

INTERNET TECHNOLOGY IN NIGERIAN EDUCATIONAL SYSTEM, THE JOURNEY SO FAR

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Abstract

The applications of Internet technology in Nigerian Educational System is a 21st century great phenomenon, which has revolutionized education techniques. The interaction has brought about tremendous speed in decision making, ensured cost effectiveness in Nigerian Educational System, reduced time wastage and above all reduced tension between the regulatory bodies in educational system in Nigeria. Based on this development, this research was taken in order to ascertain the percentage numbers of Internet usage, various ways of accessing the Internet, services provided by the Internet. The research also discussed the challenges of Internet and also enhances satisfactions, efficiency and effectiveness in the Nigerian Educational System.

Key words: Internet, Internet technology, and Educational System

Introduction

The Internet, which is the largest computer network in the world, is actually a network of networks, Kama (2009). It is a collection of more than 2,000 individual computer networks owned by governments, universities, non-profit group and companies.

These interconnected networks exchange information seamlessly by using the same open, non-proprietary standards and protocols. They are connected via high speed, long distance backbone networks. Thus, the Internet forms a massive electronic communications network among schools and other organization worldwide. The internet, the great invention of the printing press took books out of ecclesiastical libraries and placed them in every one's hand. The telephone system allows people to communicate instantaneously with each other. The Internet is now merging these two technologies. The Internet is a new communications dimension an electronic, virtual world where time and space have almost no

meaning.

Alvin (2009) foresaw that electronic networks form the key infrastructure of the twenty-first century, as critical to business success and national economic development as the railroads were in Morse's era.

The Evolution of the Internet

According to Olatunde (2008), the Internet began as one network, called the ARPANET. This network was a 1969 United States government experiment in packet switched networking. ARPA means Advanced Research Projects Agency. The ARPANET originally linked a largely technical audience composed of the military, government agencies and academic researchers and scientists.

The original goals of the project were to allow researchers to share computing resources and exchange information, regardless of their locations, and to create a resilient, fault tolerated, wide area network for military communications.

The original ARPANET split into two networks in the early 1980's, the ARPANET and MILNET (an unclassified Military Network), but connections between the two networks allowed communications to continue.

Access to the ARPANET in the early years was limited to the Military, Defense Contractors, and Universities doing defence research. Co-operative, decentralized networks such as UUCP, a worldwide United Nations Internet (UNIX) communications network, and User's Network (USENET) originated in the late 1970s, initially serving the academic community and later serving commercial organization.

In the early 1980s, Okoroafor (2007), pointed out that more network Computer Science Network (CSNET) and Binary Digit Network (BITNET) began providing nationwide networking to the academic and research communities. These networks were not part of the Internet, but special connections were made to allow the exchange of information between the networks. The National Science Foundation Network (NSFNET) originated in 1986, and united researchers across the country with five super computers, center.

The seamless interconnecting of all these networks gave rise to the Internet we have today.

The Internet Today.

Eze (2006), posits that the number of computers and networks connected to the internet continues to grow rapidly, Thus computers and networks have been voluntarily set up to conform to the internet's set of non- proprietary standard protocols. The power of the Internet varies in this uniform, open architecture. In 1998, less than 2 percent of the world's adults had access to the Internet. Analysts estimated that by 2011, some 500 million people worldwide were Internet users, connected to the one million networks that make up the Internet.

Also, Chima (2005), said that the internet is international with users on all continents, including Antarctica, Per capita incomes limit the number of internet users in the developing world, because the costs of personal computers and internal connections are prohibitively high for most of the population.

However, the demand for Internet access exists, even if the infrastructure and per-capita income inhibit Internet usage.

Internet Usage in Nigerian Educational System in 2008

Nigerian Tele- Communication Commission NTC (2008), highlighted the number of internet usage in various states. The table is shown below;

S/NO	STATES	NUMBER OF INTERNET USERS (AS PERCENTAGE OF POPULATION)	NUMBER OF INTERNET USERS IN MILLIONS
1.	University of Lagos	49	$\frac{134.6 = 49 \times 136.6}{100} = 65.954$
2.	University of Abuja	49	$\frac{14.4 = 49 \times 14.4}{100} = 7.056$
3.	Rivers State University	44	$\frac{27.9 = 44 \times 27.9}{100} = 12.276$
4.	Enugu State University	40	$\frac{25.2 = 40 \times 25.2}{100} = 10.2$
5.	University of Ibadan, Oyo	24	$\frac{19.9 = 24 \times 19.9}{100} = 4.776$
6..	University of Calabar, Cross River	35	$\frac{14.7 = 35 \times 14.7}{100} = 5.145$
7.	Niger State University	22	$\frac{12.5 = 22 \times 12.5}{100} = 2.75$
8.	Delta State University	28	$\frac{16.8 = 28 \times 16.8}{100} = 4.704$
9.	Imo State University	33	$\frac{18.5 = 33 \times 22.5}{100} = 7.392$
10.	University of Ilorin, Kwara	27	$\frac{22.4 = 27 \times 22.4}{100} = 6.048$
11.	Nassarawa State University	15	$\frac{9.0 = 15 \times 9}{100} = 1.35$

The Infrastructure of Internet

Although the Internet began as a government project in the United States, currently, Nigerian Educational of the companies in Nigeria, like MTN, the internet. The Nigerian Communications some funds to essential administrative through contracts with private organization that perform these functions.

(NCC)(2009),positions that the Internet infrastructure Supplied by network service providers such as United Union Network (UUNET), an MCI World Com company, General Technology (GTE) Internetworking,

sprint and other. In Nigeria, the Educational Systems, Business and Individuals subscribers are connected to the Internet through these and order smaller Internet Service Providers. In some cases, the provider may be a large backbone provider, in other cases; it will be a smaller local network service provider. Both backbone and access providers are referred to as Internet Service Providers (ISPs). Service providers charge customers for various combinations of bandwidth, traffic and access time.

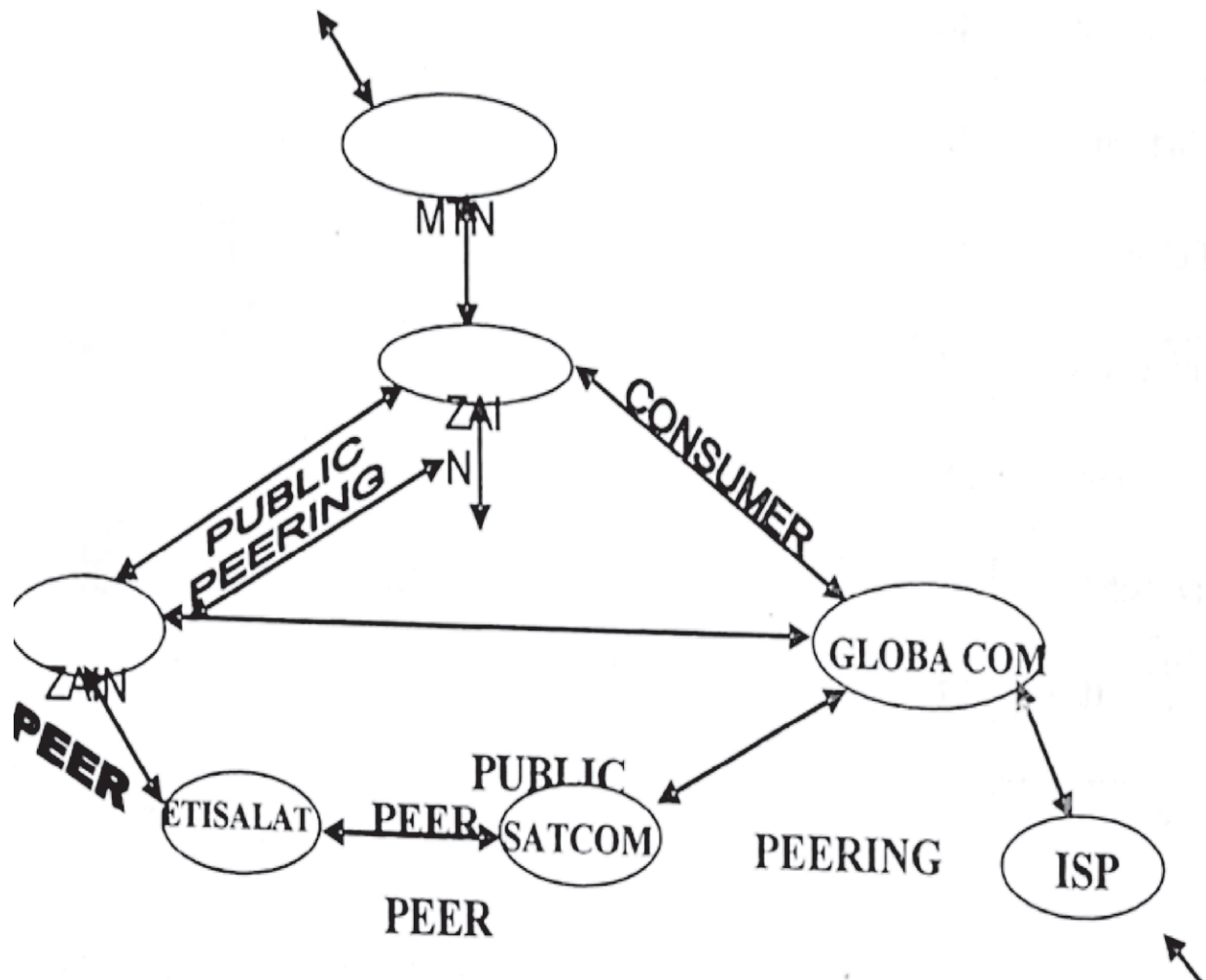
Backbone providers must be connected to one another and to access providers, and this is done

over backbone networks. The various backbone networks that make up the Internet transmit

information to one another on a reciprocal basis, meaning that each carrier agrees to transport traffic originating on another carriers network.

The Federal Ministry of Information and Communication Technology (2010), during the Science Teachers Association of Nigeria (STAN) Conference, presented a chat on how the internet works.

Diagram on how the Internet works in Nigerian Educational Systems or Organizations



Step1:-Suppose Fred in Nigeria wants to send an e-mail to Susan across the Internet Fred is a customer of MTN, an Internet Service Provider (ISP), and Susan is a customer of another ISP, ISPs act as on ramps to put users on the information highway.

Step2: To connect its customers to the internet MTN contracts with a company that links MTN to the rest of the internet. MTN chooses one of the smaller companies, ZAIN.

Step3: MTN sends its traffic, including Fred's e-

mail to ZAIN. But Zains network is not linked to Susan's ISP. So, ZAIN needs to contract with another internet carrier to route Fred's e-mail. There are two ways that ZAIN can connect to another carrier; as a peer or as a customer.

Step 4: If two Internet carriers decide that they are peers generally of equal size, they networks directly or by linking at a public peering points in Nigeria Educational by side and share traffic. The largest carriers e.g. MTN, GLOBACOM, ZAIN, ETISALAT, and SATCOM, typically consider each other peers and exchange traffic without charging fees.

Step 5: If one Internet backbone provider is not accepted as a peer by another, the rejected company has to become a consumer in order to send data across the other educational network.

Step: Since MTN is a consumer of GLOBACOM; the e-mail can go from Fred to Susan.

Ways of Accessing the Internet in Nigerian Educational Systems In various Educational Systems or Organizations in Nigeria, the Digital Bridge Institute in 2008, pointed out that, there are various ways of accessing the Internet. These methods include

(i) Connecting via LAN Server: This approach requires the user's computer to have specialized software called a communication stack, which provides a set of communications protocols that perform the complete functions of the seven layers of Operating System Internet (OSI) communications model. In various establishments in Nigeria, example, the National Library, Ibadan, Local Area Network(LAN) servers are typically connected to the Internet at 56 Kilobits (Kbps) or faster. This type of connection is experience, but the cost can be spread over multiple LAN users.

(ii) Connect via Serial Line Internet Protocol/Point to Point Protocol(SLTP/PPP): This approach requires that users have a modem and specialized software that allows them to dial into a SLPT/PPP server through a serial provider at a cost of This type of connection is advantageous, for example, for employees working at home who need to access the Internet or their own company's intranet.

(iii) Connect via Online Service: This approach requires a modem, standard communications software, and an online information service account with an Internet Service Provider. The cost include the online service fee, a peer hour connect charge, and where applicable, e-mail charges.

Services Provided by the Internet in Nigerian Educational Systems or Organizations

In Nigerian Educational Systems or Organizations, Ikoro (2011), highlighted that the Internet provides major types of services in

Nigerian Educational Systems or Organizations. He enumerated some services provided by Internet as follows:

(1) Communication Services: In Nigerian Educational Systems, the communication services available on the Internet are revolutionizing both in personal and business communications. A tremendous variety of data can be accessed through the Internet. Users are no longer strictly dependent on telephone for one to one communication. Also, some of these services enable organizational interactive communications with individuals and groups around the world who share personal and professional interest. Also, blowing off steam is considered a therapeutic form of communication for many employees.

(2) Electronic Mail (e-mail): - In Nigerian Educational Systems or Organizations, the internet is the most important e-mail system, because it connects so many people and organizations. E-mail is an application that allows an electronic message to be sent between individuals through telephone wires or over wireless networks. E-mail is not limited to simple text messages. Users can embed sound and images in their messages, and attach files that contain text documents, spreadsheets, graphs or executable programs. Also in some organizations, not all networks use the same e-mail format, so a computer called a gate way translates the format of the e-mail message into the format that the text network can understand. Each gateway computer reads the "To" line of the e-mail message and routes the message closer to its destination.

(3) Chatting:-In Nigerian Educational Systems, chatting has allowed for two or more people who are simultaneously connected to the internet to hold live or real time, interactive, written conversations. Internet Relay Chat (IRC) is a general chat program for the Internet. Chat groups are divided into channels; each assigned its own topic of conversation. Chatting is the third most used Internet applications, behind e-mail and search. Few services can build big audiences more quickly than chat.

(4) **Instant Messaging:-**The internet in Nigerian Educational systems, provides for Instant Messaging. Instant messaging is online, real or more people who are connected to the Internet. Users can send instant text messages to other users who are logged on. A window appears on the screens of all the people engaged in the messaging. Each window displays that one person is typing in real time. In Nigeria, a number of Educational establishments offer instant messaging, including the National University Commission.

(5) **Telnet:** - Telnet in Nigerian Educational Systems allows users to be on one computer while doing work on another. Telnet is the protocol that establishes an error free link between two computers. Users can log on and use third party computers that have been made accessible to the public, such as using the catalog of the Federal Ministry of Information.

(6) **Internet Telephone:** -Internet vendors are providing Public Switched Telephone Network (PSTN) applications, internet telephone also called Voice Over IP or VOTP, lets users talk across the internet to any personal computer equipped to receive the call for the price of only the internet connection.

(7) **Internet Fax:** In Nigerian Educational Systems, the use of the Internet for real-time fax transmissions is emerging as an application that may signal a shift of from the telephone companies to the packed switched Internet. For Example in National Commission for Colleges of Education, this application is useful because faxes can be sent long distances at local telephone rates, and delivery can be guaranteed through store and forward mechanisms.

Steaming Audio and Video: Internet services in Nigerian Educational Systems allows steaming audio and video. This it does by allowing users to see and hear data as it is transmitted from the host server instead of waiting until the entire file is downloaded. For example, Real Network's, Real Audio allows a Web site to deliver live and on-demand audio over the Internet and can work over connections. Steaming audio enables the

broadcast of radio programs, music, press conferences speeches and news programs over the Internet.

The Challenges of Internet in Nigerian Educational System

In Nigerian Educational Systems, challenges facing the internet in the next few years include making the internet more suitable for e-commerce transactions, incorporating rapidly evolving technologies, standards and regulatory frameworks, responding to the growing need for additional bandwidth, and addressing privacy concerns. Another challenge for the Internet is providing the infrastructure for very large-scale projects. According to Nwankwo (2004), he pointed out that vendors are adopting new technologies more rapidly than many users and customers can implement them. For example in Nigeria, the Universities of Lagos and Abuja are the two most popular Web Browsers Internet Explorer. He also observed the following as the major challenges of Internet in Nigerian Educational Systems or Organizations.

(a) **Internet Regulation:-**Technical organizations such as the Internet Engineering Task Force and the World Wide Web consortium and others have played an important role in the evolution of the Internet and the web. These organizations are not formally charged in any legal or operational sense with responsibility for the Internet. However, they perform the important task of defining the standards that govern the Internet's functionality. Hardware and software vendors also have been instrumental in submitting specifications for consideration to standard bodies and in creating de facto standards of their own. Recent attempts by governments in Nigeria and elsewhere to regulate the content of Internet connected computers have generated concerns about privacy, security and the legal liability of service providers. Some content providers have addressed these issues with filters, ratings and restricted access. However, it is difficult to regulate content across international borders.

(b) **Internet Expansion:-**The Internet was not designed to provide a mass-market

interchange of high density information. As a result, the massive growth of Internet traffic has strained some elements of the network. The strains manifest themselves as slowdowns in retrieval time, unreliable transmission of streamed data and denial of services by over loaded servers. The Internet's design, with many potential transmission paths, is in theory highly resistant to outages caused by failed links. In practice, however, the Internet often is accepted by software problems. A wide range of actors contributes to congestion or slowdowns. These problems include, improperly configured networks, over loaded servers, rapidly changing Internet usage patterns, and too much traffic for available bandwidth

(c) Internet Privacy: Websites collect information with and without consumer knowledge. One way to collect information at web sites is through registration. Visitors to the site enter data about themselves, and obviously know that such information is available for future use by the company that collects the data. The most common way web sites collect information, though, is through "Click stream "data-that is, information about where people go within a web site and the content they see. Click stream data are most commonly collected by cookies. A cookie is a small data file placed on users' hard drives when they first visit a site. This software can be used to exchange information automatically between a server and a browser without a user seeing what is being transmitted.

In Nigeria, the Federal Ministry of Information (2010), randomly checks web sites to see if site operation are posting privacy notices that explain how personal information such as e-mail addresses data is being used and whether it is being Federal Ministry of Information, there are bills in congress related to Web privacy, ranging from laws to regulate spamming disclosure of subscriber information by online services.

Three possibilities exist in Nigerian Educational Systems;

- Ø The government should let groups develop voluntary privacy standards but not take any action now unless real problems arise.

- Ø The government should recommend privacy standard for the Internet but not pass laws at this time.

- Ø The government should pass laws not for how personal information can be collected and used on the Internet.

Summary

Accountability, transparency and efficiency are key elements in Nigerian Educational Systems, both in the public and private institutions. The applications of internet technology in Nigerian Education has emerged as the most radical development of the 21st century. It has facilitated;

- i. Speedy information transmission
- ii. High level decision making
- iii. Reduces cost in educational and organizational management
- iv. Opens vast opportunities for institutions, individuals, companies and governmental agencies and parastatals.

Internet Technology in Nigerian Educational Systems would strengthen and facilitate institution to institution, institution to business and institution to make institution compact, more effective in service delivery and participation of ordinary citizens in the day to day activities of Nigerian Educational Systems.

Recommendations

For Nigerians to maximize these potentials there is need to adequately fund Nigerian Institutions that are involved in internet technology and training, scale up investment in human capital development in the areas of internet acquisitions and review of the nation's educational academic calendar to make it internet compliance.

Conclusion

The academic research community, which the internet was originally intended to serve, found the internet too slow for data intensive applications such as transmitting super computer model data. Today, in Nigerian Educational Systems, Internet include over 180 universities working in partnership with government, educational regulatory bodies, industries and the

entire society to develop and deploy advanced network applications and technologies.

The primary goals of internet in Nigerian Educational System are;

(i) To create a leading edge network capable

- (ii) for the national research community.
Enable revolutionary internet applications
- (iii) Ensure the rapid transfer of new network services and applications to the broader internet community

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