

CONSTRAINTS AND PROBLEMS OF INTERNET SERVICES IN OBAFEMI AWOLOWO UNIVERSITY, NIGERIA

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Abstract

In spite of the benefits of the Internet to learning, teaching and research a number of difficulties still bedevil the provision of services in Nigeria. The objective of this study was to examine the constraints and problems of Internet Services at the Obafemi Awolowo University, Ile-Ife. Questionnaires were administered to postgraduate students at the Obafemi Awolowo University, Ile-Ife who were presently at the thesis writing stage of their programmes. The results from the analysis of the responses showed that the greatest constraints to Internet connectivity and usage was the high cost involved, while the associated problems were identified as incessant power failure and the dearth of Internet Service Providers (ISP). The study concluded that the provision of uninterrupted power supply and a functional telecommunication network were highly essential if Nigerian universities are to take full advantage of the benefits of Internet connectivity and services.

Introduction

The Internet provides several opportunities for the academia since it is a mechanism for information dissemination and a medium for collaborative interaction between individuals and their computers without regard for geographical limitation of space, (Leiner et al. 2000, Singh, 2002). Its appearance in higher education was used as a tool for researchers to communicate and share project data. Today the *.edu* domain is still one of the largest contributors to the Internet (NMSU Library, 2002). More and more students are searching for research materials exclusively on the Internet.

Cerf (1997) described the Internet as an emerging Global Information Infrastructure unlike anything that has ever existed. Ultimately we are witnessing the formation of a Global Information Village for mankind. An essential component of this global information village is the educational sector especially at the tertiary level. This is more so because of the desire to create an enabling environment for the dissemination of knowledge based information with a view to achieving meaningful economic and technological

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development. Jagboro (2003) asserted that for any country to be a part of this Global Information Village, it must develop its own Information Infrastructure. Duru (1997) opined that despite claims of Internet's global pervasiveness, its map largely excludes much of the African continent". This poses a serious question as to why this is so, particularly for a developing country such as Nigeria. However, Duru (1997) went further to propose a good but partial answer, linking it with the continent's telecommunications structures being strictly within the few highly urbanized environments.

In support of the reason proffered above, building a nation's information infrastructure is dependent on some basic infrastructure such as electricity supply and telecommunication network. In this regard, it is a truism to say that stable and sustainable Internet services require uninterrupted power supply and a well-developed and affordable telecommunication system. Other factors that could adversely affect the building of a national information infrastructure are high cost of ICT hardware and software, the dearth of Internet Services Providers, taxation of ICT related materials, inefficient transport networks and lack of manpower in specialized areas of ICT. The main objective of this paper is to examine the constraints and problems associated with the provision of Internet services at the Obafemi Awolowo University, Ile-Ife, Nigeria.

The Study Area

Obafemi Awolowo University was established in 1962 and is ranked among the first generation of Arts and Sciences based universities in Nigeria. It has eleven Faculties offering Bachelor, Masters and Doctoral degrees programmes in various academic disciplines with a student population of twenty five thousand that rely heavily on research publications that are sourced from the library and other agencies. The University has a well-established Postgraduate College that is responsible for the coordination of all postgraduate activities. It was one of the few privileged Nigerian Universities with limited Internet access, in a country where about 75% of the universities are either at zero or infancy stage of Internet connectivity.

In view of the problem posed by an outdated Analog Telephone Exchange that served the town of Ile-Ife, the university adopted a practical step of embarking on interconnectivity through the installation of a V-SAT with a 512Kbps/256Kbps bandwidth linked to a service provider in Lagos, under the management of the Obafemi Awolowo University Network (OAUNET). Academic staff were given preferential registration with token fees, a privilege that was later extended to non-academic members of staff. A recent addition of a second V-SAT has increased the bandwidth to 1024Kbps/512Kbps. At the time of this research most Faculties were already linked at least at the level of Dean's office; while a number of Departmental

offices, as well as some academic staff offices were connected through standby hub facilities.

Research Methodology

The study was carried out through questionnaires that were administered to resident postgraduate students who were already at the thesis writing stage of their programmes. A significant number of the respondents were Graduate Assistants and junior academic staffs in training positions, making this group the most active in academic research. Most of them were registered with the OAUNET. One hundred questionnaires were randomly administered on the participants drawn from all Faculties during a research awareness workshop organized by the University Postgraduate College. Seventy-three questionnaires were returned at the end of the working session, representing 73 percent response rate. The responses were analyzed using percentile ranking of the SPSS package.

Literature Review

The success in the provision of Internet services in developing countries of the world would, to a large extent, depend on the availability of enabling infrastructure such as uninterrupted power supply and functional telecommunication network. On the African scene, a number of countries in North Africa and Southern Africa have more highly developed economies and better infrastructures, which naturally result in larger populations of Internet users. This promising posture is far from being true for a number of other countries in the continent including Nigeria. According to Laudon and Laudon (2000), the Internet is not yet a worldwide tool because many countries lack the communication infrastructure for Internet use. Many of these countries face high costs, government monitoring and controls. Even in cases where there is an element of infrastructure, it is often outdated as a result of technological obsolescence. According to a recent Report by the Partnership for Higher Education in Africa (2003) "Nigeria is the most handicapped in terms of its ICT infrastructure, including unreliable telephone lines and electric power".

Power Supply

Regular supply of power is not only essential but also highly imperative in the development and usage of the Internet as in every other industry. In Nigeria, electricity supply by the National Electric Power Authority (NEPA) is by far the cheapest source of power in the country and must be in constant supply for any meaningful development to take place. The presence of the necessary telecommunication and Internet infrastructure is reduced to nothing in the absence of power to utilize it. Power is the bedrock of development and its continuous and constant supply must be guaranteed. The

state of the power supply and transmission in Nigeria can best be described as erratic and epileptic. A situation where a whole town is thrown into darkness for days, or power cut is experienced intermittently for hours and is highly unfavorable for Internet usage and development. This situation was confirmed by Status Report on African Internet (Updated July 2002), which says that "Many countries have extremely limited power distribution networks, which do not penetrate significantly into rural areas, and power sharing (regular power outages for many hours) is a common occurrence, even in some capital cities such as Accra, Dar es Salaam and Lagos". Irregular or non-existent electricity supplies are a common feature and a major barrier to use of the ICTs, especially outside the major towns.

Telecommunication

Laudon and Laudon (2000) asserted that it is essential for any country embarking on connectivity to know that the heart of the international systems problem is telecommunications. This will invariably link together the systems and people of a global firm into a single integrated network just like the phone system but capable of voice, data and image transmission.

Jensen (1999) affirmed that "Access to telephones is still very scarce on the continent – there are only about 14 million lines installed – fewer than the number of phones in Manhattan or Tokyo, and most of the lines are concentrated in the urban areas, while over 70% of the population is rural." North and South Africa have a teledensity of around 35 per 1000, while West and East African coastal countries have densities of between 2.5 and 10 per 1000. Senegal seemed to have discovered a leeway with over 7,000 commercially run public phone points mostly in urban areas, and with a growing number of points being established in remote locations. This program has been sustained especially with the PTO Sonatel's aggressive rollout of backbone infrastructure which is in the process of linking 2000 villages and towns by fiber optic cable (Jensen, 1999; Economic Commission for Africa, 1999).

Ajayi (2000) however asserted that Nigeria has one of the lowest telephone densities not only in West Africa, but also in the whole of Africa. The teledensity is about 0.5 for Nigeria; as compared to South Africa (10.1), Egypt (5.6), Libya (6.6), Algeria (4.8), Gambia (1.9) and Senegal (1.3). The Internet connectivity index showed the same trend as for telephones. Obviously, a country's Internet policy is an important factor influencing Internet use (Kalathi and Boas, 2003). The Internet market is relatively a novel idea in Nigeria, despite the fact that it has a fifth of the population of Sub-Saharan Africa. It is therefore still a relatively small player in the Internet sector, though there is a great potential for Internet services providers. The country's recent opening up of its telecommunication industry, which was firmly under the auspices of Nigerian

Telecommunication Network, (NITEL) to private operators has led to an improvement in this industry. The country has in addition to its only 700,000 landlines initially under the operation of NITEL, installed over 2 million mobile telephone lines, courtesy of the MTN and ECONET service providers.

Internet Infrastructure

The sub-Saharan Africa was reported to have the least developed Internet Infrastructure. The Internet is a vast network of networks that communicate with one another based upon a set of software protocols that direct traffic so information can pass among the networks. The Transmission Control Protocol (TCP) and Internet Protocol (IP) define the rules by which packets of data are addressed and transmitted across physical fiber, copper, satellite, and wireless networks (Kennard, 1999). It started in 1969 with four host computer systems and has grown to tens of millions. Its growth is dependent on the expansion of its physical infrastructure or backbone.

The physical Internet network or infrastructure is made up of a variety of components including: Fiber networks owned or leased by Internet backbone providers, Routers; Network Access Points (NAPs) where Internet service providers (ISPs) connect their networks in order to exchange Internet traffic; Host servers that hold the content; and Access lines that provide business customers and home user connections to the point of presence (POP) of the ISP. It is a hierarchical structure that has at its base the provision of telephone access lines, which enable individual computers to talk to other computers in the neighborhood forming a Local Area Network (LAN). The connection and communication of that LAN with other LANs through Points of Presence (POP) in various locations, linkage and communication of POPs to Network Access Points (NAPs) which are then linked to Routers. Internet infrastructure therefore depends heavily on the development and expansion of the nations telecommunication network. Regulatory policies governing the telecommunications market, therefore, have a direct impact on Internet development and usage by consumers.

Given the Internet's potential to drive future economic and cultural growth, a key challenge for developing countries is to implement sound policies to encourage Internet growth within their borders. Government policy can have a profound impact on Internet development; it can either foster it or hinder it. To date, the Internet has flourished in large part due to the absence of regulation. A "hands-off" approach allows the Internet to develop free from the burdens of traditional regulatory mechanisms. As a result, telecommunications regulatory policies can have a direct impact on the development of the Internet. Experience indicates that market-oriented policies spur the development of affordable and available infrastructure required for Internet services and e-commerce to flourish (Kennard, 1999).

Competition, investment, and technological neutrality have been identified as factors that promote the establishment of the global information infrastructure upon which Internet applications thrive. Countries must have the physical infrastructure necessary to be a part of this new, Internet-based world; otherwise they may miss out on the future benefits derived from the global economy.

In Nigeria, Internet connectivity has been mostly through wireless and satellite communications. Most Local Area Networks are connected through wires (UTP cables, etc) while inter – networks connectivity are mostly through wireless communications. The few business and home connections that use telephone lines are limited to major towns that have digital telephone lines. The country was predominantly served by analogue telephone lines and it was only of recent that digital lines were introduced which were limited to few big cities. The advent of the mobile phone operators seems to have jeopardized the continuing development of the digital lines, which is better for Internet connectivity than the analogue lines. Communication among various Points of Presence and Network Access Points are mostly via Satellites. Recent information revealed that the much-awaited for marine optic fiber passing through the West African coast has actually been laid. Nigeria has most probably hooked on to it but this is yet to be made public by the Nigerian government. It is therefore not available for now to the Nigerian Internet market.

Data Analysis and Results

Table 1: Benefits of the Internet to Academic Learning and Research

	Currency of materials		Ability of read & print materials		Remote accessing		Relevance of material	
	Count	%	Count	%	Count	%	Count	%
0	29	39.7%	54	74.0%	38	52.1%	49	67.1%
1	44	60.3%	19	26.0%	35	47.9%	24	32.9%
Total	73	100.0%	73	100.0%	73	100.0%	73	100.0%

Table 1 is the outcome of the Internet's benefits to academic learning and research. The results (as currently observable from the table) show that the currency of materials on the Internet was considered the highest benefit, with a score of (60.3 %). This was followed by the ability to access materials remotely with 47.9%, the relevance of materials (32.9%) and finally the ability to read and print the materials obtained (26.0%).

Table 2: Constraints to the Usage of the Internet

	High cost of usage		Time consuming		Sponsored adverts interference		Tendency for virus spread		Journal inaccessibility	
	Count	%	Count	%	Count	%	Count	%	Count	%
0	33	45.2%	52	71.2%	66	90.4%	45	61.6%	72	98.6%
1	40	54.8%	21	28.7%	7	9.6%	28	38.4%	1	1.4%
Total	73	100%	73	100.0%	73	100.0%	73	100.0%	73	100%

The factors which constitute constraints to a wide spread usage of the Internet in Nigerian Universities were also investigated. Table 2 shows that the high cost of usage (54.8%) was considered the greatest constraint. This finding may be due to the limited access and the non availability of the international optic fiber cable link for Internet access; a privilege being enjoyed by North and South African sub-regions. South Africa, unlike Nigeria, has the benefit of being served by the marine optic fiber link to the cross-Atlantic hub in the Canaries. The American AT&T's 'Africa One' project, which was designed to serve the West African coast would have given the country a comparative advantage in terms of faster and easier access to the Internet. Access in Nigeria is presently through orbital satellites with attendant high cost of connectivity and bandwidth. The tendency for a virus spread (38.4%) was considered the next important constraint, followed by the time consuming nature of Internet search (28.8%). Sponsored adverts interference (9.6%) was considered a minor issue and Journal inaccessibility a no issue.

Table 3: Problems associated with Internet Services

	Incessant power failure		Low level of telephone lines coverage		Lack of trained personnel			Limited Internet Service Provision
	Count	%	Count	%	Count	%	Count	%
0	30	41.1%	57	78.1%	64	87.7%	34	46.6%
1	43	58.9%	16	21.9%	9	12.3%	39	53.4%
Total	73	100.0%	73	100.0%	73	100.0%	73	100.0%

Table 3 shows the result of the analysis when respondents were asked to rank the problems associated with the usage of the Internet. Incessant power failure (58.9%) expectedly topped the list, and it was seen as a major factor militating against Internet usage. This is in agreement with the Status Report on the African Internet. As established in literature, power instability has become a national problem in Nigeria featuring prominently in the last two general elections. The next highly ranked factor was the Limited Internet Service provision (53.4%). It is currently believed that Africa has about 3 million Service Providers, out of which South Africa alone has about 2 million and Nigeria only accounts for 1.8% of the remaining 1 million shared by the rest of Africa. Provision of Internet Service in Nigeria is therefore grossly inadequate given the size and population of the country. Other factors ranked were low level of telephone lines coverage (21.9%) and lack of trained personnel (12.3%). Telephone line coverage in the country had been grossly inadequate until recently when some mobile telephone operators were allowed to come to rescue the situation for fear of NITEL total collapse. The prohibitive cost of mobile telephones makes it inappropriate for every day Internet usage. According to Duru (1997) and Bayo (1996) "Phone penetration in Nigeria has been put at about one line to 200 persons as against International Telecommunications Union's (ITU) recommended ration of one line to 100 persons. Statistically, only 0.0045% of Nigeria's over 100 million people have access to the telephone, and which to a large extent has an adverse effect on the Internet accessibility in the universities and the country as a whole.

Conclusion and Recommendation

The study shows that in spite of the immense benefits of the Internet to academic learning and research, a number of factors still militate against its effective and meaningful use even by those who have access to it at the Obafemi Awolowo University. Though most Faculties are connected, many research students and staff still yearn for individual office connection and complain of high cost of access through cyber cafés. In view of the huge academic resources available on the Internet and its usefulness to learning, teaching and research, it would be necessary for libraries of Higher Learning Institutions in Nigeria to provide guaranteed access to the Internet as a way

of enhancing their books and journals collections. Universities could do this through the provision of more access points at Departmental and Faculty levels. This, it is envisaged, would create a conducive environment for the use of the Internet for academic research.

The situation could improve with the provision of digital telephone lines to the University and Ife town thereby enabling people to connect to the OAUNET and other ISPs from their homes either in the university quarters or in town as well as more digital telephone lines nation-wide and a stable power supply. Provision of affordable telephone lines will go a long way to encourage home-based Internet access and further reduce the cost of access in Cyber cafés. It is also recommended for the country to embark on projects similar to that of Senegal whereby fiber optic links are provided between major towns. This would improve the bandwidth within the country and internationally when marine optic links are finally available. There is also need for the country to encourage more Internet Service Providers and development of skilled manpower in the area of ICT.

Lastly, the Internet infrastructure must be supportive of the learning environment in which the University finds itself. This imposes on the authority to design systems and networks that explicitly support the strategic plan of the university, in terms of learning, research and development.

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