1.

4.2.4 GRAPHICAL PRESENTATION OF X^2

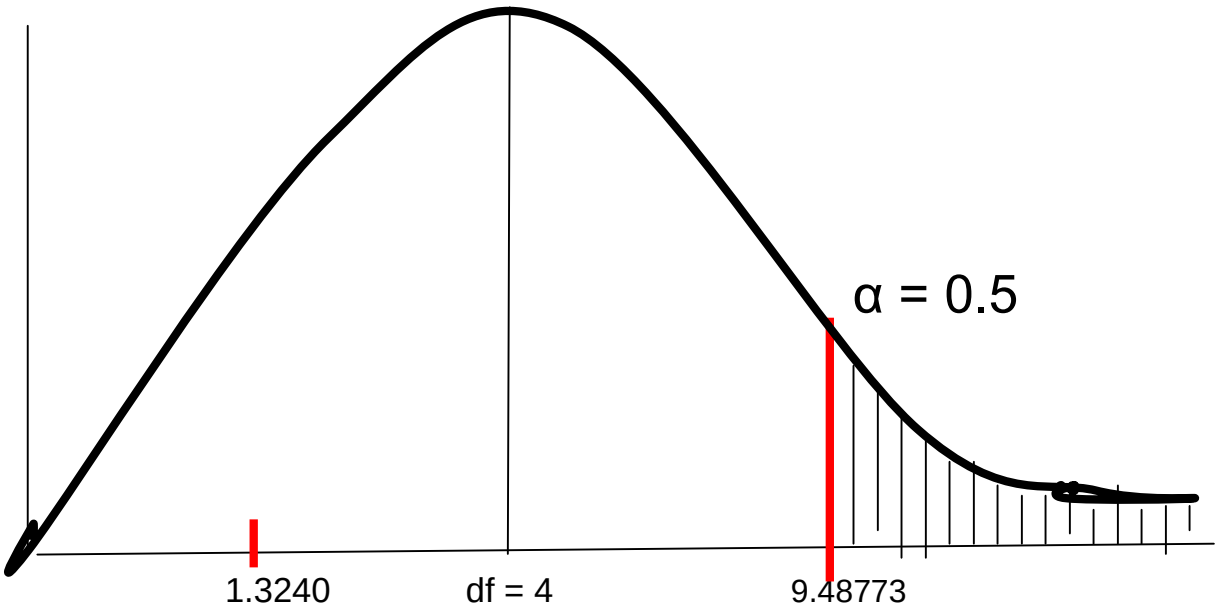

Fig 4.2 – Graphical presentation on quality of goods

From Fig 4.2, it is observed that calculated Probability (1.3240) falls within the accepted area with level of significance of 5% and a degree of freedom of 4.

Since $X^2(1.324)$ Calculated $<$ $X^2_{table}(9.48773)$, the difference between the expected responses and the actual responses calculated is small and hence very insignificant. The null hypothesis that the birth of quack ICT outlets in Nigeria has affected the quality of ICT Products in Nigeria is accepted.

4.2.5 THIRD HYPOTHESIS

4.2.5a Null (H0): The birth of quack ICT outlets in Nigeria has positive effects on the economic indices of the country.

4.2.5b Alternative (HI): The birth of quack ICT outlets in Nigeria has negative effects on the economic indices of the country.

On the effect on the economic indices in Nigeria, it is also assumed that all the respondents (μ=100%) are expected to agree that the proliferation of quack ICT outlets has positively affected the economic indexes in Nigeria. From the research findings, the actual responses were as follows:

Table 4.2.5 Proliferation of Quack ICT Outlet has affected the Economic Indexes of Nigeria

Respondents	Has Affected	Has Not Affected
Corporate Respondents	**215**	**20**
Individual Respondents	**140**	**10**
Regulatory Bodies	**39**	**6**
Personal Interview	**28**	**2**
Telephone Interview	**5**	**0**
Totals	**427**	**38**

Source: Field Study 2007

Applying the formulae for the computation of Chi-Square (X^2) values shown in section 4.1.20, we have the results summarized in Table 4.2.3a as follows:

Table 4.2.5a Summary of X^2 Calculation

Respondents	Oi	Ei	O – E	(O – E)2	O – E)2/E
Corporate Respondents	**200**	**235**	**-35**	**1225**	**5.2128**
Individual Respondents	**145**	**150**	**-5**	**125**	**0.83333**
Regulatory Bodies	**30**	**45**	**-15**	**225**	**5**
Personal Interview	**25**	**30**	**-5**	**25**	**0.83333**
Telephone Interview	**3**	**5**	**-2**	**4**	**0.8**
Total					**12.6795**

Source: Field Study 2007

From the table 4.2.5a above, $\mathbf{X^2 = 12.6795}$

$X^2_{table} = X^2_{(0,.05,4)} = 9.48773.$ This value is obtained from Chi-Square Statistical Table with coordinates (df = 4 and α = 0.05) See Appendix C1.

4.2.6 GRAPHICAL PRESENTATION OF X^2

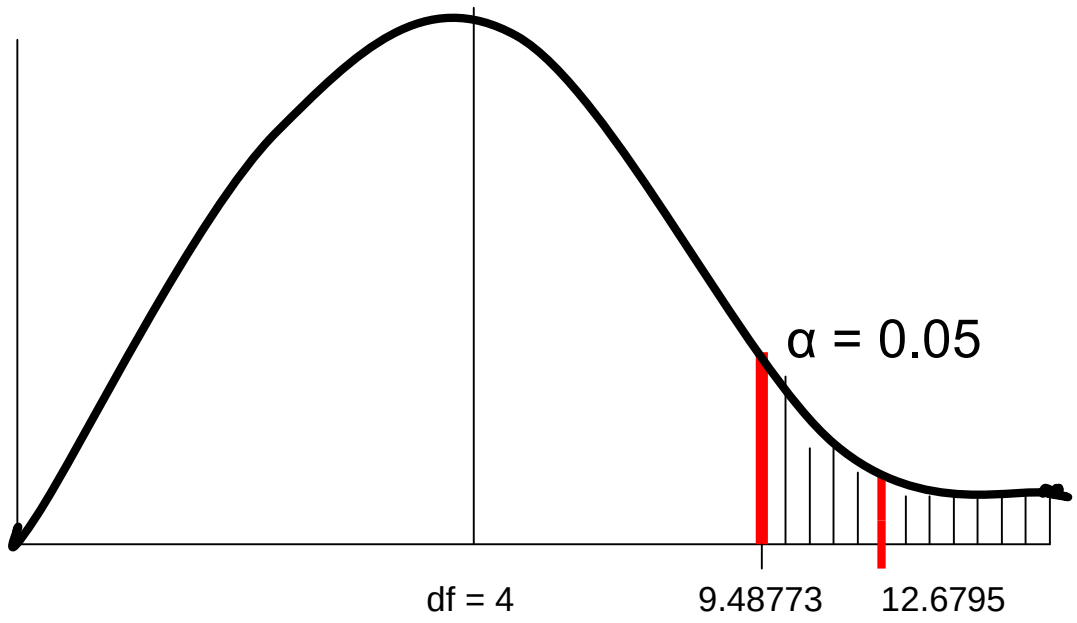

Fig 4.3 – Graphical presentation of the effect on Economic Indexes

From Fig 4.3, it is observed that calculated Probability (12.6795) falls outside the accepted area with level of significance of 5% and with a degree of freedom of 4.

Since $X^2(12.6795)$ Calculated $> X^2_{table}(9.48773)$, the difference between the expected responses and the actual responses calculated is relatively significant, hence the null hypothesis (H0) that the birth of quack ICT outlets in Nigeria has positive effect on the Economic Indices of the Country is rejected and the Alternative Hypothesis (HI): The birth of quack ICT outlets in Nigeria has negative effects on the economic indices of the country is accepted.

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CHAPTER FIVE

5.0.0 DISCUSSION OF THE RESULTS

5.0.1 INTRODUCTION

In this chapter, the researcher attempts to discuss the various findings from the study as presented in Chapter Four of the research documents. This is done in other to establish if the findings are consistent with existing knowledge or whether there is new knowledge or information resulting from it, which will be of interest to the public. Also, the outcome of the tested hypotheses will be discussed. The discussion of the findings is based on the research on The Impact of Proliferation of quack ICT Outlets on ICT Professionalism, ICT Products quality and the Nigerian Economy.

5.0.2 DISCUSSION

Information and communication Technology (ICT) has witnessed tremendous growth the world over. Nigeria has not been lagging behind in the development of Information and communication technology over the centuries.

5.0.3 ICT IN NIGERIA

The first electronic computer, and indeed the foundation of ICT evolution entered into the Nigerian market in 1963. It was first used for the analysis of the 1962/63 national census data. By 1973, computers installed all over the Federation in both private and public sectors stood at about 25 and at about 70 installations in 1977 at which time some banks and other big Government Institutions/Corporations have joined the team of proud owners of computers. Installed computers were mainly mainframes which used CARD Technology for data entry.

Mainframe Computers were generally very large and powerful with large word length, large primary storage capabilities of several megabytes and greater secondary storage. They also had the capability of serving several users at once because of its multiprogramming capabilities. They usually required very large installation environments. They were very expensive and are no longer very much in demand and in use today except by some very few multinationals.

Minicomputers were a development of the third generation of computers which began in the mid 1960s. They were smaller in size and required

smaller area of installation than the mainframes but with capabilities almost similar to those of the mainframes. Sales of mini computers accelerated during the late 60s and 70s when minicomputers became the fastest growing segment of the computer market the world over. The early 1980 marked the entry into the Nigerian Computer market the first Micro Computer. This was an IBM Micro and IBM Laptop (Notebook) Computers. IBM pioneered the manufacturing of IBM Microcomputers and Notebooks in the world. Different brands of Personal Computers and Notebooks followed one after another and were generally referred to as IBM Compatible Systems. The most common name for microcomputers now is PERSONAL COMPUTERS (PC), because they are so widely owned by individual persons for use at homes, at schools, and at work places. They are the cheapest in all the generations of computers and with enhanced technology; they are replacing the Mainframe and the minicomputers as they can be configured to do what a mainframe can do.

5.0.4 EARLY ICT OUTLETS IN NIGERIA

By 1975, Nigeria had only three (3) Computer Vendors/Outlets namely IBM, ICL and NCR. These were the Nigerian subsidiaries of the three major international mainframe computer manufacturers in the world. The appointment of Data Sciences Nigeria Ltd, an indigenous ICT

Company, as a sole distributor of Digital Equipment Corporation (DEC) brand of computers in 1976 marked the entry of the first Mini Computer into the Nigerian Computer market. Digital Equipment Corporation Inc (DEC) was the first Computer Company that ventured into the manufacturing of Mini Computers. Incidentally also, DEC was one of the three largest computer manufacturers in the early 1970's following International computers Limited (ICL) and International Business Machines Inc (IBM) which were initially manufacturing Main Frames.

Joint Komputer Kompany Ltd (JKK) joined the Minicomputer vendor market in 1979 with Data General Brand of Minicomputers. By the end of 1980, IBM Nigeria Ltd started the marketing of IBM Micro and Laptop (Notebook) Computers in Nigeria. At this time, there were only five (5) Computer Vendors in the Country namely IBM, NCR, ICL, Data Sciences and JKK the last two dealing principally with Minicomputers. Mini and Micro computers were relatively cheaper than the main frame computers.

Followed immediately were many branded computers that were imported into the country by some companies. Among these were: Data Mini and OBODEX (IBM compatible Microcomputers) imported from Europe and marketed by ADC Systems Ltd and Data Sciences Nigeria Limited respectively. EKO system was imported from the United States

and marketed by Omatex Ventures Ltd. COMPAQ, DELL, Gateway 2000 also started gaining entry into the country. Fountain system was imported and marketed by Authentic Services and Supplies Ltd. Micro Products International Ltd and Chams Nigeria Ltd were major names in the micro computer repairs and services. Main base of operations were Lagos from where the necessary locations in the country received their supplies.

5.0.5 EVOLUTION OF LOCALLY ASSEMBLED COMPUTERS

In the late 1980's and into early 1990's, there was high demand for computer parts in the country. Simoch International Ltd was the first name to venture into this area followed by Harriscocan Nigeria Ltd. Due to local availability of virtually all the component parts of the micro computer system in the country in the early 1990's, the assembly of micro computers locally started to gain a gradual entry into the market. Brand names like IMAGE was assembled and marketed by Rosan Ventures Ltd; IQ System was assembled and market by Frigale Nigeria Ltd. By this time, systems were built mainly on the Microsoft Disk Operating System (MS-DOS) platform as Windows were not manufactured then. Window based systems came into being in the mid 1990's after Microsoft introduced MS windows Version 1.0. Ms Windows

has gone through improvements through to Windows XP and now Windows Vista which was launched in 2007.

Zinox Computers Ltd and Omatex Computers Ltd recently joined the microcomputer assembly business in the early 2000s with their locally assembled brands names of Zinox and Omatex respectively. They are now dominating the assembly industry. The Federal Government has given approval for these systems to be used in all government institutions in the country. These assembly businesses are gaining solid grounds in the Country and are getting international acceptance and recognition.

5.0.6 EARLY USERS OF ICT PRODUCTS

Sales of mini computers accelerated during the late 60s and 70s when minicomputers became the fastest growing segment of the computer market the world over. JAMB, Central Bank and Post and Telegraphy (P&T) latter known as Nigeria Telecommunications Limited (NITEL) were the first institutions to install minicomputers in Nigeria in the late 70s followed by Shell and other institutions. Some of these installations, notably SHELL Petroleum Development Company Plc were used for the processing of their oil field data and other administrative functions. They were also packaged with communication facilities that enabled data

transfer over dedicated phone lines between their big cities of operations such as between Warri, Port Harcourt and Lagos. JAMB installation was used for the processing of admissions records into the Nigerian Universities, Central Bank used theirs for all banking and personnel functions while NITEL used theirs for the processing of phone bills and personnel functions. These installations were mainly installed and maintained by Data Sciences Nigeria Ltd as the pioneer minicomputer vendor in West Africa. The researcher also worked in this company from 1981 to 1991.

With the advent of modern communications systems in Nigeria and with their massive integration with computer technology in the early 2001, the name, Information and Communication Technology (ICT) evolved. Most modern microcomputers are very user friendly than the minis and the mainframe computers. They also have the capabilities of relating with all ICT devices in performing all the ICT and communication functions. Internet browsing using ICT products, telephone and computers has reduced the world to a global village.

5.0.7 GROWTH OF ICT OUTLETS

In the early 1990, there was manageable number of ICT vendor outfits of between 20 and 50 mainly controlled and managed by computer and

communication professionals. Computer and communication Professionals were considered as those that have a formal University or Polytechnic education in Computer Sciences, Electrical/Electronics Engineering, Computer Engineering, Communication, Data processing and Information Technology. Most of them were also members of the Computer Association of Nigeria now Nigeria Computer Society formed in 1978 as the first ICT professional and regulatory body.

Further growth in the number of ICT outlets necessitated the establishment of a second body, The Computer Professionals Registration Council of Nigeria as a regulatory body for the profession.

In spite of the roles of these bodies, the influx of different shades of people (unprofessionals) into the profession still continues unabated and the regulatory agencies have not or could not do anything about it.

The evolution of GSM and the liberalisation of telecoms sector in Nigeria in the early 2000 further expanded the outlets for the distribution of these products and services. These areas are most affected by the entry of all shades of people thus aggravating the already devastating state of ICT outlets in the country. The researcher therefore sets out to conduct a research on the effect of the Proliferation of these outlets on ICT profession, ICT product quality and on the economy.

5.0.8 THE NATIONAL ICT POLICY

Growth, as it were, is generally followed by some attendant problems. Same is aggravated in the Nigerian ICT industry where all activities in the industry have no policy direction and guidelines implemented. This actually brings to focus the need for a comprehensive ICT policy which the Federal Government of Nigeria painstakingly caused to be drafted. Guidelines and policies governing research, manufacturing, distribution and consumption of all ICT activities are comprehensively defined and stated in this policy document (Appendix DI) with National Information Technology Development Agency (NIITDA) proposed to be the administrator. By this step, the Federal Government of Nigeria had taken a step in the direction of proper and effective control and regulation in the ICT industry. This laudable framework which the researcher considers to be a step in the right direction has not, as at the time of this research been implemented and enforced. This will have done the industry a world of good if implemented.

5.1.0 THE RESEARCH AND ITS FINDINGS

For the purpose of the research, a targeted sample population of five hundred (500) people was taken and questionnaires were administered to them as follows:

1. Corporate bodies 250. 235 questionnaires were completed and returned
2. Individuals 200. 150 questionnaires were completed and returned
3. Regulatory Bodies 50. 45 questionnaires were completed and returned

30 people were interviewed personally

5 people were interviewed by telephone.

Respondents were those that have reasonably good circular education and a little or in-depth knowledge of ICT. This targeted sample population was selected to ensure that the caliber of the respondents fully understand the essence of the research.

5.1.1 EVALUATION OF THE QUESTIONNAIRES

An average response rate of 86% as derived from Table 4.1.1 was attained. This was considered a good response rate. Response rates of

between 50% and 92% for questionnaire surveys have been reported as valid (Duman, 1978: 10-16, Saunders et al, (1997: 131) reported a response rate of 52% of a questionnaire survey they carried out for a multinational organization. The response rate from this study gives credibility and validity to data used.

Furthermore, from the analysis of the responses, about 95% level of certainty is achieved which is considered in line with the views of other researchers (Saunders et al, 1997: 128-129). This gives a marginal error of 5%. With this level of response, it is obvious that at least 95% of the samples would be certain to represent the characteristics of the population.

5.1.2 RESPONSES FROM THE QUESTIONNAIRES

Going by the relevant information obtained from the returned questionnaires, and based on the oral and telephone interviews held with the concerned parties, various results were obtained:

5.1.3 RESPONSES ON PROFESSIONALISM

- 98% of the respondents agreed that the number of people that are now in ICT business are more than what was the case some five years

back. It is pertinent to observe that there is growth in every sector of the economy. ICT business should not be an exception. However, the generally held view is that the influx of people into this sector is quite astronomical. This is caused by increase awareness, availability, affordability and increased application of ICT products and devices in businesses and homes in the country. This has resulted in high demand that gives birth to the growth of diverse ICT channels in the country. The ICT market itself becomes very profitable and lucrative. Many people from different walks of live began to move into it. Principal among these are motor spare parts dealers who left their spare part business to engage in selling of ICT products. The findings of the research are in agreement with the generally held view on the growth in ICT Channels.

- 86% of the respondents agreed that this growth in ICT outlets also brought the trained and the untrained into the business with more of the untrained especially those that enter the business with motor spare parts background. Those that are untrained in the profession and are engaged in it are necessarily professional Unprofessionals.

- Over 90% of the entire respondents agreed that there is need for those that are operating ICT outlets or rendering any aspect of ICT services including engineering to be adequately trained, experienced and knowledgeable for effective service delivery. Operators without the

needed pre-requisites are considered unprofessionals. It has been observed that in the early 1980s and 1990s, operators of ICT Sales, Services and Engineering outlets were University and Colleges of Technology Graduates in related ICT fields. Presently these areas are dominated by those without the requisite training and experience. This is basically the reason that the service delivery especially those rendered by these classes of people (unprofessionals) which are in the majority is deteriorating. Jobs and businesses of the professionals are affected negatively.

- 95% of the respondents agreed that the influx has affected ICT Professionalism. After testing the first Hypothesis:

  Null (H0): The birth of quack ICT outlets in Nigeria has affected ICT Professionalism in Nigeria,

  Alternative (HI): The birth of quack ICT outlets in Nigeria has not affected ICT Professionalism in Nigeria, the null hypothesis (H0) that the birth of quack ICT outlets in Nigeria has affected ICT Professionalism in Nigeria was accepted.

The generally held view has been that the influx is not helping the profession as professionalism is on the verge of collapse. The result of the research confirms this development.

5.1.4 RESPONSES ON ICT PRODUCT QUALITY

Known brands of ICT products such as Hewlett Packard (HP), DELL, Gateway, Acer, Mercury computer products; NOKIA, SAMSUNG, MOTOROALA, PANASONIC and LG communication products and accessories are known to have the quality in them from inception as they are generally known as “Branded” ICT products. All branded products are principally distributed through accredited dealers or distributors and as such are controlled and the qualities are certain.

From the research findings, 78% of the respondents asserted that the purchase of fake and low quality products depends on the channel of purchase. 80% of the respondents asserted that brands are principal determinant of quality of goods and the prices for good quality products are usually higher than those of the fake products.

It follows therefore that the craze for cheap products by Nigerians also influences the distribution of fake products in the country. From the research findings, 90% of the respondents agreed that Nigerian ICT buyers prefer cheap products even when they are aware of the

existence of a better quality of the same product but with higher prices. This market demand also encourages the importers to flood the market with fake and adulterated products.

It is also a generally held view that the influx of many people into the ICT business has brought in many money bags into the ICT trade. A good number of these people have enough money to bring in goods of any quantity into the country. 78% of the research respondents agreed that fund is the major determinant of ICT trade. These money bags may not be trained in the profession. They are in most cases unprofessionals. To a large extent, they dictate to the manufacturers, the quality of goods to be manufactured. In some cases, known products brands are also faked and pirated. They also form the bulk of the population that brings in used ICT products into the country. Some of these used items are reframed as new.

From the questionnaire responses, 100% of the respondents agree that fake and pirated products dominate the Nigerian ICT market. 88% agree that pirated products are brought about by the presence of unprofessionals in the business. On testing the second Hypothesis:

Null (H0): The birth of quack ICT outlets in Nigeria has affected the quality of ICT goods distributed in the Country,

Alternative (HI): The birth of quack ICT outlets in Nigeria has no effect on the quality of ICT goods distributed in the Country, it

reveals that the null hypothesis (H0) that the birth of quack ICT outlets in Nigeria has affected the quality of ICT Products in Nigeria is accepted. This confirms the origin and sources of the poor quality of some ICT goods circulating in the country.

5.1.5 RESPONSES ON THE EFFECTS ON THE ECONOMY OF NIGERIA

Job creation is an off shoot of growth in ICT the world over. Various developmental opportunities actually open up due to the influence of ICT. India currently earns twice as much from ICT Software export as Nigeria earns from oil (Sanusi J.O, 2003:12). Wealth creation and economic growth opportunities are also off shoots of the impacts of ICT in developing nations (Sesan O.O. 2001:25). Is Nigeria, as one of the third world nations, benefiting from the economic growth influenced by her growth in ICT?

Some of the indices of economic growth which will be considered briefly in this analysis are full employment and industrialization. To fully appreciate the economic impact, it is recommended that further in depth research and analysis on “The effects of ICT growth on economic indices in Nigeria” is carried out by an economist.

ICT growth in Nigeria has expanded the horizon of the utilization of ICT products and services coupled with the evolution of low prices. 100% of the respondents asserted that prices of ICT products and services are falling. This fall in prices is not due to increase in local manufacturing which would have generated employment and boost the national economy. It is due mainly to massive importation into the country. 75% of the respondents also agreed that engagement of both the trained and the untrained in ICT business in Nigeria has greatly reduced unemployment.

A closer observation reveals that this reduction of unemployment is mainly on the lower strata of the society. The growth has strengthened the distributive and semi-skilled trade sectors of the economy as many who would have otherwise been unemployed take advantage of the massive importation and resort to distributive trade on ICT products and minor trial and error repairs as there is the market for them. The skilled and professional sectors in ICT are deteriorating and manufacturing of ICT products is not envisaged. ICT professionals are not benefiting from the growth as the boom has caused some unprofessionals to try to take over their jobs even though they may not do them properly.

It is reasonable to note that the ICT/GSM companies have offered employment to many Nigerians but the products and services they

pushed into the market actually create rooms for more outlets in telecoms sector for the sales of those services. These outlets outnumbered the number of people employed by these companies and are not managed and run by skilled hands.

Organizations that understand the need to engage the professionals and the skilled are very few to cope with the number of professionals that are being turned out every year from different institutions in the country. The effect on unemployment and on the productive sector, hence on the economic indices considered is not completely on the positive side.

When the proposed hypothesis:

Null (H0): The birth of quack ICT outlets in Nigeria has positive effects on the economic indices of the country

Alternative (HI): The birth of quack ICT outlets in Nigeria has negative effects on the economic indices of the country was tested, the null hypothesis that the birth of quack ICT outlets in Nigeria has positive effect on the Economic Indices of the Country was rejected and the Alternative Hypothesis (HI): The birth of quack ICT outlets in Nigeria has negative effects on the economic indices of the country was accepted.

This is at variance with the world trend but in agreement with the generally observed trends in the country. In conclusion, The proliferation of Quack ICT Outlets in Nigeria has:

1. Polarise ICT Professionalism
2. Opened up the era of fake ICT product distribution in Nigeria
3. Not really helping in the growth of Nigeria economy

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CHAPTER SIX

6.0.0 SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

From the investigations carried out by the researcher, the study has been able to establish that:-

- In deed, there is an exponential growth in ICT development in Nigeria since the early 2000s. This growth has expanded the distributive terrain of ICT products and services due to increase demand for ICT products and services.

- Most of the people that run ICT outlets in Nigeria are not ICT professionals and have no reason for being there except for money making purposes, but not for the expected services they should render. The growth and prospects brings about the dominance of unprofessionals into the ICT businesses. Proper control can reduce quackery.

- ICT professionalism is challenged and nothing has been done about it either by the professionals or the regulatory bodies. Professionalism is gradually disappearing and being replaced by professional hawks who acquired some knowledge through the

road side make shift training and experiment same on the services they render.

- There are ICT Professional and regulatory bodies but they have not been able to live up to their assigned responsibilities in controlling the development and regulating entry into the sector.

- No ICT product is manufactured in Nigeria as at the time of the research. Most of the ICT products that are sold in the country are imported from Taiwan and in most cases the standard of goods shipped to Nigeria are manufactured to less quality standard, on the request of the importers. The Standards Organisation of Nigeria, a body charged with the responsibility of ensuring that goods that enter into the country from any part of the world are of the best quality, are not seen to be doing their work. Piracy thrives in Nigeria.

- Most products that are sold in Nigeria are cheaper than the prices of such product in other countries of the world. This is because a lot of fake and adulterated products are dominating the Nigerian ICT terrain. Used ICT products are in some cases reconditioned and sold as new to unsuspecting buyers.

- Fake products are available in Nigeria because of the buying preferences of the consumers. Cheap products and services are preferred by Nigerian consumers. High quality products are branded products which are mainly distributed and engineered through accredited distributive and support channels. In some cases, the adulterated versions of some branded products are also seen in circulation in the market.

- Self and low level employment opportunities are enhanced due to the growth in ICT channels occasioned by the entry of many trained and untrained people into the ICT business.

- The economy of Nigeria would have been better off than it is if the growth has effectively touched on the manufacturing sector of ICT.

6.1.0 RECOMMENDATIONS

The researcher would at this juncture, wish to submit that

1. ICT industry in Nigeria should be well regulated. This should be done by:

- Ensuring that any person or organization intending to be involved in any aspect of business (sales outlets, services, engineering,

consulting) in the ICT industry, must be certified or licensed for just that aspect of business. The certification establishes the minimum level of education, training and experience required for the provision of a particular service in the industry. Such Licenses can be withdrawn at any time where professional ethics are not adhered to. Information Technology Development Agency of Nigeria can be saddled with this assignment.

- Well defined ICT policies and ethics should be used. The time has come for the Nigerian ICT Policies which was developed some years back to be implemented and closely monitored by the appropriate agency set up for it. This, the researcher believes, will be a compass directing to all the activities – research, manufacturing, distribution and consumption within the ICT Industry.

- Relevant Nigerian Agencies or bodies in charge of ICT regulations should be reminded to sit up and perform their duties as clearly spelt out under the laws establishing them. They should stop paying lip service to it. Drug and Food sector in Nigeria had worse problems than that of the ICT some year back but National Agency for Food and Drug Administration and Control (NAFDAC), a regulatory body in that sector sat up and the sector is now

sanitized. Regulatory bodies like The Nigeria computer Society, Computer Professional Registration Council of Nigeria, The Standards Organisation of Nigeria, the Nigerian Communications Commission and Nigerian Information Technology Development Agency should invoke the laws establishing them for the sanitation of the sector. Necessary support from the Government should be given to these agencies. Determined and committed leaders should be appointed to oversee the affairs of these agencies. Success of NAFDAC and indeed that of Economic and Financial Crimes commission (EFCC) are due to the commitment and determination of the current leaders of those agencies. This can also happen in the ICT sector.

- National Consumer Protection Agency should be established. This is an Agency where an aggrieved consumer of any ICT products can lodge complain for redress.

- An appropriate, and more legislation should be made for the improvement of the sector.

2. Major ICT product manufacturers should be encouraged to establish their factories in Nigeria. Nigerians should be involved in the production and marketing of these ICT products; not only consumers.

There should be an implementation of policy frame work that will increase patronage of locally manufactured ICT products. This is necessary to develop capacity in the local ICT industry.

When ICT product factories are established in the country, all levels of employment opportunities will ensue. Quality will be assured and prices will also drop.

3. A good ICT manpower policy should be developed and implemented in the country. This will ensure that ICT education is not just for its sake, but also for the benefit of Nigeria and Nigerians. ICT literacy should no longer be optional in schools. Every Nigerian child should be ICT literate. Education must emphasize the practical aspects of ICT. It should address the IT and Telecoms skills needs of employers, and the need for world-class personnel that can offer service in the global ICT driven market. For sustainable, strong growth of Nigeria's economy, it needs a skilled and enlightened populace that can take advantage of advances in ICT.

4. There is also a need to evaluate and encourage well propelled ICT apprenticeship program. Apprenticeships scheme should be developed in conjunction with industry as a way of training young people to work effectively in their early careers. The present system where ICT professionals come only from the formal and traditional educational

institutions is not the very best. A well articulated apprenticeship program will give the youth more opportunities to get into ICT in a focused manner rather than through “road side and half baked” training which enhances quackery. Some of the youth can actually contribute positively to society if given the chance rather than scrambling to be ICT Unprofessionals, area boys, or political party thugs. Features of such schemes should include: job/work placement, training plan, practical skills based training, certification, with improved career prospects and job security. Apprenticeship provides practical ways of gaining skills for work and continuing learning and career development throughout life.

5. One of the aims of Nigeria's ICT policy is for Nigeria to be an exporter of information technology products. With the global trend indicating phenomenal growth in outsourcing, Nigeria cannot afford to be left behind.

The aim of the National ICT policy and the National Information Technology Development Agency (NITDA) is to ensure that Nigeria as a nation does not just benefits from the advances in information technology, but also becomes a key player in information technology. Outsourcing is an attractive option for a country like Nigeria. However, for outsourcing to make sense for Nigeria, other issues such as

standards, public power supply, project management expertise and incentives for professionals and investors should also be addressed.

6.2.0 CONCLUSION

This study has made significant number of findings. Recommendations have been made where possible. If these recommendations are vigorously pursued and implemented, the menace of quackery in ICT sector will be minimised. ICT Professionalism will be restored. Fake products will be eliminated. Complete sanity will return to the ICT sector and Nigeria will parade a robust and healthy ICT environment that will be comparable with those of the developed countries of the world.

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A1 COVER LETER FOR QUESTIONNAIRE

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February 13, 2007

_____
_____
_____

Dear Sir,

COMPLETION OF QUESTIONNAIRE

In partial fulfilment of my Doctorate Degree (Ph.D) Programme in Information and Communications Technology, I am writing a dissertation on the topic:

"Proliferation and Impact of Unprofessional Information and Communication Technology Outlets on Professionalism, Products/Technology Quality and on Nigeria".

You are therefore, please requested to assist me in the gathering of information needed for this dissertation by completing and returning to me the attached questionnaire.

While apologising for your valuable time that will be taken, I thank you so much for the immediate attention given to my request.

Yours faithfully,

Anietie B. Essien

A2 INDIVIDUAL QUESTIONNAIRE

1. Name……

2. Address……

3. Phone number

4. Sex……

   Age……..

5(a) Educational qualification

☐ WASC ☐ OND/NCE ☐ HND/BSc/BA

☐ MSc/MA ☐ PhD. ☐ Others……..……

5(b) In what did you qualify……

6 How long have you been in ICT business?

☐ Less than 1 year ☐ 1 – 3years ☐ 4 – 6years

☐ 7 – 10years ☐ over 10years

7 What was your previous job before the present ICT business…….

……..……

8 Have you any training on the ICT business you are engaged in ☐ Yes ☐ No

9 Where were you trained?……

10 For how long were you trained?

☐ Bellow 1 year ☐ 1 – 3years ☐ 4 – 6years

☐ 7 – 10years ☐ over 10years

11 Are you computer literate? ☐ Yes ☐ No

12 Do you have a computer outfit? ☐ Yes ☐ No

13(a) Is your computer outfit registered? ☐ Yes ☐ No

13(b) If yes, with ☐ CPRCON ☐ NCS

☐ Others (specify)……..……..

13(c) If No, state reasons…….

……..……..……

14 What type of enterprise are you engaged in

☐ Micro - (i.e. assets less than =N=1.5m)

☐ Small - (i.e. assets less than =N=50m)

☐ Medium - (i.e. assets less than =N=200m)

☐ Large - (i.e. assets more than =N=200m)

15 How long have you been operating this enterprise

☐ Less than 1 year ☐ 1 – 3years ☐ 4 – 6years

☐ 7 – 10years ☐ over 10years

16 Total number of employees (including yourself)

☐ Technical ☐ General ☐ Management

17 Which of these describes the activities of your enterprise

1. <u>Trading</u> **2. <u>Services</u>** **3. Engineering**

☐ Wholesale ☐ Training ☐ Computer Engineering

☐ Retail ☐ Consultancy ☐ Computer Assembling

☐ Importer ☐ Others service

☐ Exporter

18 Who are your main customers

☐ Corporate bodies ☐ Resellers ☐ Individuals

19 Why do they patronise you? ……

20 What are your major products/Services……

……

……..

21 Where do you buy your ICT equipments and accessories

(tick as many as are applicable)

☐ China ☐ USA ☐ South Africa

☐ Singapore ☐ Britain ☐ Nigeria

☐ Korea ☐ Germany ☐ Others (Specify)

☐ Japan ☐ India

22 Why do you buy from that (those) country(ries)?

……

23 Are ICT products prices falling or rising? ☐ Falling ☐ rising

24 Why (in your view)……..

25 Are there fake/ pirated ICT products in Nigeria?

☐ Yes ☐ No

26 In any case, why?……..

27 Do you sell fake or pirated ICT products? ☐ Yes ☐ No

☐ I do not know

28 In any case why?…….

…….

29 What type of ICT outlets do you think can sell fake/pirated products…….

30 Are there more people in ICT business now than in the last 5 to 10 years? ☐ Yes ☐ No ☐ I do not know

30a In any case why?…….

Are there unprofessionals Yes ☐ No ☐

31 In your view who do you consider “unprofessionals” in the trade

…….

……..……..

32 How does you answer to 25 – 33 affect

(i) ICT Products …….

…….

(ii) ICT Profession…..…….

…….

(iii) ICT Employment……..…

…….

33 What are your views on the regulation of ICT practice in Nigeria? ……..……..……

…….

34 What would you like to see in the ICT industry in the next few years ……..…….

…….

Please answer the following questions by marking any box as applicable

Item		Response				
		SA	**A**	**U**	**DA**	**SD**
1.	Operating a computer outfit does not require training					
2.	Experience is not a yardstick for excelling in IT business					
3.	Knowledge or not in computer literacy does not affect marketing of computers					
4.	The booming of computer trade makes the issue of unprofessionals very prominent					
5.	A major determinate in computer trade is funds not skill					
6.	Quality of ICT products is not dependent on outlet of purchase					
7.	The make of computer parts does not determine quality					
8.	The issue of inferior ICT products in the county is not because unprofessionals are in the business					
9.	The influx of untrained persons in computer business has made the trade competitive					
10.	Engagement of trained and untrained in					

	ICT business has greatly reduced unemployment					

SA - Strongly Agree
A - Agree
U - Unsure/undermined
DA - Disagree
SD - Strongly Disagree

A3 QUESTIONNAIRE (CORPORATE BODIES)

1 Name of Establishment:……..…….

2 Location Address:…….…….

3 Year of Establishment……..

4 Person completing the questionnaire:……..

5 Rank/Post:…….Telephone:…….

6 How many people are currently engaged in your establishment

Person Engaged	**Sex**		**Total**
	Male	Female	
Below 12 years			
12 – 17 years			
18 – 25 years			
26 – 35 years			
36 years & above			
Total			

7 What type of business organisation is your corporation (tick one)

☐ Registered Business Name (Sole Proprietor)

☐ Registered Partnership

☐ Incorporated Company (Limited)

☐ Public Liability Company (Plc)

☐ Government

8 Which category(ies) of Organization does your establishment falls into

☐ Micro - (i.e. assets less than =N=1.5m and/or workforce less than 10)

☐ Small - (i.e. assets less than =N=50m and/or workforce 11-100 workers)

☐ Medium - (i.e. assets less than =N=200m and/or workforce101-300 workers)

☐ Large - (i.e. assets more than =N=200m and/or workforce more than 300 workers)

9 Which of these major activities do your establishment provide to the public (please tick as many as applicable)

☐ Information and Communications Technology Service

☐ Engineering/equipment

☐ Manufacturing

☐ Export /import

☐ Financial institution

☐ Oil services

☐ Marketing

☐ Advertising

☐ Others (specify)…….

10 Do you drive you services with ICT ☐ Yes ☐ No

11 Do you have full ICT Department ☐ Yes ☐ No

12 How many staff do you have in the Department?

☐ Technical ☐ Administration

13 What percentage of your services are computerised……

14 What is the minimum qualification of your (ICT) Technical staff? …….

15 Is there any relevance between qualification and job performance ☐ Yes ☐ No

16. How?……..

17 How do you source for your ICT product?

☐ Manufacturers abroad

☐ Local Manufacturers/representatives

☐ Internet

☐ Distributors

☐ Resellers

☐ Trade Fairs/ Technology expositions/

☐ Open market

☐ Others (specify)……..

18 Why?…….

19 How do you usually get to know about new technology/ equipment (please tick as many as appropriate)

☐ Manufacturers ☐ Internet

☐ Publication/Journals ☐ Suppliers

☐ Trade Fairs/ Technology expositions

☐ Others (specify)……..

20 In your opinion, are ICT product price falling or rising?

☐ Falling ☐ Rising

21 In your own opinion, why?……

……..

22 Are there fake or pirated ICT products in Nigeria?

☐ Yes ☐ No ☐ Don't know

23 What type of ICT outlets do you think can sell fake/pirated products…….

……

24 Has your organization ever bought fake or pirated products?

☐ Yes ☐ No

25. In your opinion, why do people buy pirated/fake products?

……..

……

26 Why do people sell fake/pirated products …….

……

……

27 Are there quack ICT product channels in Nigeria?

☐ Yes ☐ No ☐ I don't know

28 In your view, who would you consider "quack"? …….

…….

29 Does your organisation patronize quack ICT channels?

☐ Yes ☐ No

30 In any case, why?…….

…….

31 How does your answers to 22 – 30 affect

(i) ICT Products…….

(ii) ICT Profession…….

(iii) ICT Employment…….

32 What is your view on the regulation of ICT practice in Nigeria

…….

…….

33 What would you like to see in the ICT industry in the next few years:…….

…….

…….

…….

B1 PUBLICATIONS ON PIRATING AND FAKING

The following write-up was published in the itwire e-mail Newsletter and might serve as a good information in the evolving ICT growth especially in a developing country like Nigeria where the main sources of ICT products are outside Nigeria principally China:

Source: <http://itwire.com.au/content/view/7483/52/>

B2 PIRATING AND FAKING – A CASE STUDY

"Fake Chinese Electronics Selling better than the originals

By Alex Zaharov-Reutt

Monday, 27 November 2006

It's a funny old world. Chinese manufacturers are copying the circuit boards and designs of products from Japan and Korea, and they're doing it so fast that by the time the originals arrive in the marketplace, they're seen as the fakes!

China is a land of endless factories, with many pumping out the world's most desirable gadgets, from iPods to portable computers to digital cameras and much more. But with so much electronics smarts to hand, the pirate electronics industry is very active.

Two reports on the Internet, here and here, have indicated that Chinese electronics pirates have been very busy, churning out excellent copies of LG's Chocolate phone right down to the glowing touch-controlled keypad and smooth sliding action.

LG took so long to get a Chinese version ready, that by the time they launched theirs into the market, the copied Chinese version had been on sale for so long that LG's phone was seen as the fake item copying the 'original' Chinese version.

Another example is the PSP. Rumoured to be coming out with in a version that contains a standard GSM mobile phone, a Chinese manufacturer came out with a phone that looks very much like a PSP, although not as wide, with a stack of pirated Nintendo games thrown in for good measure to beef up its gaming credentials, even if those games have been shamelessly ripped off from Nintendo.

Plenty of other goods, both electronic and otherwise, are routinely copied in China. Everything from designer clothes, handbags, Mont Blanc and other brand pens, expensive cars, golf clubs, jewellery, sports shoes (sneakers), many modern toys including many of the robots in the ‘Robosapien’ series and plenty more including CDs and DVDs is freely available from ‘markets’ all over China, and if you know where to look, at markets in Hong Kong, too.

The cars may not be so easily accessible from the markets, indeed that are the one place you won’t find them, but the rest of the products are much more easily transportable and copy able that it’s no surprise they are widely available.

The electronics market is just the latest frontier, with costs of electronics production so low in China. Many of these products will not officially make it out of China, but will be smuggled out to appear in stores across Asia, and in likely much smaller quantities to first world Western countries.

The piracy of electronics is nothing new. In the 90s, I clearly remember fake Panasonic DVD players marked as ‘Panesoic’, a brand name so ridiculous only the incredibly dimwitted would mistake it for the original.

But sell these products do, especially in Asia where the prices are low, few questions are asked and in many cases, the quality is actually pretty good.

Samsung is said to have been so concerned by seeing its phones copied on the Chinese market that it tracked the distribution channels back to the source and discovered the electronics guys responsible for copying their latest products.

After offering them a job with Samsung and a chance to go legitimate, they are reported to have declined the offer, saying that they were able to make more money by simply continuing in their pirate ways. What Samsung did next is not known.

Eventually China will crack down on the blatant piracy seen on its shores, but until then, the world will keep on seeing ever more creative and ever better quality copies from Chinese manufacturers, along with complete duds that should definitely be avoided and products of varying quality every where in between.

What a funny old world we live in, where people will do almost anything and copy almost anything to make, or save, a buck."

It should be noted that “war” was earlier waged against these acts by the Chinese Government according to the publication below from Recycling Laws International. <http:www.raymond.com/international/9_2/news/1301-1.html>

B3 China Cracks Down on Fake Products

“March 10, 2003

Source: <http://www.raymond.com/raymondstyles.css>

The Chinese government has announced a nationwide crackdown against fake and illegally recycled products. According to a statement released in January 2003, eight departments will co-ordinate the “war” against such products”.

C1 TABLE OF CHI-SQUARE STATISTICS

df = Degree of Freedom

α = Level of Significance

df	α=0.250	α =0.10	α=0.050	α=0.025	α=0.010	α =0.005	α=0.001
1	1.32330	2.70554	3.84146	5.02389	6.63490	7.87944	10.828
2	2.77259	4.60517	5.99146	7.37776	9.210	10.5966	13.816
3.	4.10834	6,25139	7.81473	9.34840	11.3449	12.8382	16.286
4.	5.38527	7.77944	9.48773	11.1433	13.2767	14.6083	18.468
5.	6.62568	9.23636	11.0705	12.8325	15.0863	16.7496	20.515
6.	7.84080	10.6446	12.5916	14.4494	16.8119	18.5476	22.456
7.	9.03715	12.0170	14.0671	16.0128	18.4753	20.2777	24.332
8.	10.2189	13.3616	15.5073	17.5345	20.0909	21.9559	26.125
9.	11.3888	14.6837	16.9190	19.0228	21.6660	23.5894	27.877
10.	12.5489	15.9872	18.3070	20.4832	23.2093	25.1882	29.588
11.	13.7007	17.2750	19.6751	21.9200	24.725	26.7568	31.284
12.	14.8545	18.5493	21.0261	23.3367	26.2170	28.2995	32.909
13.	15.9839	19.8119	22.3620	24.7356	27.6882	29.8195	34.528
14.	17.1169	21.0641	23.6848	26.1189	29.1412	31.3194	36.123
15.	18.2451	22.3071	24.9958	27.4884	30.5779	32.8013	37.697
16.	19.3689	23.5418	26.2962	28.8454	31.9999	34.2672	39.252
17.	20.4887	24.6790	27.5871	30.1910	33.4087	35.7185	40.790

18.	21.6049	25.9894	28.8693	31.5264	34.8053	37.1565	42.312
19.	22.7178	27.2036	30.1435	32.8523	36.1909	38.5823	43.820
20.	23.8277	28.4120	31.4104	34.1696	37.5662	39.9968	45.315
21.	24.9348	29.6151	32.6706	35.4789	38.9322	41.4011	46.797
22.	26.0393	30.8133	33.9244	36.7807	40.2894	42.7957	48.268
23.	27.1413	32.0069	35.1725	38.0756	41.6384	44.1813	49.728
24.	28.2412	33.1962	36.4150	39.3641	42.9798	45.5585	51.179
25.	29.3389	34.3816	37.6525	40.6465	44.3141	46.9279	52.618
26.	30.4346	35.5632	38.8851	41.9232	45.6417	48.2899	54.052
27	31.5284	36.7412	40.1133	43.1945	46.9629	49.46449	55.476
28.	32.6205	37.9159	41.3371	44.4608	48.2782	50.9934	56.892
29.	33.7109	39.0875	42.5570	45.7223	49.5879	52.3366	58.301
30.	34.7997	40.2560	43.7730	46.9792	50.8922	53.6720	59.703
40	45.6160	51.8051	55.7585	59.3417	63.6907	66.7660	73.402
50	56.3336	63.1671	67.5048	71.4202	76.1539	79.4900	86.661
60	66.9851	74.3970	79.0819	83.2977	88.3794	91.9517	99.607
70	77.5767	85.5270	90.5312	95.0232	100.425	104.215	112.317
80	88.1303	96.5782	101.879	106.629	112.329	116.321	124.839
90	98.6499	107.565	113.145	118.136	124.116	128.299	137.208
100	109.141	118.498	124.342	129.561	135.807	140.169	149.449

D1

NIGERIAN NATIONAL POLICY FOR INFORMATION TECHNOLOGY (IT)

‘USE IT’

TABLE OF CONTENTS

EXECUTIVE SUMMARY

1 Preamble

Information Technology (IT) is the bedrock for national survival and development in a rapidly changing global environment, and challenges us to devise bold and courageous initiatives to address a host of vital socio-economic issues such as reliable infrastructure, skilled human resources, open government and other essential issues of capacity building.

In addition, an Information Technology policy built on reliable human resources and infrastructure constitutes the fundamental tool and means of assessing, planning, managing development change and for achieving sustainable growth.

It is for this reason that every progressive country has a national IT policy and an implementation strategy to respond to the emerging global reality and thus avert becoming a victim of the digital divide. A developing nation like Nigeria, that aspires to participate effectively and become a key player in the emerging Information Age needs to have in place, a highly efficient Information Technology system driven by a vibrant national IT policy.

2 Vision Statement

To make Nigeria an IT capable country in Africa and a key player in the Information Society by the year 2005, using IT as the engine for sustainable development and global competitiveness.

3 Mission Statement

To '**USE IT**' for:

(i) Education

(ii) Creation of Wealth

(iii) Poverty Eradication

(iv) Job Creation.

(v) Global Competitiveness

4 General Objectives

i. To ensure that Information Technology resources are readily available to promote efficient national development.

ii. To guarantee that the country benefits maximally, and contributes meaningfully by providing the global solutions to the challenges of the Information Age.

iii. To empower Nigerians to participate in software and IT development.

iv. To encourage local production and manufacture of IT components in a competitive manner.

v. To improve accessibility to public administration for all citizens, bringing transparency to government processes.

vi. To establish and develop IT infrastructure and maximize its use nationwide.

vii. To improve judicial procedures and enhance the dispensation of justice.

viii. To improve food production and food security.

ix. To promote tourism and Nigerian arts & culture.

x. To improve healthcare delivery systems nationwide.

xi. To enhance planning mechanisms and forecasting for the development of local infrastructure.

xii. To enhance the effectiveness of environmental monitoring and control systems.

xiii. To re-engineer and improve urban and rural development schemes.

xiv. To empower children, women and the disabled by providing special programs for the acquisition of IT skills.

xv. To empower the youth with IT skills and prepare them for global competitiveness.

xvi. To integrate IT into the mainstream of education and training.

xvii. To create IT awareness and ensure universal access in order to promote IT diffusion in all sectors of our national life.

xviii. To create an enabling environment and facilitate private sector (national and multinational) investment in the IT sector.

xix. To stimulate the private sector to become the driving force for IT creativity and enhanced productivity and competitiveness.

xx. To encourage government and private sector joint venture collaboration.

xxi. To enhance national security and law enforcement.

xxii. To endeavour to bring the defence and law enforcement agencies in line with accepted best practices in the national interest.

xxiii. To promote legislation (Bills & Acts) for the protection of on-line, business transactions, privacy and security.

xxiv. To establish new multi-faceted IT institutions as centres of excellence to ensure Nigeria's competitiveness in international markets.

xxv. To develop human capital with emphasis on creating and supporting a knowledge-based society.

xxvi. To create Special Incentive Programs (SIPs) to induce investment in the IT sector.

xxvii. To generate additional foreign exchange earnings through expanded indigenous IT products and services.

xxviii. To strengthen National identity and unity.

xxix. To build a mass pool of IT literate manpower using the NYSC, NDE and other platforms as “train the trainer” Scheme (TTT) for capacity building.

xxx. To set up Advisory standards for education, working practices and industry.

xxxi. To establish appropriate institutional framework to achieve the goals stated above.

5 STRATEGIES

i Establishing a coordinated program for the development of a National Information Infrastructure (NII), State Information Infrastructure (SII) and Local Information Infrastructure (LII) backbone by using emerging technologies such as satellite including VSAT, fibre optic networks, high speed gateways and broad band/multimedia technologies.

ii. Providing adequate connectivity to the Global Information Infrastructure (GII).

iii. Addressing open standards for further liberalization and the fiscal measures including incentives to substantially improve telephone teledensity and make IT more affordable to the citizenry.

iv. Establishing IT Parks as incubating centres for the development of software applications at national, state and local levels.

v. Restructuring the education system at all levels to respond effectively to the challenges and imagined impact of the information age and in particular, the allocation of a special IT development fund to education at all levels.

vi. Restructuring the healthcare system by providing a national databank to provide on-line national healthcare information, administration and management at primary, secondary and tertiary levels.

vii. Encouraging massive local and global IT skills acquisitions through training in the public and private sectors with the view to achieving a strategic medium-term milestone of at least 500,000 IT skilled personnel by the year 2004.

viii. Empowering the labour force with IT skills and improving Small to Medium Enterprises (SMEs) productivity.

ix. Establishing adequate institutional framework at the federal, state, and local government levels in order to effectively accomplish the objectives of the IT vision and mission.

x. Establishing national IT awareness machinery at all levels of government and encouraging private sector participation in exposing Nigerians to the features and benefits of IT.

xi. Strengthening government and private sector collaboration for the attainment of national self-reliance.

xii. Utilising IT facilities to develop and transform the entertainment industry for wealth and job creation.

xiii. Establishing appropriate mechanisms to accelerate and enhance trade and commerce transactions in the sector.

xiv. Creating national database management systems as a tool for effective planning & communication between citizens at home and abroad.

xv. Establishing national databases and other IT infrastructure to enhance defence and law enforcement.

xvi. Enacting Bills & Acts to stimulate and protect the rights of users and developers including intellectual property rights.

xvii. Bringing the government to the doorsteps of people by creating virtual forum and facilities to strengthen accessibility to government information and facilitating interaction between the

governed and government leading to transparency, accountability and the strengthening of democracy.

xviii. Utilizing IT opportunities to restructure government, citizens and business interfaces for better governance, improved trade and commerce and administrative effectiveness.

xix. In order to achieve the short to medium term objectives of this policy with maximum effectiveness, Government will establish a National.

Information Technology Development Agency (NITDA) to implement the IT Policy, regulate, monitor, evaluate and verify progress on an on going basis under the supervision and coordination of the Federal Ministry of Science and Technology. Its operations will be funded amongst others with a start up grant of at least $10 million.

xx. Establishing a National Information Technology Development Fund (NITDEF) under the aegis of the National Information Technology Development Agency (NITDA) and funded as follows:

a. Start up grant of at least $150m.

b. Two percent of the national budget will be allocated to the fund until the articulated vision is attained.

c. 3% tax on all imported finished IT products will be directly paid to the fund.

Government recognizes IT as a strategic imperative for national development and taking cognisance of its immense benefits, government has resolved to provide considerable national resources, both financial and otherwise for the realization of the National IT Vision statement.

ACKNOWLEDGEMENTS

The necessity for a national Information Technology (IT) policy became more obvious after the participation of the Nigerian delegation in the first African Development Forum on the Challenge to Africa of Globalisation in the Information Age held in Addis Abba in October 1999. As a result, a national workshop on the National Information and Communication Infrastructure was held in Abuja in March 2000.

In parallel, professional bodies including Computer Association of Nigeria (COAN), Information Technology Association of Nigeria (ITAN) and the Institute of Software Practitioners of Nigeria (ISPN) submitted draft IT policy proposals. More efforts followed and culminated in the production of a master plan for the development of a national ICT program “ICT 2000” during the term of Chief Ebitimi Banigo as Honourable Minister of Science and Technology.

President Olusegun Obasanjo has identified Information Technology as a national priority and his enthusiastic commitment has helped tremendously in the timely production of this policy document. Likewise, the present Honourable Minister of Science and Technology, Professor Turner T. Isoun provided the motivation, support and mobilisation to complete this critical task in such a short time.

Special thanks to the chairman of the policy drafting committee, Professor G.O. Ajayi who provided able guidance and the members, Professor S.A. Sanni, Mr. Chris Uwaje, Mr. Abdul-Hakeem Ajijola and Mr. Alexej von Radloff who together worked very hard to produce this valuable document for our national development. Additionally thanks are extended to the various support staff involved in the process.

In case some names have been inadvertently missed out we would like to apologise in advance.

DEFINITIONS AND ACRONYMS

I. INFORMATION TECHNOLOGY – DEFINITION

a. The term 'information technology' means computers, ancillary equipment, software and firmware (Hardware) and similar procedures, services (including support services) and related resources.

b. The term information technology includes any equipment or interconnected system or subsystem of equipment, that is used in the automatic acquisition, storage, manipulation, management, movement, control, display, switching, interchange, transmission or reception of data or information.

II. ACRONYMS

S/n	***Acronym Full Description***
1	Backbone - A bulk data communication network
2	BIS - Broadband Internet Services
3	CMD - Centre for Management Development
4	CITO - Chief Information Technology Officer
5	DPA - Data Protection Act
6	GIS - Geographical Information System
7	GII - Global Information Infrastructure
8	HIS - Health Information System
9	ITF - Industrial Training Fund
10	IT - Information Technology as well as Information Communication Technology
11	IAP - Internet Access Provider
12	ISP - Internet Service Provider
13	LII - Local Information Infrastructure

14 NDE - National Directorate of Employment

15 NECC - National Electronic Commerce Council

16 NII - National Information Infrastructure

17 NIIB - National Information Infrastructure Backbone

18 NITDA - National Information Technology Development Agency

19 NITDEF - National Information Technology Development Funds

20 NITMA - National IT Merit Awards

21 NYSC - National Youth Service Corps

22 NITC - Nigeria IT Corps

23 NCC - Nigerian Communications Commission

24 SMART - Simple Moral Accountable Responsive Transparent

25 SME - Small to Medium Enterprises

26 SDT - Software Development Tools

27 SII - State Information Infrastructure

28 TOKTEN - Transfer of Knowledge Through Expatriate Nationals

29 UBE - Universal Basic Education

30 POP - Point of Presence

SECTORAL APPLICATIONS

CHAPTER 1: HUMAN RESOURCE DEVELOPMENT

1.1 Policy Statement

The nation will endeavour to develop globally competitive quality manpower in IT and related disciplines.

1.2 Objectives

(i) To develop a pool of IT engineers, scientists, technicians and software developers.

(ii) To increase the availability of trained personnel.

(iii) To provide attractive career opportunities.

(iv) To develop requisite skills in various aspects of IT.

(v) To develop made in Nigeria software to earn foreign exchange.

(vi) To develop domestic computer components.

1.3 Strategies

(i) Making the use of IT mandatory at all levels of educational institutions through adequate financial provision for tools and resources.

(ii) Developing relevant IT curricula for the primary, secondary and tertiary institutions. Such curricula will be based on the appropriate national syllabus at the selected level and other

global certification syllabi, to tie into key elements of government's Universal Basic Education (UBE), the proposed digital virtual library scheme, and related educational initiatives. A virtual university system shall be established.

(iii) Establishing facilities for electronic distance learning networks and ensure effective Internet connectivity, which will provide opportunities for educationally disadvantaged areas to educationally leapfrog into the modern era.

(iv) Encouraging IT companies with appropriate incentives to compel them to invest in education and training through certification for tax rebates through existing government bodies experienced in such matters such as the Industrial Training Fund (ITF) and Centre for Management Development (CMD).

(v) Establishing study grants and scholarships to deserving Nigerians.

(vi) Promoting "Training the Trainers" scheme using existing establishments such as the National Youth Service Corps (NYSC), the National Directorate of Employment (NDE) to boost capacity building in IT.

(vii) Empowering IT institutions and development centres to develop IT capacities initially at zonal, state and local levels.

(viii) Facilitating the growth of private and public sector dedicated primary secondary and tertiary IT educational institutions.

(ix) Working in partnership with related domestic and international initiatives such as “Nigerian Human Professionals in the Diaspora”, and the United Nations “Transfer of Knowledge Through Expatriate Nationals” (TOKTEN) program.

CHAPTER 2: INFRASTRUCTURE

2.1 Policy Statement

The government, through ***National Information Technology Development Agency (NITDA)*** shall establish and develop a National Information Infrastructure (NII) ‘backbone’ as the gateway to the Global Information Infrastructure (GII) interconnecting it with State Information Infrastructure (SII) and the Local Information Infrastructure (LII).

2.2 Objectives

(i) To provide leadership direction and vision to guide IT infrastructure development.

(ii) To provide equitable access to all users and stakeholders.

(iii) To guarantee the privacy, integrity, accuracy, confidentiality, security, availability and quality of personal information.

(iv) To create an ubiquitous and affordable technology with an "open standard" approach, scalable and capable of adapting to changes.

(v) To provide a reliable and secured gateway to the Global Information Infrastructure.

(vi) To stimulate the creation and sharing of national and international knowledge.

(vii) To encourage private sector investment in IT particularly in Information Infrastructure.

(viii) To ensure that interoperability and openness are promoted through the utilization of efficient, high-capacity and multi-media technologies.

(ix) To promote electronic trade, business and commerce.

To facilitate the opening of overseas markets for Nigerian

(x) Businesses and enterprises.

(xi) To encourage the private sector to invest, design, deploy and

(xii) Operate independent information infrastructure

(xiii) To close the continuous widening gap, with its attendant grave consequences between the rich and poor nations; otherwise known as the digital divide

(xiv) To pursue and attain cultural diversity.

(xv) To empower the citizenry to better compete in the information societies.

2.3 Strategies

(i) Government will establish a ***National Information Technology Development Agency (NITDA)*** that will foster the development and growth of IT in Nigeria. NITDA will in part be funded from the taxes levied on imported IT equipment.

2.3.1 National IT Backbone

(i) Declaring the establishment of NII as a fundamental national mission.

(ii) Planning, designing and configuring a scalable National Information Infrastructure Backbone (NIIB) to achieve a minimum capacity of 2.5Gbps, using combination of optical fibres, satellite communications and wireless technology.

(iii) Adopting the open system approach in selecting an appropriate,

(iv) Easy-to-use and scalable Information Infrastructure Technology over a long period.

(v) Involving through consultations, the IT Professionals, Experts, Universities and Research Centres, industries and business enterprises in the establishment processes.

(vi) Promoting high bandwidth physical connectivity using broadband technologies as effective pipelines for large and multi-media applications.

(vii) Using existing facilities such as power grids and Railways infrastructure to enhance the creation of NII Backbone.

(viii) Encouraging the private sector, through relevant incentives to build interfacing NII of fibre transmission systems designed strictly to provide transmission capacities on lease basis to service providers essentially for data transmission and not primarily for telephony.

(ix) Ensuring that the entire country is linked by Information network systems by the year 2005.

(x) Utilizing private sector investment.

(xi) Establishing a “Backbone By Anyone” Project for a period of 5-8 years through tax-free incentives to accelerate and encourage investment in the development of NIIB.

CHAPTER 3: GOVERNANCE

3.1 Policy Statement

The nation shall use IT as the major driving force to re-engineer and rapidly transform governance to interface with the needs of its citizenry by establishing transparent "Government Wide Information System (GWIS)" at national, state and local government levels.

3.2 Objective

(i) To replace traditional governance with electronic governance.

(ii) To create knowledge-based and ***Simple Moral Accountable Responsive*** and ***Transparent*** (SMART) governance.

(iii) To reduce bureaucracy.

(iv) To maximize productivity and quality.

(v) To eliminate waste.

(vi) To increase efficiency.

(vii) To create an easy and free access to government information.

(viii) To reduce the cost of service delivery.

3.3 Strategies

(i) Ratifying a Data Protection Act (DPA) for safeguarding privacy of National computerised records and electronic documents.

(ii) Ensuring through NITDA, the implementation of compatible standards for networking of all government organisations to share data, information and reporting on-line; establish interagency support structures that build on existing successful interagency efforts and provide expertise and advice to other federal agencies;

(iii) Expanding the skill and career development opportunities of information technology professionals in government; and improve the management and use of information technology within and among agencies by developing information technology procedures and standards and by identifying and sharing

experiences, ideas, and promising practices; and provide innovative, multi-disciplinary, project-specific support to agencies to enhance interoperability, minimize unnecessary duplication of effort, and capitalize on agency successes; supported by a Government IT Procedure Act (GITPA).

(iv) Making IT skill acquisition mandatory for all government employees, by:

a. Requiring all civil servants to become functionally computer literate within 24 months of this policy coming into force.

b. All new entrants into the civil service from grade level 6 and above must be functionally computer literate prior to commencing their appointment; and c. Tie eligibility requirements for all employees, of federally owned, funded and controlled organisations, nominated to attend overseas, advanced management or technical programs, or those being considered for promotion or special posting will henceforth include their being functionally computer literate.

(v) Establishing clear accountability for information resources

(vi) Management activities by directing all federally owned, funded and controlled bodies to appoint ***Chief Information Technology Officers*** (CITOs) with the visibility and management responsibilities necessary to directly advise the Federal agency

head on the design, development, and implementation of their information systems. These responsibilities include:

a. Participating in the investment review process for information systems;

b. Monitoring and evaluating the performance of those information systems on the basis of applicable performance measures; and

c. As necessary, advising the agency head to modify or terminate those systems.

(vi) Promoting through the National Information Technology Development Agency the self-sustained development of Nigerian IT solution providers in areas such as training, software development and “service” houses by ensuring that not less than 30% of the values of all ICT contract awards are undertaken using local value added products, services or personnel.

(vii) Establishing Internet connectivity and access for government employees at all levels.

(viii) Establishing Web Sites for improved government image and as information centres for the citizenry.

(ix) Safeguarding the effective use of the "dot NG (.ng)" Domain name for Nigeria, with NITDA as the operating agency.

(x) Developing on-line forms for information collation.

(xi) Simplifying citizens' access to the process of governance and government information by providing choices and options for interaction with government, and advance the use of electronic media for government contract tendering and procurement processes.

(xii) All Federally owned, funded or controlled organisations will immediately embark on the following measures, namely:

a. Improving significantly the management of government statutory bodies information systems, including the acquisition of information technology, and facilitating the adoption of Information Technology (IT) solutions in all aspects of their operations where practicable;

b. Focussing information technology management to support directly statutory bodies strategic missions, implement an investment review process that drives budget formulation and execution for information systems, and rethink and restructure the way they perform their functions before investing in information technology to support that work;

c. Using of information technology to improve the productivity of federal programs and promote a coordinated, interoperable, secure and shared government wide infrastructure that is provided and supported by a diversity

of private sector suppliers and a well-traine corps of information technology professionals.

CHAPTER 4: RESEARCH AND DEVELOPMENT

4.1 Policy Statement

IT Research and Development will be used for sustainability, leapfrogging and competitiveness.

4.2 Objectives

(i) To ensure Nigeria's contribution to IT development and her competitiveness in the international market.

(ii) To guarantee sustainability of IT in Nigeria and use it to stimulate industrial growth.

(iii) To promote self-reliance and export of IT products and services.

(iv) To encourage joint R & D efforts between the private sector and the universities such as software development.

(v) To identify key technological areas as well as others and provide fiscal support and incentives to encourage local technology development.

(vi) To encourage transfer of technology through exchange of visits between expatriate IT experts and Nigerian IT experts in Diaspora on one hand and IT institutions and experts in Nigeria. Funding to be coordinated via NITDEF.

4.3 Strategies

(i) Developing local expertise and resources through adaptation.

(ii) Developing market-oriented software for local market and export.

(iii) Cultivating/upgrading the maintenance culture.

(iv) Developing low cost PCs, solutions, services and accessories in order to increase PC accessibility to at least 30% of the populace by year 2003.

(v) Encouraging and funding R & D in identified universities. Industries (including those in the oil sector) are to be encouraged to set up R & D centres at university level, through faculty chairs, matching grants and focused joint projects.

(vi) Requesting for research projects that will be made open to both research institutes and universities in order to select good and innovative projects for national development.

(vii) Funding vacation or sabbatical; visits of expatriate IT experts and educationists in order to transfer knowledge and share their experiences.

(viii) Introducing “Innovative ideas” competitions, on countrywide basis covering all levels (from primary schools to tertiary institutions) and R&D centres to instil the spirit of innovation and excellence in our young professionals.

(ix) Stimulating growth of local IT industries through government patronage of local IT industries, products and services.

(x) Establishing R & D institutions in IT in Abuja and in each of the six geo-political zones of Nigeria with clear mandate. States shall be encouraged to establish similar institutions, which are to be properly funded.

CHAPTER 5: HEALTH

5.1 Policy Statement

The government shall invest in IT based healthcare systems to ensure that Nigerians have access to good healthcare delivery.

5.2 Objectives

(i) To use IT for the establishment of Health-care Information Systems (HIS) cutting across primary, secondary and tertiary healthcare systems.

(ii) To improve the efficiency of patient care and reduce cost of healthcare delivery.

(iii) To deploy IT for the development of drug information, records and bibliographic records.

(iv) To deploy IT for the study and control of epidemics.

(v) To deploy IT as a research tool and means of disseminating information.

(vi) To reduce costs and improve productivity of healthcare administration and delivery.

(vii) To deploy IT for use in distance learning for medical professionals.

(viii) To use IT-based healthcare information system to educate on preventable diseases.

5.3 Strategies

(i) Capitalise on existing global IT infrastructure such as the free Healthnet Satelife “nearly real-time” email facilities that connect, via e-mail, medical personnel at all levels in the developing world to each other, and to select health experts in developed countries.

(ii) Networking all healthcare institutions to collate information, share data and communicate on-line.

(iii) Establishing full Internet connectivity and access for healthcare professionals at all levels (primary, secondary and tertiary).

(iv) Making IT skills acquisition mandatory for all healthcare professionals thus achieving computer literacy within 24 months.

a. Including IT courses in the curricula of all medical and para-medical education institutions.

b. Establishing a network of co-operating centres/institutions for training education, software development and research

to produce the software and necessary human resources needed.

(iv) Developing Software packages for;

a. The three levels of healthcare delivery, primarily to support clinical work and hospital management within the health facilities, so that the state/federal information statistics is produced as a natural by-product of the daily operations.

b. Mandating local/state/federal government authorities to accumulate the information coming from all levels of healthcare delivery and also to produce the combined statistics primarily to support the decision making by the authorities.

(v) Establishing in all hospitals, healthcare, epidemiological, and administrative records.

(vi) Use IT to combat serious national health threats such as HIV/AIDS, leprosy, physical disabilities among many others, by using IT:

i. To teach the youth on ways to prevent the transmission of HIV.

ii. To educate the victims of HIV and their families on palliative measures and provide them with information through on-line conferences so that they can share their fears and experiences.

CHAPTER 6: AGRICULTURE

6.1 Policy Statement

The nation shall use IT to re-engineer agriculture for the purposes of maximizing food production, improving food self-sufficiency and security, increasing output for industrial raw material utilization, providing employment, economic growth and minimizing environmental abuse and degradation.

6.2 Objectives

(I) To optimise land use for food production.

(II) To provide employment for the citizenry.

(III) To minimize urban migration.

(iv) Develop and protect a sustainable agricultural environment.

6.3 Strategies

(i) Developing Geographical Information Systems (GIS) to monitor the environment and plan sustainable environmental usage: IT is used in land and water management, offshore resource exploitation, yield assessment and livestock management. Government will revitalise agricultural extension services by empowering and equipping farm extension workers with IT skills to support farmers through the use of IT in areas such as:

a. Digital Mapping

b. Land Use

c. Soil types

d. Meteorology

e. Ecology

f. Oceanography particularly off-shore fisheries exploitation

g. Hydrology

h. Agricultural records

(ii) Establishing an agricultural information system to provide support for planning, production, storage and distribution of horticultural crops, livestock, and fisheries products.

(iii) Creating IT awareness for all types of farmers at all levels nationwide.

CHAPTER 7: URBAN AND RURAL DEVELOPMENT

7.1 Policy Statement

The government shall facilitate the development of the Geographical Information Systems (GIS) and its utilization with other IT facilities for urban and rural area development.

7.2 Objectives

(i) To develop digital master plans for our cities.

(ii) To improve rural area development and management.

(iii) To reduce the trend of rural to urban migration.

(iv) To achieve environmentally clean cities and rural areas.

(v) To generate IT related jobs for urban and rural youths.

(vi) To introduce the benefits of e-governance to urban and rural communities.

(vii) To make tools available to predict environmental problems in advance for necessary action.

(viii) To promote the development of rural IT facilities.

(ix) To promote the proper documentation of ownership of land and property in urban and rural areas and the transformation of dead property assets to capital.

7.3 Strategies

(i) Creating environmental networks.

(ii) Organising enlightenment campaigns about IT amongst city and rural area planners.

(iii) Developing the GIS technologies for use in urban and rural areas for planning and design.

(iv) Re-training the present core designers and planners for relevance in the information era.

(v) Establish rural internet resource centres with VSAT capability where such communities can have access to IT and the Internet and information on the following;

a. government programs,

b. local news and weather details,

c. land and related administrative records,

d. government license and related documentation application on-line,

e. local commodity prices and on-line transactions.

(iii) Developing community tele-centres for boosting the socioeconomic activities in the rural areas.

(iv) Establishing IT facilities in rural areas through the use of Mobile Internet Unit, Community Tele-Centres, etc using satellite, wireless, HF-radio and cellular technologies.

CHAPTER 8: TRADE AND COMMERCE

8.1 Policy Statement

Create an enabling environment that empowers stakeholders in trade and commerce with the underlying infrastructure to improve productivity and positively position the nation for global competition.

8.2 Objectives

(i) To develop a transparent, stable and effective legal operating environment that promotes private sector business and investment in IT.

(ii) To cultivate a culture of electronic commerce, which makes business transactions easy, quick and cost effective, for both national and international transactions.

(iii) To positively raise the local and international visibility of Nigerian businesses.

(iv) To encourage foreign and domestic private sectors investment to build information infrastructure and related assets and develop subsequent downmarket activities.

(v) To stimulate the proliferation of private sector-led information technology services and consequently generates meaningful employment opportunities for Nigerians.

8.3 Strategies

(i) Firmly address the protection of intellectual rights by bringing the copyright laws in line with the needs of a globally competitive economy.

(ii) Government, through NITDA, will collaborate with the private sector in the development of information infrastructure.

(iii) Permitting the private sector to establish Internet communication “backbone” facilities stimulated on market demand with minimal governmental encumbrance.

(iv) Encouraging the development of alliances of communities and non-governmental organisations to enhance efficient and appropriate grass-roots development efforts.

(v) Raising the profile of Small and Medium-Scale Enterprises (SMEs) in exports through e-commerce by providing low cost accessibility to markets and services.

(vi) Encouraging manufacturers and suppliers to utilise bar codes on items sold in the country.

(vii) Establish a high profile National Electronic Commerce Council (NECC), to govern all the electronic commerce (e-commerce) affairs in Nigeria, and facilitate international trade through an e-commerce infrastructure. The NECC will be operated and supervised by NITDA with the cooperation of relevant Ministries and organisations.

CHAPTER 9: FISCAL MEASURES

9.1 Policy Statement

The government shall introduce a series of fiscal measures, in order to stimulate further investment and growth in the IT sector with the creation of a favourable investment climate for the development of a globally competitive IT enabled economy.

9.2 Objectives

(i) To develop fiscal mechanisms that quickly respond to the fast changing needs of an IT based economy.

(ii) To position the economy to secure capital inflow, retain capital and encourage local and foreign direct investment.

(iii) To use favorable fiscal policies to ensure that Nigerian IT products and services are globally competitive.

(iv) To establish and operate duty free IT zones to attract investment.

(v) Fuel the development of economic sub-sectors, asset accumulation, and fiscal activities that arise from IT use.

(vi) Endow the nation and its citizens with high margin employment opportunities.

9.3 Strategies:

(i) Provide a sound, responsive and efficient regulatory environment.

(ii) Encourage the development of the professional services subsector, where manpower is provided to work on customer's sites on a time-charge basis.

(iii) Promote the growth of alliances and partnerships among local firms and with foreign firms through the establishment of joint ventures and strategic alliances based in tax-free technology parks.

(iv) Imported IT components and software tools, for industries set up for the sole purpose of exporting finished IT products and services, will be duty free.

(v) The import duty on IT “knocked down” components for the domestic market will be 1.5% whereas import duty on imported finished IT goods for the domestic market will be 7.5%. Three percent of the accrued duty will be paid directly to the National Information Technology Development Fund.

(vi) Tax holidays will be accorded to all enterprises that demonstrate substantial financial commitment to the advancement of IT capacity and training for its staff as an extension of the Industrial Training Fund (ITF) and Centre for Management Development (CMD) mandates in collaboration with the NITDA.

(vii) Federally owned, funded or controlled organisations for a period of 3 years from the effective date of this policy will not deduct the statutory with-holding taxes from payments to Nigerian IT solution providers for the following services:

a. One hundred percent locally developed software

b. Locally assembled or manufactured ICT equipment

c. Internet access services, local web hosting, and local website design

d. ICT equipment maintenance

(viii) Government through its statutory bodies will promote the self-sustained development of Nigerian IT solution providers in areas such as training, software development and “service” houses by ensuring that not less than 30% of the value of all ICT contract awards are undertaken using local value added products, services or personnel.

(ix) Stimulate the proliferation of high-speed internet gateways through a less stringent licensing regimen towards Internet Service Provider’s (ISP’s) and Internet Access Provider’s (IAP’s), and a reduction of the licensing processing time to seven working days and reduction of licensing fees to only cover administrative costs.

(x) Providing legal safeguards for the privacy of individuals and the confidentiality of transactions against misuse.

(xi) Government through the Central Bank of Nigeria (CBN) will set a deadline for the conversion of transactions such as Letters of Credit (L/C), Form-M, Bills of Lading and related import-export documentation to electronic formats by importers and exporters; and empower banks to engage in, manage, and finance e-commerce transactions.

(xii) Adopting a Tax exemption on Export Profits for 5 years.

(xiii) Establishing various IT parks across the country to be designated as duty free IT Zones. All companies located in the IT zone and

science parks are to be granted the same incentives as those in the Export Processing or Free Zones, such as:

a. **Pioneer Status** that guarantees firms Tax exemption for a period of 5 years.

b. **Export Incentives** that are similar to the incentives in the Export Processing Zones (Export Processing Decree No. 34 of 1991) - Zero levies; zero-rates for states and LGA's.

c. **Other Incentives** include 50% Tax rebate on interest paid by IT companies on loans to local banks. This will reduce interest rates significantly and make lending to such companies more attractive..

(xiv) Accelerated capital allowances over half of the approved life of the IT equipment, which will enable investment in such equipment.

(xv) Establishing a National Information Technology Development Fund (NITDEF) managed by the NITDA.

(xvi) 50% Tax rebate on dividends accruing from shares in IT and Biotechnology companies.

(xvii) Access to special development funds such as the NITDEF or other funds to be approved by government from time to time.

(xviii) Remitting proceeds (Net of all taxes) and other obligations in the event of a sale or liquidation of the enterprise or any interest attributable to an offshore investment.

(xix) Enacting laws for the protection of investments and property from expropriation.

(xx) Promoting government procurement policies to favour IT and enterprises located in the Parks.

9.4 Conditionality

In order to take full advantage of the favourable incentives offered in the IT Park free zones, appropriate conditionalities are to be worked out by NITDA. The key objective is to stimulate technological growth and development, IT literacy and R & D efforts. Companies must employ at least 75% local staff and invest at least 15% of profit tax on R & D.

CHAPTER 10: GOVERNMENT & PRIVATE SECTOR PARTNERSHIPS

10.1 Policy Statement

Recognizing that the IT should be private sector driven, government shall engage joint venture investment with the private sector, in addition to the provision of an enabling environment for investment.

10.2 Objectives

(i) To provide an enabling environment so that private ventures can flourish.

(ii) To use favourable fiscal policies to make Nigerian IT products and services globally competitive.

(iii) To ensure that NITDA in collaboration with the private sector develops a large pool of IT professionals with wide range of state of-the-art IT skills for internal and international redress of shortages.

(iv) To establish joint Government/Private sector institutional framework for developing Advisory Standards and quality control.

(v) To encourage local capacity building by providing guaranteed markets in specialized and strategic IT sectors.

10.3 Strategies

(i) Establishing and operation of Information technology free zones also known as IT Parks to attract IT investment. All companies located within the IT free zones or Export Processing zones (EPZ) are to be granted the same incentives.

(ii) The IT parks may be set-up by Federal or State Governments, public or private sector undertakings or any combination thereof. The IT parks will greatly enhance the ease of doing business by providing favourable access to the Nigerian domestic markets and providing incentive for export production. All IT Parks will be subject to certification as designated Free Zones by the National Information Technology Development Agency (NITDA).

(iii) Developing government/private sector R & D partnerships through equitable facilities sharing and by establishment of Pilot Schemes in software and hardware development within/outside designated IT Parks.

(iv) Establishing and supporting the National IT Development Trust Fund (NITDEF), which amongst its other activities, will provide venture capital finance to the start up of SMEs in the IT sector. The National Information Technology Development Agency (NITDA) will manage this fund.

(v) Promoting equity participation with IT investors both locally and internationally.

(vi) Establishing an export promotion drive to sponsor participation of Nigerian IT solutions and service providers in national and international IT exhibitions.

(vii) Setting up "power corridors" to the IT parks to ensure consistent and reliable power supply.

(viii) Removing all bureaucratic bottlenecks to the development of local capacity building.

CHAPTER 11: ARTS, CULTURE & TOURISM

11.1 Policy Statement

IT shall be used to project a positive image of Nigeria's arts and culture and create wealth.

11.2 Objectives

(i) To safeguard manuscript and preserve cultural artefacts.

(ii) To promote Nigerian cultural heritage on the digital superhighway.

(iii) To promote business and tourist activities and generate revenue.

(iv) To enable Nigerian to become a net provider of Internet content on the World Wide Web, as opposed to its status of being a net recipient of Internet content.

11.3 Strategies

(i) Creating websites to project Nigerian culture.

   a. Use web technology to attract tourist to Nigeria,

   b. Providing facilities to sell Nigerian arts and cultural goods on the Internet,

   c. Encouraging Internet access services, local web hosting, and local web-site design,

   d. Developing a multi-media virtual gallery, and

   e. Developing low cost broadcast, video and film industry.

(ii) Introducing state-of-the-art gadgets in the production process.

(iii) Capitalise on existing infrastructure such as the Worldspace digital FM broadcasting satellite with its footprint over Africa to develop low cost home office West Africa wide broadcasting stations.

(iv) Establishing more schools for the development of manpower for the multimedia industry.

(v) Establishing community broadcast networks where information can be channelled.

(vi) Promoting rapid growth in the use of personal computers for playing indigenous games for example:

a. Local games like ayo, etc, could be programmed into the computer and sold to the outside world.

b. Gaming with diversity - games betting via the Internet.

(vii) Facilitating the use of the Internet by people with particular hobby and leisure interests.

(viii) Developing the trend of interfacing the above development on a multi-media architecture allowing for a range of IT activities to be selected using an array of equipment.

(ix) Strengthening infrastructure and related facilities for interactive and reliable networked airline/transport/hotel reservation.

(x) Providing Internet connectivity to major tourist areas with access links to popular search engines for global visibility.

CHAPTER 12: NATIONAL SECURITY AND LAW ENFORCEMENT

12.1 Policy Statement

Protect and promote the interest, assets and safety of Nigeria, Nigerians and those we work with in the global environment, by

developing knowledgeable manpower with commensurate discipline and IT skills-set capable of efficiently generating and effectively utilizing information in a timely manner, for national decision making.

12.2 Objectives

(i) To safeguard life and property of all Nigerian both at home and abroad.

(ii) To preserve the territorial integrity of our borders and assets.

(iii) To provide attractive career opportunities for our citizens.

12.3 Strategies

(i) Using IT to combat contemporary and emerging security threats and challenges that are being re-defined by Information Technology.

(ii) Raising awareness and educating National Security and Law Enforcement personnel at all levels on the use, benefit and risks of new IT environment.

(iii) Appropriately informing and protecting our citizens, government, infrastructure and assets from illegal and destructive activities found in the global electronic environment thus enhancing the confidence of our nation and its partners in our citizens, government and infrastructure.

(iv) Government through the Federal Ministry of Justice, in collaboration with the NITDA, and after due deliberation with IT and sectoral experts, will frame appropriate legislation in the following areas, namely;

a. ***Computer Crimes***,

b. ***Digital Signature***

c. ***Tele-Medicine***

d. ***Tele-Education***

e. ***Intellectual Property/ Copyright***

f. ***Consumer Protection***

g. ***Media Convergence***

h. ***Electronic Government***

i. ***Electronic Commerce***

12.4 Regulations

(i) A regulatory framework is essential to avoid violating policy goals and direction, while incorporating social and consumer concerns in the deployment of new products and services, and to safeguard national resources. A continuous balance must be achieved between under-regulation that breeds sharp practices and excessive regulations that stifle industry investment and growth.

(ii) In devising a useful regulatory framework, the following steps shall be taken:

a. Focus on creating an equitable, fair, just and competitive environment, based on the principles of the free market and open unfettered access to products and services.

b. Make optimum use of existing Information Communication Technology investments, and removal of restrictions on voice and video transmission via the Internet, Intranet, or other data communication media.

c. Allow network operators the freedom to build their own backbone and local access, and encourage collaborative private sector efforts in this regard.

d. Facilitate deployment of infrastructure for advancement of IT and related services.

e. Review government management and procurement policies to ensure that they encourage competition among IT service providers.

f. Promote the self-sustained development of Nigerian IT solution providers in areas such as training, software development and “service” houses by ensuring that not less than 30% of the value of all IT contract awards by government are undertaken using local value added products, services or personnel.

12.5 Standards

(i) The government through NITDA shall adopt standards on an ongoing basis as part of a continuing IT planning process by initially determining what and where to standardize and the costs versus benefits of standardization. Issues to be considered include:

a. Compatibility in sharing of data and information.

b. Effective and efficient sharing of skills and knowledge.

c. Efficient usage of resources.

d. Improved product quality.

e. Avoiding the stifling of creativity and development of new products and ideas.

(ii) The relevant Policy and Technical committee shall study, review and produce advisory standards to be adopted in the use of IT by the government and the private sector.

(iii) For the public sector the government will ensure that federally owned, funded or controlled organisations (federal agencies); cooperate in the use of information technology to improve the productivity of Federal programs and to promote a coordinated, interoperable, secure and shared Government – wide infrastructure.

(iv) Establish inter-agency support structures that builds on existing successful inter-agency efforts and shall provide expertise and advice to agencies.

(v) Recommended Standards shall be reviewed and published on a regular basis. The publications shall be used as guidelines by government, public and private sector organizations throughout the country. Where specific standards are identified as critical to the development and deployment of a countrywide infrastructure, compliance with these shall be made mandatory.

CHAPTER 13: LEGISLATION

13.1 Policy Statement

The nation shall promote and guarantee freedom and rights to information and its use, protect individual privacy and secure justice for all by passing relevant Bills and Acts.

13.2 Objectives

(i) To facilitate electronic communication and electronic governance (e- governance).

(ii) To facilitate electronic communication and electronic commerce (e-commerce).

(iii) To promote and secure electronic fund transfer and digital transaction payment system.

(iv) To protect government data, records and information in digital form.

(v) To establish and enforce Cyber laws to combat computer crime.

(vi) To enthrone public confidence in the use, application and sharing of information.

(vii) To promote acceptable standard, authenticity and integrity in IT use nationwide.

(viii) To enhance freedom and access to digital information at all levels while protecting personal privacy.

(ix) To promote intellectual property and copy rights.

(x) To address critical ethical issues of the digital culture and protect the rights of the child and under-privileged.

13.3 Strategies

(i) NITDA in collaboration with the Ministry of Justice, with inputs from the private sector advisory committee (where deemed necessary) shall sponsor and promote the establishment of the following IT Bills and Acts to realize objectives such as: freedom of access and rights to information, on-line transaction, service, payment systems, privacy and confidentiality, digital signatories, and intellectual property rights:

(ii) Ensure the protection of individual and collective privacy, security, and confidentiality of information.

(iii) Introducing the machinery for verification and admissibility of copies of electronic records and digital evidence in administrative or legal proceedings, and promote the digitalisation of court proceedings.

(iv) Review of relevant existing laws to take care of any impediments that may hinder the implementation of IT policy.

(v) Training and re-training all judiciary personnel, including Judges, Magistrates, Lawyers, Prosecutors and Court Clerks to apply and use computers and other IT tools to improve the delivery of justice.

(vi) Computerizing and networking all arms of law enforcement and converting existing relevant records into digital format.

(vii) Enacting legislation on the following;

a. Establishing a National IT Policy.

b. Establishing a National Information Technology Agency.

c. Government workforce restructuring in the IT era.

d. Commercial transactions using IT media and digital signature technologies.

e. Computer crime and Cyber laws (CCCL)

(viii) Re-structuring Decree 49 of 1995, which established the Computer Professionals Registration Council of Nigeria as well the decree establishing Council Of Registered Engineers of

Nigeria, and other pertinent decrees to effectively respond to the challenges of the Information Age.

(ix) Encouraging "Made in Nigeria IT products and services" such as software and professional services through incentives

(x) Updating the existing National Copy Rights Act to protect IT related intellectual property rights (IPR).

CHAPTER 14: GLOBAL CONSIDERATIONS

14.1 Policy Statement

Recognizing that the subject of globalisation is indeed an issue of internationalisation of technology, government shall encourage international collaboration in IT knowledge sharing, investment and security.

14.2 Objectives

(i) To encourage national and regional co-operation in the applications and development of IT to strengthen co-operation and integration in Africa.

(ii) To position Nigeria as an IT capable country in Africa.

(iii) To respond to the challenges of the IT globalisation in goods, services and human capital.

(iv) To transform IT brain drain from Nigeria to brain gain.

(v) To encourage the participation of Nigeria in the Internet Society activities at the international and regional levels.

14.3 Strategies

(i) Creating IT departments, headed by Chief Information Technology Officers (CITO), in our missions abroad and related establishments.

(ii) Establishing an international relations department in the National Information Technology Development Agency with special interagency links to the Presidency and the Ministry of Foreign Affairs.

CHAPTER 15: IT POPULARIZATION AND AWARENESS

15.1 Policy Statement

A comprehensive promotion and awareness campaign shall be undertaken in order to create an information society with cutting edge technologies in which every citizen is empowered to contribute positively to national development and wealth creation.

15.2 Objectives

(i) To promote IT diffusion, utilization and applications within and across sectors.

(ii) To promote the use of IT by the heads of the three tiers of government; Ministers and all other key officers who can influence public opinion.

(iii) To encourage the performing arts (home video, artists, musicians etc) and other similar media sources to integrate IT popularisation into their programmes.

(iv) To use the electronic and print media extensively for the popularisation of IT.

(v) To encourage the development of simple IT tools designed for local language interactions.

(vi) To draw on the intrinsic ability of women to propagate positive values within the society at large as an instrument for IT diffusion and promotion.

15.3 Strategies

(i) Deploying Mobile Internet Units (MIU) with varying multimedia aids to tour rural areas in order to educate the populace on IT features and benefits in addition to the community telecentres.

(ii) Encourage IT skills acquisition for all officers at all tiers of government within 24 months of this policy going in to effect.

(iii) Establishing interactive websites for all key government offices within 12 months as information centres for the populace.

(iv) Organizing workshops to demonstrate the features and benefits of IT for performing artists through the Ministry of Youth, Sports and Culture.

(v) Collaborating with the Ministry of Women Affairs to organize workshops and training in IT skills for women and other special groups.

(vi) Collaborating with the Ministry of Information as well as it's agencies such National Broadcasting Commission, NTA, the Federal Radio Corporation of Nigeria and others at the state level to popularise IT through the slogan ***'Use Information Technology' (USE IT)*** via television and radio.

CHAPTER 16: POLICY IMPLEMENTATION

16.1 Policy Statement

Recognizing IT as a strategic imperative for national development and taking cognisance of its immense benefits, Government shall provide considerable national resources, both financial and otherwise, for the realization of the National IT Vision Statement.

16.2 Objectives

(i) To develop an efficient and cost-effective infrastructure that provides equitable access to national and international networks and markets.

(ii) To develop an extensive pool of trained IT manpower at all levels to meet local and export requirements.

(iii) To promote the widespread use of IT applications in governance.

(iv) To provide business incentives for both local and foreign investors to ensure the development of Nigeria's IT sector, including the software, hardware and service industries, and the use of its products.

(v) To develop an encouraging legislative and regulatory framework for IT related issues.

(vi) To give maximum opportunity to the private sector to lead the thrust in the development of IT in Nigeria.

(vii) To establish a tradition of electronic commerce for both national and international transactions.

(viii) To establish institutional mechanisms for the control, regulation and monitoring of IT activities in Nigeria.

16.3 Strategies

(i) Establishing a coordinated program for the development of a National, State and Local Information Infrastructure Backbone by using emerging technologies, such as satellite including VSAT, fibre optic networks, high-speed gateways and broad band/multimedia within the next eighteen months but not later than the fourth quarter of 2002

(ii) Providing high–speed connectivity to the global information infrastructure by 2002.

(iii) Increasing the telephone line penetration rate by expanding the existing Telecom network and providing new networks by employing modern technologies in order to minimize the cost of expansion.

(iv) Removing the barriers to the introduction of new technologies such as Wireless Local Loop (WLL) by the private sector in order to ensure the spread of Telecom services to under-served areas of the country.

(v) Developing an integrated, flexible, robust and reliable transmission network covering the entire country and capable of voice and data by 2003.

(vi) Establishing IT Parks as incubating centres for the development of software/hardware applications at national, state and local levels.

(vii) Encouraging further deregulating of the Telecom industry with a view to providing affordable, competitively priced Internet connectivity (low and high bandwidth) for a larger community of users by the end of 2002.

(viii) Communication with Internet PoPs should be regarded as local calls, to reduce the costs and make such services affordable to the populace.

(ix) Reducing the rates and tariff for all Telecom services to a level reasonable and consistent with economic realities of the country and the global trends.

(x) Reducing the bandwidth rates, both domestic and international, dramatically to encourage the rapid launch of new services and distance learning and also provide a competitive edge to local companies trying to break into established international markets.

(xi) Restructuring the educational system at all levels with a view to developing relevant IT curricula for the primary, secondary and tertiary institutions in order to respond effectively to the challenges and imagined impact of the information age and in particular the allocation of IT development fund to education.

(xii) Encouraging massive local and global IT skills acquisitions through training in the public and private sectors as well through joint venture and alliances with a view to achieving a strategic medium-term milestone of at least 500,000 IT skilled personnel by the year 2003.

(xiii) Bringing Government to the doorsteps of the people by creating virtual forum and facilities to strengthen accessibility to government information and facilitating interaction between the governed and Government leading of transparency, accountability and strengthening of democracy.

(xiv) Making IT skill acquisition mandatory for all government employees and achieving computer literacy for all civil servants by the end of 2002.

(xv) Networking all government organizations to share data, information and reporting on-line by the end of 2002.

(xvi) Establishing full Internet connectivity and access for most government employees by the end of 2002.

(xvii) Establishing Web Sites for improved government image and as information centres for the citizenry.

(xviii) Establishing an Overseas Strategic Advisory Board of Nigerians in Diaspora in IT and related industries not only for advice but also for investment and participation in IT projects and activities in the country.

(xix) Giving ISPs approval to develop high-speed gateways with no licensing fees.

(xx) Encouraging the private sector to develop software for government and non/classified defence projects.

(xxi) Enacting Bills and Acts to stimulate and protect the right of users and developers including intellectual property rights.

(xxii) Establishing Government IT Procedure Act (GITPA) to enhance equipment standards, performance and security.

(xxiii) Establishing a Data Protection Act (DPA) for safeguarding privacy of National computerized records and electronic documents.

(xxiv) Establishing a National Information Technology Development Agency (NITDA) to implement, monitor, evaluate, regulate and verify IT activities on an on-going basis under the supervision and coordination of the Federal Ministry of Science and Technology.

(xxv) Establishing a National Information Technology Development Fund (NITDEF) with a view to achieving the short to medium term objectives of the policy by earmarking, in the first instance, at least 2% of the Federal Capital Budget (with effect from 2002) for the implementation of the policy thrust to be administered by the National Information Technology Development Agency.

(xxvi) Encouraging Internet telephony as well as Voice over Internet Protocol (VoIP), to reduce the cost of telephony and make such services affordable to the populace.

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National Information Technology Development Agency (NITDA): Appendix

Purpose:

This Body is to be set up to:

i. ensure the achievement of the articulated National IT vision;

ii. foster and co-ordinate the accelerated development of IT in Nigeria;

iii. promote the efficiency and international competitiveness of the IT industry in Nigeria;

iv. facilitate universal access to IT at affordable prices;

v. promote and maintain fair and efficient IT business practices;

vi. advise government on national IT needs and policies;

vii. act internationally as the national body of Nigeria with respect to IT matters;

viii. further the advancement of IT through R&D;

ix. exercise licensing and regulatory functions in respect of IT systems and services;

x. encourage, facilitate and promote the greatest practicable use of IT industry self-regulation;

xi. encourage investment, development and expansion of the IT industry in Nigeria;

xii. promote broad based IT human resource development;

xiii. support the application of IT in all economic sectors;

xiv. provide IT consulting and advisory services;

xv. popularise IT at all levels;

xvi. cost-effectively provide pooled IT resources to government;

xvii. act as repository of IT standards and register, classify and document all locally developed and imported software for the purpose of testing and benchmarking its claims;

xviii. act as a secure government information clearing house, data repository, and central electronic archive facility;

xix. develop and maintain an inventory of government's assets, projects, and resources particularly human and material investment;

xx. manage the National Information Technology Development Fund (NTDF).

Composition of NITDA Board of Directors:

The Board is to provide the policy guidelines for the NITDA, and the Board will meet quarterly. Membership of the Board shall be for a term not exceeding two years. Changes in membership shall be staggered such that at least 35% of the members are retained. Individual membership of the Board can be renewed at the discretion of the President.

i. The suggested members of NITDA Board of Directors shall include;

1. The Chairman who will be appointed by the President on the recommendation of the Honourable Minister for Science and Technology.
2. Representative of the Ministry of Communications - Member
3. Representative of the Ministry of Information - Member
4. Representative of the Ministry of Finance - Member
5. Representative of the Ministry of Education - Member
6. Representative of the Ministry of Science and Technology - Member
7. Representative of the Presidency – Member

8. Representative of Information Technology (industries) Association of Nigeria (ITAN) - Member.
9. Representative of Computer Association of Nigeria (COAN) - Member
10. Chairman of Nigerian Internet Group (NIG) - Member
11. Representative, Institute of Software Practitioners of Nigeria – Member
12. Computer Professionals Registration Council of Nigeria (CPN)
13. Two representatives from the tertiary educational system - Members
14. Three distinguished persons to be nominated by the President - Members
15. A Managing Director to be appointed by the President on the recommendation of the Honourable Minister of Science and Technology

ii. In the interim period, the Inter-Ministerial Committee on IT will midwife the NITDA until such a time as the law establishing the Agency is enacted, for the following reasons;

a. to give the major stakeholders a role in the development of the Agency;
b. to maximize the commitment of the major stakeholders to the development of the Agency;

c. to facilitate access to wider consultation and establish interagency interfaces for the coordinated development of the Agency;

d. to ensure the adherence to the vision of the IT Policy.

ICT Technical Assistance Group

There is a need to have an ICT Technical Assistance Group to give technical support to NITDA. This Group will be supervised by NITDA Details of composition can be spelt out at the level of implementation.

Computer-Ready Smart Buildings

There is need to ensure that Government and other public buildings including facilities at the IT Parts are computer-ready smart buildings. This issue of ensuring smart buildings to meet this requirement. Details of this should be worked out at the level of implementation.