

THE PRINCIPLES AND THE IMPLEMENTATION OF ELECTRONIC COMMERCE: A CASE FOR NIGERIA

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Abstract

In recent times, the ability to manage information has become a prerequisite for a successful business. Nigerian companies must react quickly to consumer needs, bring the products and services to the market with greater speed, and respond more completely and efficiently to the changing business conditions. To meet these demands, many organizations in Nigeria now are beginning to develop new approach that allows them to build on existing technology, which is electronic commerce (e-commerce). Electronic commerce (e-commerce) is a process of carrying our commercial activities such as initiating order, bill payment, invoicing with use of the computer connected to the Internet for commercial activities, it has become imperative and absolutely necessary that Nigeria and indeed all other countries in developing world should begin to consider it seriously with a view to implementing it eventually. This paper looks first of all at the world of Internet, giving the meaning and the history of Internet. It will briefly describe how one can connect to the Internet. The paper looks at the advantages, the requirement and the issues involved in implementing electronic commerce in Nigeria.

Introduction

To a layman, e-commerce is when someone offers a product for sale on the Web site and someone else buys the product through a Web site. It may sound simple, but there are different things that must be considered to make the sale possible over the Web. Many of these considerations are similar to what the traditional physical storefront deals with. When products are offered for sale on the Web, these products must be marketed, sold, paid for and delivered through services of the Website via the Internet. The details of all these are different for e-commerce, but, whether the store is physical or electronic storefront, one is still running a store or a supermarket or a retail store, and your Web storefront must meet many of the same requirements of a physical storefront to be successful.

Electronic commerce is emerging as one of the most important applications on the Internet. It has the potential for revolutionizing the whole structure of retail merchandizing and shopping. Internet commerce is made possible by the combination of the traditional Information Technology systems that use the World Wide Web (WWW) to bring together customers, vendors, suppliers and employees. Internet and e-commerce, also referred to as Internet commerce has brought a change to business procedure. For instance, the individual processes in Internet commerce depend on the enabling technology and the business concept they support. An example of an area of internet I commerce is electronic buying and selling, often referred to as shopping.

For the organizations to remain relevant and profitable in this new information age. information technology is an enabler. After describing the Internet and the World Wide Web (WWW), the topology of e-commerce, the horizontal and the vertical models of e-commerce, some scenarios of people from different works of life and situations are used in illustrating the various situations in comparing and contrasting manual and electronic systems. I crave the indulgence of all those whose actual names are used in describing actual situations.

The Various Descriptive Definitions of Electronic Commerce

- Electronic commerce, defined simply, is the commercial transaction of services in an electronic format.
- Electronic commerce refers generally to all forms of transactions relating to commercial activities, including both organizations and individuals, that are based upon the processing and transaction of digitized data, including text, sound, and visual images.

- Electronic commerce is about doing business electronically. It is based on (lie electronic text, sound and video. It encompasses many diverse activities including electronic trading of goods and services, online delivery of digital content, electronic fund transfers, electronic share trading, electronic bills of lading, commercial auctions, collaborative design and engineering, online sourcing, public procurement, direct consumer marketing, and after sales services. It involves both products (consumer goods, specialized medical equipment) and services (information services, financial and legal services); traditional activities (health care education) and new activities.
- Electronic commerce is the carrying out of business activities that lead to an exchange of value across telecommunications networks.
- Electronic commerce even though limited to a number of specified companies and establishments, is now entering a new era where many unspecified persons including general consumers are involved on the networks. In addition, the contents of e-commerce have come to include not only simple transactions of data concerning placing orders or order acceptance but also to general commercial act such as publicity, advertisements, negotiations, contractions, and fund settlements.

The Internet

The Internet is a huge web of networks interconnecting millions of people all over the world. The Internet also, is a World Wide Network of heterogeneous computer systems. The Internet is the name given to a collection of computers around the world that can be connected to each other over the telephone line.

The Internet itself does exist as a discrete entity; it , is not like one of the many other computerized database services. The Internet is not as you may think, a tool for technical people, who do sophisticated things with their computers. It is actually a usable facility for people with any level of computer expertise. We can exchange electronic mail (e-mail), download shared applications, look up NYSC postings, look up JAMB results, look up WAEC results, look up election results, any our political opinions, get news updates, get information one has a specialist interest, or a problem which needs expert advice, the chances are that someone out there who is connected to Internet will have a solution.

The History and the Development of the Internet

The original idea for the Internet developed out of an American Defense Department agency called DARPA (Defense Advanced Research Project Agency). They began a project in 1969 entitled 'Resource Sharing Computer Networks' which attempted to provide a system for exchanging military information between sites placed long distances apart. This project was motivated by a certain amount of paranoid cold-war thinking, i.e., finding a way to communicate over long distances in the event of a nuclear war. The solution was simple network of four computers called DARPANET, which was later changed to ARPANET.

The system was a great success and, by 1972, the network had grown to include 37 computers with a well-used-e-mail system. By 1983, the whole system had grown so big that the military research component was moved to a separate network called MILNET. A year later, the National Science Foundation, another US government agency, established NSFNET. This linked together five super computers and made their information available to educational institutions, research centres and educational work and the number of people using the system mushroomed. By 1987, NSFNET had so many sites connected to it that the whole system infrastructure needed a complete overhaul. At this time, NSFNET' was opened up to academics, government employees, educational centres and international research organizations.

During this period of development, a lot of experimental work was carried out to find the best way of interconnecting computers. Different networking methods were demonstrated using various media including satellite, radio, telephone and Ethernet, and also, several different packet-switching methods were used. All this experiment work formed the foundations of the Transmission Control Protocol/Internet Protocol (TCP/IP), but it wasn't until 1983 that all nodes on ARPANET were required to use it.

There is much debate about precisely when the Internet began. Some people say that it all depends on when one first experienced it. Some still say that it depends on how you define the Internet. The Internet we know now came into existence around 1993. It is now available to any one who has the means of connecting to it. During the past ten years, the growth of the Internet has been incredible, increasing from 5, 000 users to about 35 million. Five millions of which are Nigerians.

How One Can Connects to the Internet

Getting connected to the Internet is simple these days. One does not have to be a computer expert or a manager of a big corporation to get on line. All one needs is an independently functional computer, a telephone line, a modem (modulator demodulator), and of course an Internet Service Provider (ISP). The ISP is an organization that will provide one with an Internet connection (Internet Connectivity). There are three basic types of connection (Internet Connectivity):

- Direct Connection.
- SLIPP/PPP (serial line Internet Protocol/point - to- protocol), and
- Dial-up/terminal.

(a) A Direct Connection

This gives one a permanent and dedicated link to the Internet. This is very expensive and generally only available to users in large corporations, academic and research institutions, oil companies, oil servicing companies, and government departments.

(b) SLIPP/PP Connection

In this second method, one gets access from a company which itself has a direct connection and allows subscribers to use it. using an ordinary telephone line, SLIPP and PPP are the protocols which make this technically possible.

(c) Dial-Up-/Terminal Connection

Commercial service providers like AOL or CompuServe offer the Dial-up/terminal connection. They charge the customer on a monthly basis for a range of service and access to their Internet gateway. This was obtainable at the Computer Science Department, Nnamdi Azikiwe University, Awka, until recently, when NITEL. Awka tossed the telephone line. With this type of connection, one is not linked directly to the Internet. One is connected to their system (Commercial Service Provider), which in turn is connected to the Internet. So, you are "seen" by the rest of the Internet as name@bigserve.co. Files are down loaded in the two stages.

The World Wide Web (WWW)

The World Wide Web (WWW), usually called the Web, is a global collection of documents, popularly known as Web pages, which are stored on computers connected to the Internet. One of the most outstanding features of the World Wide Web is that Web pages usually contain the links you can click on, that lead to the Web pages. A link is a connection between one Web page and another, and can be either text or graphics. Links are usually indicated by underlining and colouring them differently from other text on the Web page.

Earlier example of distributed client-server tools which offered menu-based interface to Internet sources were Gopher and World Wide Web (WWW). The World Wide Web (WWW) is built around standard hypertext language, the Hypertext Mark-up Language (HTML) can be read by almost any computer system and allow users to create links between text, images, and sound files. However. early versions of WWW browsers were text based and consequently offered few advantages over other tools. It was not until the development and free distribution of multimedia browsers (e.g. Mosaic and Netscape Navigators) for accessing the WWW that the potential of the Internet for information access and dissemination were fully realized. Using Mosaic or Netscape, files could be located, retrieved and displayed easily with fully integrated text, graphics and sound. In addition, browsers provided access, not only to WWW information in hypertext format, but also to other information source such as Usenet newsgroup, Gopher resources, and FTP archives.

The Other Capabilities of the Internet

The following are some of the other capabilities of the Internet:

- (a) Access to information.
- (b) Education through the Internet.
- (c) Business use.
- (d) Shopping by the Internet (e-commerce).
- (a) The social side.
- (b) The “corruption” controversy with the Internet.
- (c) Find out information, send messages any where in the world within seconds.
- (d) Make international phone calls at local rate. Take part in video conferencing at local rates.
- (e) Publicize your business (Marketing).
- (f) Get your personal problems answered.
- (g) Obtain free programs for your computer.
- (h) Take part in International discussion.
- (i) Catch up on the news as it happens.
- (j) Study for a degree (Online degree/certificate programme).
- (k) Get usual questions answered.
- (l) Receive electronic newsletters on almost any subject.
- (m) Listen to live radio and television programmes from different countries (e.g. CNN).
- (n) Check out company financial details.
- (o) Read press release.
- (p) Read books, journals, magazines, newspapers, law reports, and so on.
- (q) Get legal advice.
- (r) Transact banking business (e-banking).

A Topology of Electronic Commerce

Although e-commerce always involves at least two participants, these participants can be of different nature. Depending on the pair involved, some very distinct type of e-commerce will take place.

The three main categories of agents likely to be involved in such pairing are:

1. Enterprises.
2. Individual, and
3. Governments.

Much of the e-commerce observed over its first few years of existence has been between enterprises and individuals, and is generally known as “business-to-consumer” (or B-to-C). Less noticed in the media, the type of e-commerce, which has been taking place between enterprises, is better known as “business-to-business” (or B-to-B). The last but not least (especially for developing countries), e-commerce can be performed between government and public entities on the one hand, and business, on the other hand, in the context of public procurement purchases; this type of can be described as “business-to-government” (or B-to-G). The following schematic diagram illustrates the topology of e-commerce:

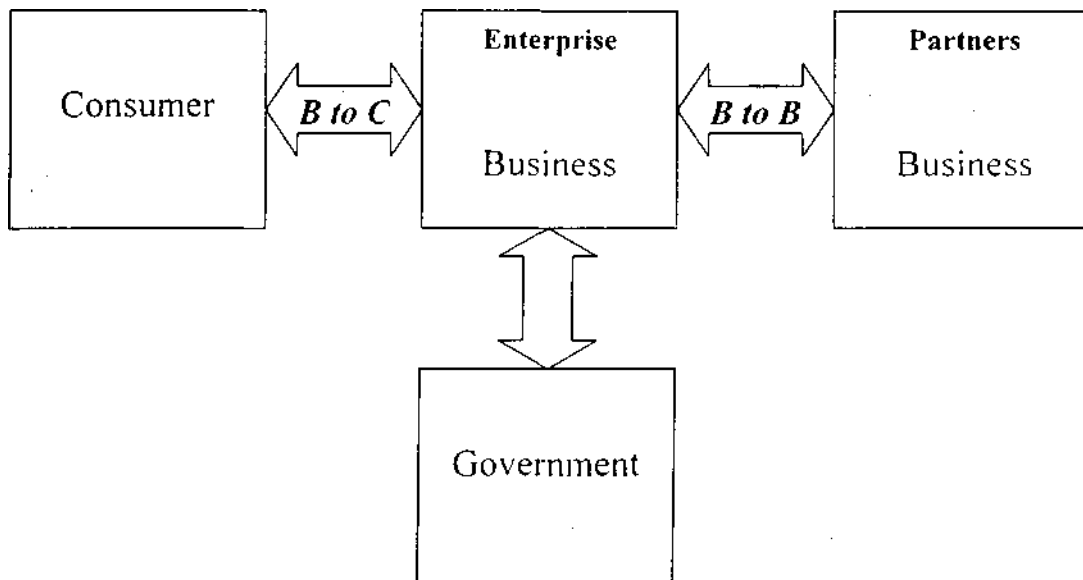


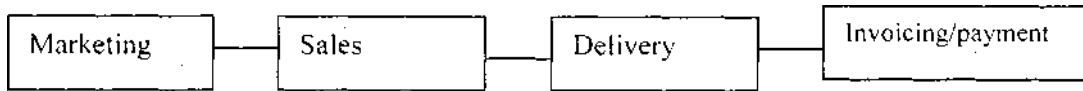
Fig. 1: The Topology of E-Commerce.

On the one hand, B-to-C has attracted much attention over the last few years. However, B-to-B is the area from which most of the expansion of e-commerce will come in the near future, especially as our international trade is concerned. This is therefore the area in which developing countries should devote priority intention as a possible source of integration in the emerging global information economy.

The third type of e-commerce namely business-to-business government (B-to-G) could also be a major source of efficiency and experience for developing countries. By participating directly in e-commerce transactions, government can enhance their efficiency (for example in the area of public procurement) as well as their level of cooperation, mutual respect between the private sector and the public sector could be significantly enhanced.

The Horizontal Definition of E-Commerce in Nigeria

If an enterprise in Nigeria considers entering the realm of e-commerce, it will have to check that it meets all the requirements that make an e-commerce transaction possible. As for any strategic choice of the same nature, the managers of that enterprise will naturally compare their “normal supply chain” to what their “e-commerce supply chain” should be. In so doing, they will check the viability and validity of their approach through the following sequence of business functions:



This can be summarized graphically in the model below:

Necessary Tools

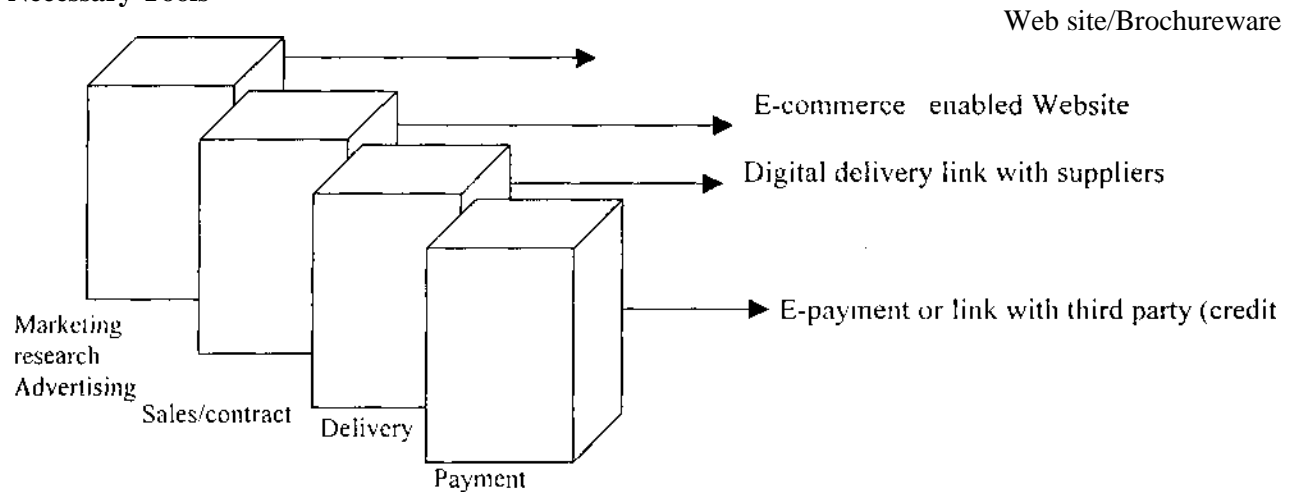


Fig. 2 : The Horizontal Model of E-Commerce.

The value of the horizontal definition of e-commerce can be found on the practical side and in the analytical field. From practical point of view, it offers enterprises in Nigeria a simple “check list” on what will facilitate their management task in identifying opportunities and obstacles when considering embarking on e-commerce strategies. From analytical (and statistical) point of view, it also offers interesting alternatives to the current chaos of descriptive definitions. One could, for example, decide that if at least two out of the last three components of the model (contract, delivery and payment) are performed on the network, one is in the presence of an e-commerce transaction.

The Vertical Definition of E-Commerce in Nigeria

Instead of focusing on the steps of an e-commerce transaction, the vertical definition of e-commerce in Nigeria stresses the operational role of various parties involved (e.g. governments, legal and regulatory bodies/institutions, enterprises). As such, it is much closer to the concerns of Nigerian government entities that will have to make strategic choices to create the proper environment for the development of e-commerce. The vertical definition of e-commerce can be summarized graphically in the model below:

Focus

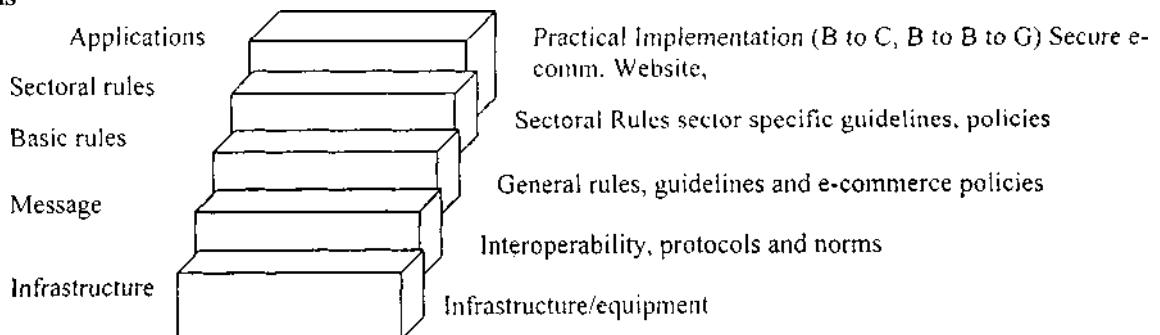


Figure 3: The Vertical Model of E-Commerce.

The vertical model of e-commerce can be described in the following manner:

(a) I as in Infrastructure

The initial requirement for the development of e-commerce in Nigeria are basically the same as for the development of Internet usage, and constitute the first layer of the model, namely that of

telecommunication infrastructure.

(b) M as in Message

This lies on top of the first layer. It is necessary to develop the tools for the standardization and harmonization of the electronic messages that will be exchanged in the process of e-commerce transaction. Although this is basically an "international function" (message need to be exchange globally), governments have a critical role to play in their adoption and dissemination.

(c) B as in Basic Rules

Again, such rules are largely of an international nature and embrace a domain larger than that of e-commerce, strictly speaking; they concern in particular, trade rules (WTO), intellectual property rules (WIPO), as well as generic regulations on the content of electronic message exchanged across borders.

(d) S as in Sectoral Rules

Each of the sectors of activity involved in e-commerce transaction will need to base its activities on a consistent and predicible set of rules and regulations. Such rules and regulations can be of great variety in nature, scope and applicability. For instance, they can be related to banking operations (security, authentication, encryption), specific items that can be traded across information network (music, movies), or even specific activities, which could be affected by e-commerce (education, health).

(e) A as in Applications

Once all the previous layers have been addressed, a successful e-commerce strategy for Nigerian enterprise will need to ensure that participating enterprises can actually benefit from the environment created. Designing efficient Website, designing and implementing adequate corporate strategies (including through joint venture and allances) will be part of securing this "last mile" of the road to e-commerce success.

The Customer

Scenario 1

The president of the United States of America Mr. George Bush woke up early one morning, yawned on his bed and was reminded by Lizzy, his wife that he wanted to buy a teddy bear. While on his bed, he powered on his laptop and surfed the Web. Eventually, he got a fine Teddy Bear. The president, Mr. George Bush paid for the Teddy Bear with his credit card and that very day. the Teddy Bear was delivered to the White House, in Washington D. C, USA.

Scenario 2

Nigeria's president. Chief Olusegun Obasanjo, apparently had to buy a teddy bear for some time. During his visit to Anambra State, while leaving the Enugu Airport, along Emene Road, the president saw a group of young street hawkers selling Teddy Bears by the roadside. He stopped the entourage suddenly, which caused the car to almost hit a passer -by. The president, chief Olusegun Obsanjo, beckoned to the boys, but they ran away in fear. The security operatives caught up with them, and they were surprised when chief Obasanjo asked for the price of one of the Teddy Bears, and paid for it.

The Organization

Scenario 3

The member of the board of CURTIX cables at Nnewi, in Anambra State had over 400 workers who had a headache over how to advertise the 5 products they had.

Scenario 4

Antiseptic factory located at Awka, Anambra State, that produces ISOL, operates solely as an online store with 15 workers, had no problem informing potential clients about their 500 other antiseptic products through the use of a search engine and aggressive adverts on their website.

The Supplier Scenario 5

Peugeot Automobile (Nig.) Pic got an order from COJA to supply 200 Peugeot 705 jeeps. PAN was out of stock, and so needed to source for it elsewhere. They picked the directory to check for a list of suppliers in Nigeria. They tried a couple of telephone numbers, which they got from the directory. NITEL

reported various problems,” Wrong numbers”, “line is tossed”, “Telephone temporary out of order”, “all lines are busy”. MTN reported various problems also, “the NETWORK has problems”, “no service” “the number you are calling is not available now”. The Managing Director of PAN got into his official car to visit some other Peugeot dealers. He was caught up in traffic jam. Eventually, the Managing Director was able to get to 5 companies where he was told they didn’t know about the product. He eventually gave up and lost the contract.

Scenario 6

Coscharis (Nig.) Ltd. got the same order from COJA to supply 200 Peugeot 705 jeeps. They were equally out of stock. They connected to the Internet through their independently functional computers in a Local Area Network (LAN). They used a search engine and got 20 Websites, where they could get the product they were looking for, 5 sites were in the United States of America, 3 sites were in South Africa, 2 sites were in Brazil, 5 sites were in France, and 5 sites were in Argentina. They were able to compare prices at the various sites. There and then, they chose the best price and right there in the Managing Directors office; completed the transaction using the company’s credit card. The vehicle arrived the country, Nigeria after two weeks. COJA was highly delighted and amazed at the speed in which their order was met.

If one examines all the above six scenarios, one could see how much easier life becomes for the Nigerian businessmen, and how much more profitable running a business in Nigeria becomes when Internet Technology is used.

Requirements for Implementing E-Commerce in Nigeria

The following is a list of requirements that provide a good foundation, on which Nigeria can build e-commerce upon:

(a) Computer Awareness Campaigns

Many people do not know how the computer can be of use to them, their business or their organizations. It could also happen that because of the unencouraging comments by those people who have developed an anti-computer syndrome. Little or not effort is made to find out how the computer can be gainfully applied. If one buys and imbibes the erroneous impression that the computer is just there to compete for one’s job, one would not seriously consider employing the computer. If however, Nigerian business men see the computer as a tool that would enable them cope with complex decisions or operations, which would otherwise be impracticable, they stand a better chance of making effective use of the computer. Many of the manual operations and procedures in their organizations and establishment need to be automated and computerized.

(b) Adequate Telecommunication Facilities

The Internet Service Providers (ISPs) and NITEL need to provide good, fast and affordable telecommunications facilities. The cost of subscribing to the ISPs and the cost of telephone calls in Nigeria is more than four times the equivalent call in either South Africa or Ghana. The cost of acquiring telephone lines needs to come down a little bit.

Apart from being affordable, NITEL’s facilities should be upgraded to provide higher speeds than the current 9.6kbps. 128kbps should be the goal.

(c) Government Participation

The federal government of Nigeria, as the largest single customer of information technology must lead by example and set realistic and achievable standards for itself, which will in turn promote the development standards in the other sectors of the economy. By so doing, a clear policy on information technology must be put in place. The federal government of Nigeria shall provide funds for the provision of infrastructure that will serve as a platform .for an enabling environment for information technology through the creation of a credit-based economy, i.e. the use of credit cards. The federal government should intensify efforts towards the provision of funds for developing the telecommunication facilities in Nigeria. The Federal government through the Nigerian Information Technology Development Agency (NITDA), should work with the private sector to identify and prioritize the critical infrastructure and find mutually beneficial ways of providing the required protections. The federal government should encourage large business to develop and adopt “best practices” for securing computing. Also, the federal government should facilitate the protection of existing and proposed critical information infrastructure in all sectors from natural events and intentional acts that would significantly diminish government ability to maintain order and deliver

essential public services at all levels. The Nigerian Information Technology Development Agency (NITDA) should encourage non-government groups to evolve into a national clearing house of information about security intrusions, hacks, vulnerabilities, and to offer tools to help detect, isolate, and prevent attacks. The clearing house will enable companies, large business, private organizations and individuals to anonymously report incidents without fear of publicizing their vulnerability. The generated data would also provide insight into nationwide cyber security trends and subsequently enhance the development of ways of countering negative trends. The clearing house will also provide users with assorted tools to deal with the aspects of the cyber threat. Some of the tools to be considered include:

- Automated analysis, distribution, and qualification of security patches on network based computer systems.
- Virus control tools that identify and remove existing infections from macro viruses, polymorph viruses, and other known viruses.
- Risk analysis offers a management tool to determine whether the appropriate countermeasures are in place to ensure the security of data.
- Autonomous agents for intrusion detection.
- Software evaluation.
- Audit trails format.
- Vulnerability database.
- Audit trail reduction.
- Vulnerability testing.
- Archive software.

The NITDA should consider itself more of a facilitator than an implementer. NITDA will be far more useful to itself and Nigeria if it facilitates the development of the human resources and the growth of e-commerce, e-government, and other e-services.

The private sector is the long-term engine of growth, innovation and opportunity for an e-commerce. The implementation of a comprehensive, enterprise-wide security plan for an e-commerce in an organization must meet the challenge of implementing security measures while maintaining the company's goals and objectives. In addition, our human resources base provides limitations, and most organizations do not have the in-house expertise to design and support an enterprise-wide security plan for e-commerce.

(d) Non-Governmental Organizations

The various Information Communication technology (ICI) groups, such as the computer professionals, Registration Council of Nigeria (CPN), Nigeria Computer Society (NCS), formerly known as Computer Association of Nigeria (COAN), Nigeria Internet Group (NIG), internet Services Providers Association of Nigeria (ISPAN) and the Information Technology Association of Nigeria (ITAN). must take a leaf from the US based Business Software Alliance (BSA), Nigeria ICT specialist and groups must collaborate and develop the best practice guides, which will reflect the

realities and the aspirations of Nigerians. The Nigerian ICT specialists at home and abroad, like the Nigerian Information Technology Professionals in America (NITPA), should use industry experts to conduct government wide vulnerability assessment. Computer forensic studies must be incorporated into the Nigerian advanced studies curriculum.

(e) Educational Institutions

The computer science programmes in Nigerian educational institutions should be encouraged by Federal Government to embark on research activities in the creation of facilities for e-commerce and the critical infrastructure such as those physical and cyber-based systems essential to the minimum operations of the Nigerian economy and government. The educational institutions should also liaise with the private sector that can finance research into infrastructure problems facing e-commerce in Nigeria.

Conclusion

Simply put, electronic commerce generally refers to the trusted means of transacting businesses, buying, selling, advertising, consulting, and so on, over the global electronic networks. Or as many computers users and experts put it-“trading on the Internet”, “internet shopping”, “cybershopping on the Web”, “electronic trading”, and so on.

Before now, several business transactions were done by physical contact, among which are: Agricultural, Medical, Engineering, Architectural, postal services purchase orders, and so on. The e-commerce is poised to carry out these businesses electronically in a secured manner.

The current federal government administration has begun the long process of turning things

around. Nigeria, on the 26th of September 2003, shall launch into space its first Satellite named Nigeria sat - I. "The journey of a thousand miles begins with a single bold step".

We are confident that the liberalization, monetisation and privatization process already set in motion will yield positive results. The global telecommunications revolutions has begun, and more infrastructure, especially that of NITEL, NEPA, MTN. ECONET, and GLOBACOM have to be rehabilitated. The Nigerian environment is endemic with the challenges of adequate infrastructure. The federal government of Nigeria must not and cannot do it alone. All hands must be on desk-the private organizations, establishments, big businesses, the conglomerates, the private sector, educational institutions, non-government organizations and the philanthropists must join hands together.

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