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Prospects of GSM technology for academic library services

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Abstract

Purpose – Poor telecommunication infrastructure has been generally identified as a hindrance to most library activities in Nigeria. However, with the emergence and spread of wireless technologies, especially the global system of mobile communications (GSM), this paper seeks to consider the implications of this event on library services, with suggestions on the possible applications to academic libraries.

Design/methodology/approach – A background study of information and communication technology status past and present in Nigeria was carried out, especially the impact of wireless technologies on the global scale and in the country.

Findings – The GSM technologies acceptance and growth rate among the Nigerian populace has serious and great potentials for enhancing the communication and information technology-related services in libraries and information centers in Nigeria. However, information managers need to fully exploit the opportunities presented by this relatively new phenomenon with a view to providing improved products and services to the library users, especially in the academic sector.

Originality/value – This paper highlights the use of GSM technologies library services. It targets librarians and information managers who have been limited in the past by inadequate telephone/telecommunications infrastructure. Encourages the professionals to exploit the opportunities presented by these expanding technologies.

Keywords Nigeria, Mobile communication systems, Telecommunication systems, Information services, Academic libraries

Paper type General review

Introduction

The world is fast becoming a global village and a necessary tool for this process is communication of which telecommunications is a key player. The quantum development in the telecommunications industry all over the world is extremely rapid as one innovation replaces another in a matter of weeks. A major breakthrough is the wireless telephone system, which comes in either fixed wireless or the global system of mobile communications (GSM). After 43 years of continued underdevelopment of the Nigerian telecommunications sector, as evidenced in the poor performance of the Nigerian Telecommunications Limited (NITEL), the deregulation and privatization of this sector has started to yield bountiful results in Nigeria. Within three years of licensing private telecommunications operators (PTOs), Internet service providers, communication and information services both within and without of the country have been revolutionized. This paper seeks to discuss the extent and impact of this wireless revolution with a view of provoking some thoughts in the prospective application of these technologies to services in Nigerian academic libraries.

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Telecommunication and academic libraries

Libraries as institutions involved in the dissemination of information are deeply interested in the various infrastructure networks that serve as major channels for the transmission of information, such as telephones and telephone lines, cellular networks, cable television and the Internet. Academic libraries are greatly challenged in satisfying their customer needs since their target market (researchers, lecturers, undergraduate and postgraduate students) is highly demanding and dynamic in nature. The internet and world wide web (WWW) have made it possible for university teachers, researchers and students to locate what they need without getting into the library. If librarians in this sector are to continue to make substantial contributions as information disseminators, they will have to understand and exploit information and communication infrastructures and emerging technologies in packaging, disseminating and delivering proactive services to their clientele.

Like most service institutions, academic libraries need to engage in marketing their products and services (Ekpenyong, 2003). Providing current awareness services to an ICT-driven target market requires dynamic, innovative, timely and adequate communication technologies. As increasing numbers of users access electronic resources through library web sites, the opportunities for in-house publicity, instruction guides and person to person contact at the reference or issue desk are declining. The digital library evolving needs a philosophy that involves the proactive management of relationships with users through applicable technologies.

From a marketing communications perspective, the challenge to most libraries is to attract users to the library and to retain them. Ekpenyong (2003) expressed the opinion that if librarians wish to remain relevant, they must focus on the information provider/user relationship. Communication and interaction are generally an important component of the process of relationship building. Popoola (2001) suggested that the university library system must ensure a closer relationship with its clientele and even among the library clientele themselves. To achieve this goal, he explained that library personnel should provide specialized information services for which students and lecturers as well as other university community members should make contacts with the library. He therefore posited that it is imperative for academic libraries to publicize their information products and services among their users to arouse their interests in patronizing the library and use the resources therein.

Most academic libraries in Nigeria have started exploring the viability of the internet technologies with a view to adopting such to improve the library operations. Library web sites have been designed to publicize and disseminate the services to users, and online public access catalogues (OPAC) are available to facilitate searching and identifying relevant materials to users. The following facilities are all available to support communication electronically: e-mail, newsgroups, chat rooms, expert forums, message board, frequently asked questions (FAQs), user information, and feedback forms. These would support all of library-to-user, user-to-library and user-to-user online interaction. However, with the internet connectivity constraints in Nigeria, these known communication options in online interaction are not easily deployed. Hence, libraries like many institutions in Nigeria have to look inwards at the already established facilities and infrastructure to make libraries more attractive or accessible.

Telecommunications in Nigeria

Telecommunications, "communicating over a distance", has actually existed for thousands of years, from the smoke signals by the Indians, to lighthouses' communication with ships, to the invention of the telephone by Alexander Graham Bell in 1887. Telecommunications has been a task of the government and is usually operated by a ministry or public body to be responsible for providing telecommunication services to everyone at the same price usually regardless of where the user resides.

Telecommunications facilities in Nigeria were first established in 1886 by the colonial administration. At independence in 1960, with a population of roughly 40 million people, the country only had about 18,724 phone lines for use. This translated to a teledensity of about 0.5 telephone lines per 1,000 people. Nigerian Telecommunications Limited (NITEL) was formed in 1985, with the main objective to harmonise the planning and coordination of the internal and external telecommunications development and provide accessible, efficient and affordable services. By the year 2000, NITEL had roughly 500,000 lines available to over 100 million Nigerians. As the national carrier NITEL had a monopoly on the sector, its services became epileptic, highly unreliable and inefficient and characterized by bad management. Telephone penetration remained poor equaling 1 telephone line to 440 inhabitants, well below the recommended teledensity of 1 telephone line to 100 inhabitants by the International Telecommunication Union (ITU) (see www.nigeriabusinessinfo.com/telecoms080903.htm)/.

Factors such as Nigeria's topography and size, global trends in technology and equipment, success of digital mobile service and fixed wireless options, Nigeria's telecommunications policy directives, cost and the governments' commitment, are all indicators that the future of telecommunications in Nigeria is pointing towards wireless communication.

Wireless evolution in Nigeria

Nigeria joined the world's digital cellular network in January 2001 with the licensing of private telecommunications operators by the regulatory body, Nigerian Communications Commission (NCC), established in 1992. The return of democracy in the year 1999 paved the way for the granting of GSM license to three service providers, namely MTN Nigeria, Econet Wireless Limited (now Vmobile) and NITEL (now MTel). Table I shows the details of these operators. A license for a second national Operator was granted to Globacom, Nigeria in 2002 by the NCC.

Operator name	Date of commencement of operations	No. of subscribers (as at July 2004)
MTN Nigeria[b]	August 2001	2,000,000
Econet Wireless (Vmobile)[c]	August 2001	1,650,000
Nitel (MTel)	December 2003	500,000
Globacom	August 2003	1,000,000

Table I.
GSM network operators[a]

Sources: [a]www.nigeriabusinessinfo.com/telecoms080903.htm; [b]www.mtnonline.com/coverage/index.asp; [c]www.econet_nigeria.com/

Countries with under-developed wired telephone systems, for instance, can use cellular phones as a fast way to install better communications and as such have a chance of joining the world economy (Williams *et al.*, 1995). Cellular phones are the forerunners of more revolutionary mobile phones which enable people to exchange information from anywhere on earth. Changes in telecommunications are impacting all types of user groups and according to Terplan (2000), the acceptance rate of the technologies and information services is accelerating significantly. According to Haig (2004), in the 1990s, a mobile phone was a mobile phone. You picked it up. You dialed a number. You spoke to someone. Now though, the humble mobile is suffering from an identity crisis. It doesn't quite know if it's a phone, a text machine, a camera, a game boy, a walk man, a computer or – in the case of 3G phones – a video player. There are 1.5 billion mobile phones in the world today, more than three times the number of personal computers (PC) (Stone, 2004). Most sophisticated phones have the processing power of a mid-1990s PC and have computer-like features, allowing their owners to send e-mail and browse the web. They however consume 100 times less electricity than PCs. These capabilities depict the highly dynamic and multi platform nature of the wireless revolution in mobile networking referred to as global system for mobile telecommunications (GSM).

Global system for mobile communications (GSM)

Global system for mobile communications is a second-generation digital technology, which was originally developed for Europe but now has in excess of 71 per cent of the world market (see www.gsmworld.com/technology/gsm.shtml). GSM network is a top-class standard relied on by millions of people worldwide. Some interesting statistics demonstrating the impact throughout the world are listed below:

- Number of countries/areas with GSM system (as at March 2004) – 207.
- GSM total subscribers (worldwide as at end of March 2004) – 1046.8 million.
- GSM accounts for 73 per cent of the world's digital market and 72 per cent of the world's wireless market (see www.gsmworld.com/technology/gsm.shtml).
- Short message messaging (SMS) sent per month – 45.6 billion.
- SMS forecast for 2004 – 547.5 billion.
- GSM Association – total membership (as at April 2004) – 780.

Today's GSM is a hugely successful wireless technology and an unprecedented story of global achievement. In less than ten years since the first GSM network was commercially launched in Europe, it became the world's leading and fastest growing mobile standard. GSM technology is in use by more than one in six of the world's population and it is estimated that at the end of January 2004, there were over 1 billion GSM subscribers across the world (see: www.gsmworld.com/technology/gsm.shtml). Table II gives an overview of services provided by GSM networks in Nigeria, while Figure 1 shows a comparison between fixed telephone lines and digital mobile links in Nigeria.

GSM and library services

Many authors of articles on information technology (IT) in libraries across Africa have continually identified the lack of telecommunications infrastructure as a culprit in the

Service	Description	Networks	Cost ($)
1. Calls	To make and receive calls. Other features: call waiting and holding – alerts users of a second caller; call forwarding – divert incoming calls to another number; calling line identity – displays the number of the incoming call; voice mail – callers can leave a message for the subscriber when unable to take calls	MTN, Vmobile, MTel, Glo	0.16-0.36
2. Short message service(SMS) also text messaging	The ability to send and receive text messages to and from mobile telephones. It is basically e-mail for mobile phones. The text can comprise words or numbers or an alphanumeric combination usually up to 160 characters in length	MTN, Vmobile, MTel, Glo	0.11
3. News service	Enables users to receive vital news and information, e.g. sports, stock prices ...	Vmobile, Glo	Varies with network
4. International roaming	Enables a subscriber to stay connected to the world on the same mobile number when traveling outside the country	MTN, Vmobile, MTel, Glo	Negotiable
5. Wireless application protocol (WAP) services	Standard for enabling mobile phones to access the internet. Users can access web sites and pages in a suitable way for the limited display capabilities of mobile phones	None	N/A
Conference calling	A subscriber can conveniently speak with up to five people simultaneously from their mobile phone	Vmobile	Airtime charges apply
Two lines on one phone	A subscriber can have two lines on one phone	Vmobile	Connection fee applies to the two lines

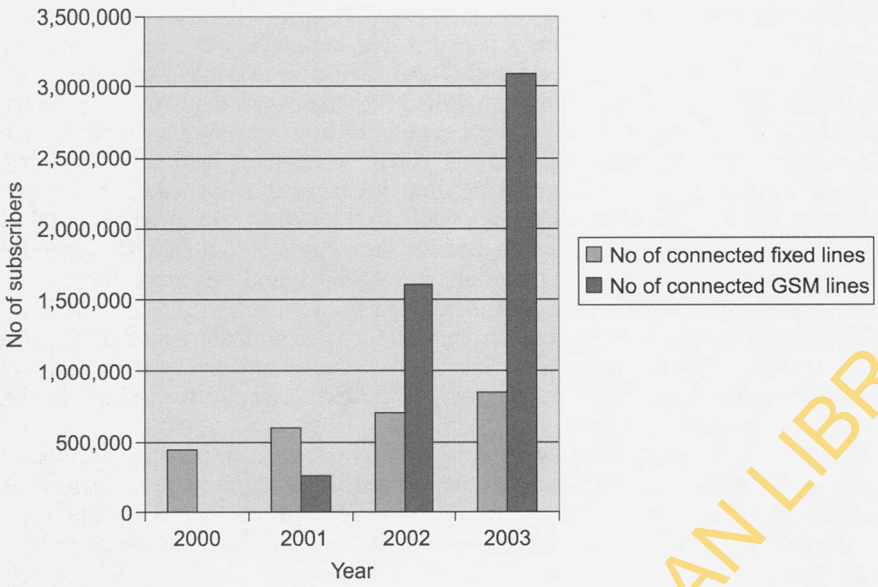
Source: Compiled from network operators' web sites and articles

Table II.
Services by GSM networks in Nigeria

underdevelopment of information and communication technologies (ICT) adoption. Omolayole (2004) identified the lack of telecommunication facilities as a major constraint in rendering efficient services in libraries. She observed that many libraries do not have telephone lines. In their research report, Oduwole *et al.* (2002) cited the high cost of telecommunication facilities as a hindrance to the provision of electronic services in Nigerian University libraries.

The teledensity in Nigeria has increased to 1.6 in 2003 as against 0.4 in year 2000; this increase has been attributed to GSM networks and phones (see: www3.sn.apc.org/africa/afstat.htm). Most businesses across Nigeria have adopted and come to rely on this facility for better services delivery to their clientele.

Enquiries desks in libraries are very vital contact points highly used by library users. Telephones and e-mail are important tools to facilitate prompt handling and response to the stream of patrons questions from within and out of the library user community. Most university libraries have one phone line which is mostly used for administrative purposes and located in the library administrators' office. Mobile phones could be deployed at the enquiries desk.



Source: Nigerian communications commission (NCC) http://www.gsworld.com/technology/gsm.shtml

Figure 1. Comparison of fixed telephone with digital mobile lines in Nigeria

Academic libraries need to keep abreast of the dynamically changing needs of their clientele; hence a way of delivering user-centred services is by conducting library surveys. Surveys could be carried out using text appeal, which drives powerful marketing campaign with text and multimedia messaging. Patrons could text a coded number to a particular phone line number to indicate their preference in choice. Specialized and personalized information services can be designed using the wireless technologies made available to all. Personalized services to patrons could be by sending renewal notifications to alert them that the books borrowed by them are almost due or even overdue. This option could prove to be more efficient than the practice presently since most of the patrons approach the circulation desks to return overdue books with excuses that they forgot the due date.

Arif and Meadows (1994) showed that once users become aware of an information source, they tend to use it. The implication of this is that information sources which users are not aware of would be underutilized. Ekpenyong (2003) in a recent survey on library use in the University of Ibadan library system for the ten-year period 1990/1991-1999/2000 revealed that only about half of the matriculated students registered in the library. This decline in her analysis stems from the library system inability to reach out to its target users. She concluded that it is imperative for the library to reach the academic community by sensitizing them and alerting users on the available resources in the library. Short message service (SMS) or text facilities available on all mobile phones, could be used to create awareness amongst the academic library clientele about upcoming events, and new arrivals. This could be flashed through a facility called "broadcast" where one text message is sent to all the library contacts listed in the address book on the mobile handset at once.

An exercise carried out by the circulation section staff of the University of Ibadan library to recall long overdue books revealed that the number of overdue books has increased by 30 per cent in the last decade. In retrieving the overdue items, notices were sent to the defaulters with a threat to publish their names in the University bulletin. This yielded a return rate of about 60 per cent of the overdue materials to the Kenneth Dike library (from the circulation records, 2003). Discussions held with some of the users on their reasons for committing this library crime, revealed that a large proportion gave excuses that the books were used for their project writing and also borrowing out to their friends, while a larger segment – which consisted mainly of lecturers – claimed using the materials for teaching and research. However the greatest percentage said they forgot the due dates.

A focus group of library patrons were asked for their preference method in getting reminders of their book return dates. The largest number indicated they would prefer to get reminders from the library first by SMS/text, secondly by e-mail and least through the overdue notice cards.

As the world becomes increasingly computer centric and computer applications are now used for a number of tasks such as communications and information retrieval, it is a natural progression for the user to expect these applications to be available to them on their mobile terminal. Many web sites offer free SMS to mobile phone services on the internet.

Recommendations and conclusion

Nigeria's mobile market is developing faster than any other sector with the rise of wireless communications and the government's decision to award mobile licenses to several private telephone operators. With the largest population in Africa and one of the lowest telephone service penetrations in the world, Nigeria offers massive growth potential for the GSM industry. The mobile subscriber base is expected to reach 30 million out of a population of 150 million by the year 2006.

With this potential, librarians, especially in the academic sector, need to deliberate and give some urgent thoughts to the implication of the phenomenon on the information sector and their libraries.

The seemingly high cost of calls on the networks presently might still make libraries skeptical about the possible adoption of GSM services. However academic libraries could draw up proposals to solicit for customized service packages from the GSM network operators in Nigeria so that special rates could be applicable within the academic community for GSM services subscription. This would make the services more affordable and fully adoptable. As these GSM networks overcome their initial teething problems, more stable and qualitative performances are expected. Also more services are being introduced to meet the needs of the teeming subscribers of these networks.

Competition has been a major player in regulating the telecommunications sector in Nigeria, hence as the five-year monopoly of the GSM market by the first three network operators: MTN, Vmobile and MTel, draws to a close in 2006, many operators are expected to join the market and force down the prices. It is envisaged that GSM would be more applicable and useful to Nigerian libraries. Further work on the usability and effectiveness of GSM services in academic libraries could be carried out. While GSM services would help solve academic library communications issues, it does not

eliminate the need for fixed lines and internet connectivity. Nevertheless, cost-benefit analysis should be carried out to ascertain the long-term benefits that GSM services could offer. Undoubtedly, the possibilities beg for further investigation.

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