

## Information and Communication Technology in Nigeria The Health Sector Experience

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### Abstract

*The advent of Information and Communication Technology (ICT) is gaining ground in all areas of life and developing nations are taking advantage of this opportunity in various sectors including the development of health care systems.*

*This paper presents a study that identifies the ICT indicators, such as mobile phones, Internet hosts and personal computers, that are in use in Nigerian Teaching Hospitals. The study explores the impact of mobile phones and the Internet on the health care delivery system in Nigeria. Findings reveal that only mobile phones are available in the hospitals. Medical experts use mobile phones but none of the Nigerian Teaching hospitals is connected to the Internet. Internet access is facilitated at the personal level via commercial Internet providers*

**Keywords:** Nigeria, information communication technology, health care.

### Introduction

World population now exceeds six billion of who more than 4.7 billion reside in the developing world (UNDP, 2000; US Census Bureau, 2001). As the population is increasing there is a need to find ways of improving efficiency and quality of health care delivery systems in developing countries. Information and Communication Technology (ICT) has been identified as a vehicle with the potential to improve the quality of health care systems as well as the efficiency of the health workers both in the developed and developing countries.

Information and communication technologies have changed the face of the world we live in. ICT enables people to communicate with family, friends and colleagues around the world instantaneously, gain access to global libraries, information resources, and numerous other opportunities. ICT may also bring an improvement in health care delivery systems. So, we may define Information and Communication Technology as one of the driving forces of globalization. ICT encompasses the broad spectrum of communication technologies from radio, film, television, press, and telephone along with more participatory forms such as theatre, video or story telling. It also focuses on the electronic end of the spectrum such as e-mail, the Internet, mobile phones and digital video.

ICT came into existence in most of the African countries through research institutions, educational institutions, or international organizations like the World Bank, UNDP, USAID, WHO, etc. In 1993 most provinces, Aimaks in Mongolia were provided with personal computers funded by the WHO with the goal to support the health services in the country (Braa et al., 1995). In Nigeria, the history of the Internet in universities can be traced to the joint project handled by the International Center for Theoretical Physics (ICTP), Trieste, Italy and Obafemi Awolowo University, in 1999. Also the introduction of ICT into Nigerian teaching hospitals came into being as a result of the INDEHELA project by the Computing Centre of the University of Kuopio, Finland, Obafemi Awolowo University and Obafemi Awolowo University Teaching hospital in the late 80s. In Africa, South Africa is ranked among the top 20 countries in the world with regard to the number of Internet nodes and it is 30 times larger than any other country in Africa. (Jensen, 1998).

The study presented in this paper will help the ministry of health and Nigerian government to instigate policies in the Nigerian health sector. The use of ICT Nigerian teaching hospitals will help all patients including the ones in life threatening situations.

### **ICT in Nigeria**

The first ICT initiative in Nigeria started in the 1950s with focus on print and electronic media. No major policy or other outcome was achieved because of strict government control. The full awareness of the importance of ICTs was absent. Only the private sector demonstrated ICT initiatives (Emadoye, 2002). The Obasanjo administration in 2001 established the National Information Technology Development Agency (NITDA) to serve as a bureau for the implementation of National Policy on Information Technology. NITDA is trying to increase the Internet penetration levels in Nigeria but the agency's focus is not on health care delivery systems.

### **Mobile Telephony in Nigeria**

The telephone system in Nigeria has been having for years. A breakthrough in telephone infrastructure emerged in January 2001 when the sector was totally liberalized with the licensing of MTN and ECONET (mobile phone company). They injected over a million lines into Nigeria within a year. Also Globacom came into existence late this year. The Global System of Mobile Communication (GSM) is spreading in a highly competitive manner from state to state and city-to-city. The advent of GSM has greatly enhanced the exchange of information especially in Nigerian teaching hospitals.

### **Internet in Nigeria**

There are a number of factors affecting access to the Internet in Nigeria with cost being the leading factor. The average charges by Internet Service Providers (ISPs) to connect to the Internet are prohibited for most Nigerian Teaching hospital. Despite the fact that Obafemi Awolowo University has been connected to the Internet since the late 90s, the affiliated teaching hospital is not connected yet.

## Methodology

This study was carried out to investigate the ICT indicators that are used in Nigerian Teaching Hospitals and the impacts of each of the indicators on the health care delivery systems in Nigeria. The instruments used were questionnaires, personal interviews and observations.

This study used four teaching hospitals; Obafemi Awolowo University Teaching Hospital, Ladoke Akintola University Teaching Hospital, University College Hospital, and Lagos University Teaching Hospital. The authors visited the hospitals to administer the questionnaires, to conduct the interviews and to observe how ICT indicators (Internet facilities and mobile phones) are used in these hospitals.

Children emergency, Emergency (Adult), Orthopedic, Neo-natal and Post natal wards were visited for four consecutive days to see how some of the ICT indicators were being used and what they are used for. In addition, the authors conducted personal interviews with twenty-four doctors, six in each hospital and a few nurses. Fifty questionnaires were given to each hospital (two hundred questionnaires in total), but only one hundred and sixty-one were returned and one hundred and forty seven were found useful. Data collected was analyzed using SPSS for MS Windows.

## Results and Discussion

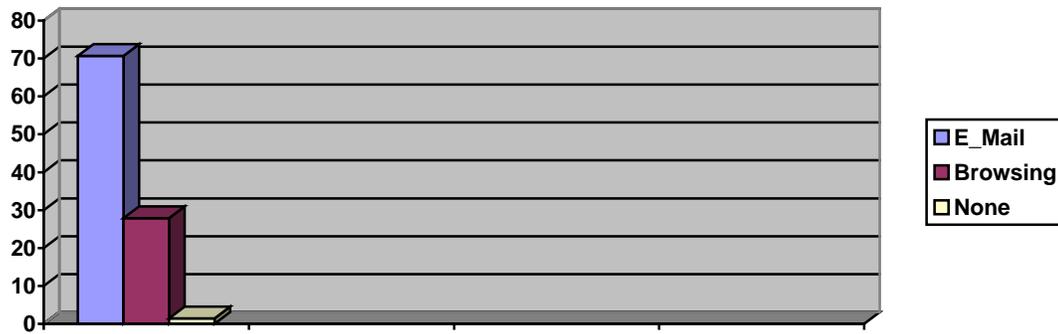
The study revealed that three ICT indicators (personal computers, mobile phones, and Internet facilities) are available in Nigerian Teaching hospitals but this paper deals only with mobile phones and Internet facilities.

### Internet Hosts

The study showed that no teaching hospital in Nigeria is connected to the Internet. Of the four hospitals visited during this study none of them was connected. In fact one has to go to a cyber café even for rudimentary net access such as e-mail. Obafemi Awolowo University is connected to the Internet since the late 90's but the affiliated teaching hospital is not connected.

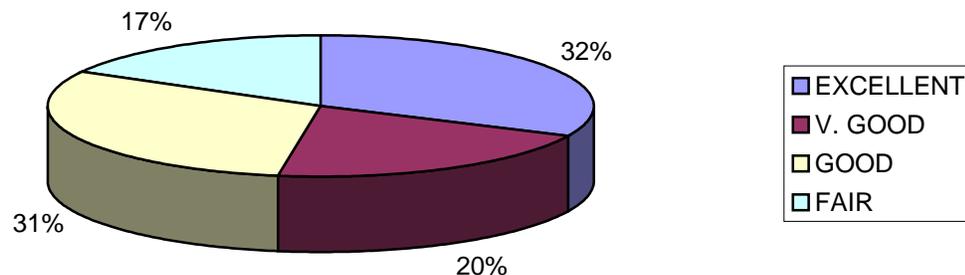
### Internet Usage

The study showed that the majority of the medical experts (including nurses) use external (non-hospital) Internet facilities. Almost one and a half percent (1.4%) of the medical experts are not using the Internet, 70.7 percent are using Internet for e-mail and 27.9 are using it for browsing Figure 1 shows that over ninety-eight percent of the medical experts in the Nigerian teaching hospitals are using the Internet.



**Figure 1.** Internet usage among the medical experts in Nigeria

The majority of medical experts go to cyber cafés to access the Internet. Thirty two percent of the experts rate the usefulness of the Internet to their medical practice as “excellent”, while 20 percent rate it as “very good”, 31 percent rate it as “good” while the remaining 17 percent rate it as “fair”. This shows that the Internet is very essential in health care delivery system. Figure 2 below shows the usefulness ratings by the medical experts.

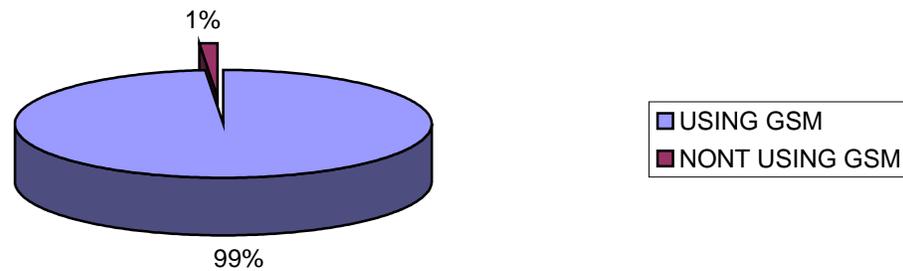


**Figure 2.** Usefulness of Internet to the Medical Profession

The medical experts were interviewed on the use and availability of Internet. During the interviews they indicated that usually they go to cyber cafés to browse and send e-mail to their colleagues within and outside Nigeria. They confessed that the Internet has really helped them in contacting their colleagues, especially those outside Nigeria, for the latest developments in the medical field. Also, through the Internet they were able to get books, journals, and other useful materials, that help them as medical care providers in Nigeria. In fact, one of them told us that the Nigerian teaching hospitals are having set backs because of the lack of Internet facilities even when compared with other African countries like South Africa. She then appealed to the Federal Government of Nigeria and the Ministry of Health to find a solution to the problem of Internet connection in Nigerian teaching hospitals.

### Mobile Phones

The use of mobile phones in all the Nigerian teaching hospitals can be traced back to 2001. At that time the Global System of Mobile Communication (GSM) was made available in Nigeria and quickly medical experts in teaching hospitals started using GSM phones. The hospitals surveyed in this study were located within the coverage area of one or more of GSM providers. Almost all the medical experts in the teaching hospitals surveyed are using mobile phone as showed in figure 3.



**Figure 3.** Percentage of medical experts using a mobile phone

The authors interviewed the medical experts on the impact of the mobile phone in the health care delivery in Nigerian teaching hospitals. The interviews showed that mobile phones are used for the following:

- a. Communication between the wards such as for patient referrals from one ward to another. During one of the interviews, a baby was brought to the emergency room for admission. The physician was able to facilitate the admission in the neonatal ward via the mobile phone.
- b. Reaching Physicians. Physicians not present in the hospital may be reached in their mobile phone if there is an emergency. Some doctors post their mobile phone number on wall in their ward.
- c. Consultation. When physicians need a second opinion they contact their colleagues for consultation via the mobile phone.
- d. Health care professionals use their mobile phone to get materials or equipment into a particular ward or room.

The study also revealed that neither the hospital management nor the Nigerian government provided any of the mobile phones being used by these medical experts. The medical experts used their own money to purchase what they referred to as ‘part of hospital equipment’ because the phones are used in the hospitals. Similarly the medical experts are using their own money to cover the fees of each call.

## Conclusions

This study dealt with the ICT indicators used in Nigerian teaching hospitals and the impacts on the health care delivery systems in Nigeria. Based on the study findings we can deduce that ICT has contributed to the positive growth of health care delivery systems in Nigerian teaching hospitals. The study also showed that hospitals are lacking connectivity to the Internet and that severely impairs the quality of health care they provide.

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