

Full Length Research Paper

Mobile technology and information services provision: Perception of library users in selected universities

¹Amuni Sarat Iyabode, ²Niran Adetoro ³Sule Olatunji Eniola*

¹Tai solarin University of education, Ijebu-ode, Ogun State, Nigeria
234-7033785266; 08188170429

²Tai Solarin University of Education, Ijebu-Ode, Ogun State, Nigeria
234-8060230082

³Crescent University, Abeokuta, Ogun State, Nigeria
234-8063428299; 08056037734

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The purpose of the study was to ascertain the perspectives of library users in two selected academic universities on the provision of information services through mobile technology. Six research questions were drawn to bring out the views of the respondents with a self-designed questionnaire that was administered to collect primary data. The findings revealed high possession of internet capable mobile device which were used for information search through various means. It also showed that those academic libraries presently do not provide information services through mobile technology. However, library users have preferences for mobile device in information search and also want information services to be provided through mobile technology. The study further established certain factors that hinder the provision of information services through mobile technology. The researcher recommends that academic libraries should consider the provision of information services through mobile technology to remain indispensable in the academic environment.

KEYWORDS: Mobile Technology, Information Services, library

INTRODUCTION

Libraries have an inherent obligation to provide information services to support the educational, recreational, personal and economic endeavors of the members of their respective communities, as appropriate to the libraries individual missions.

Information services in libraries take a variety of forms including direct personal assistance, directories, exchange of information culled from a reference source, reader's advisory services, dissemination of information

in anticipation of user needs or interests and access to electronic information. A library, because it possesses and organizes for use its community's concentration of information resources, must develop information services appropriate to its community. These services should take into account the information-seeking behaviours, the information needs and the services expectations of the members of that community because provision of information in the manner most useful to its client is the ultimate test of all a library does (Rusa, 2002).

Hence, the prevalence of mobile devices has justified the provision of information services with mobile technology and also in electronic format. Mobile technology has undoubtedly ignited a revolution that academic libraries

*Corresponding author. E-mail: olasem2005@yahoo.com

have to face. With clients' persistent demand for more electronic material than physical item, libraries' must face the reality of the need for mobile services (Leung, 2011). Library user carry, often, mobile devices with internet capabilities and thus, the provision of a library website for mobile devices, it is generally considered that mobile revolution has dramatic impact on library information services (Murray, 2010).

Mobile technology is the technology used for cellular communications. Mobile code division multiple access (CDMA) technology has evolved rapidly over the past few years. Since the start of this millennium, a standard mobile device has gone from being no more than a simple two-way pager to being a mobile phone, GPS navigation device, an embedded browser and instant messaging client, and a handheld game console. Many experts argue that the future of computer technology rest in mobile computing with wireless networking. Mobile computing by way of tablet computers are becoming more popular at the moment is the iPod, by Apple.

Tablets are available on the 3G and 4G networks. The 3G revolution allowed mobile telephone customers to use audio, graphics and video applications. Over 3G, it is possible to watch streaming video and engage in video telephony although such activities are severally constrained by network bottlenecks and over-usage. One main objective behind 3G was to standardize on a single global network protocol instead of the different standard adopted previously in Europe, the U.S and other regions. 3G phone speeds delivery up to 3mpbs, but only under the best conditions and in stationary mode. 3G cellular services also known as VTMS, sustain higher data rates and open the way to internet style applications. 3G technologies support both packet and circuit switched data transmission, and a single set of standards can be used worldwide with compatibility over a variety of mobile devices. The current generation of mobile technology, 4G has been developed with the aim of providing transmission rates up to 20mbps while simultaneously accommodating Quality of Services (QoS) features. QoS will allow you and your telephone carrier to privatize traffic according to the type of application using your bandwidth and adjust between your different telephones needs at a moment's notice. Only now are we beginning to see the potential of 4G application. They are expected to include high performance streaming of multimedia content. The deployment of 4G networks will also improve video conferencing functionality. It also anticipated that 4G networks will deliver wider bandwidth to vehicles and devices moving at high speed within the network area (Wikipedia).

To the users, the possession of internet capable mobile devices is the prerequisite to using mobile services, to the libraries, the user's adoption of mobile services in general is the prerequisite to providing mobile service's (Leung, 2011).

Statement of the Problem

With the growth in the use of mobile devices among library users and its unlimited advantages over traditional means of information search, academic libraries in this part of the world are still in the embryonic stage in terms of providing information services through mobile technology. Hence, the need for this study to ascertain the views of library users on information services provision through mobile technology.

Research Questions

1. To what extent do library users possess internet capable mobile devices?
2. In what ways are mobile devices used for information search as perceived by library users?
3. How much do library users prefer mobile devices in information search to other traditional means as perceived by library users?
4. To what extent do libraries use mobile technology for information services provision as perceived by library users?
5. What information services would library users want their libraries to offer with the use of mobile technology?
6. What are the hindrances to the use of mobile technology in information services provision as perceived by library users?

Significance of the Study

This study will provide new initiative to academic libraries that already have library website to see the need for improvement by providing a mobile version of their library website and to those academic libraries that are yet to have a library website; it should be considered as now paramount in their service delivery platform.

To library users, it will serve as an eye opener to the merits and usefulness of mobile devices they carry in their access to information services.

And to other researchers, a stepping stone to more issues on mobile technology in information service provision.

Scope of the Study

The study examines the view of library users of academic libraries in the provision of information services with the use of mobile technology. It is limited to two academic libraries in Lagos State, namely: the main library situated at Ojo campus of Lagos State University and the main library of Michael Otedola College of Primary Education, Noforija, Epe, Lagos State. This study will concern itself only with the users of academic libraries.

LITERATURE REVIEW

This chapter focused on the review of literatures related to the study. As revealed by search of literature, much

work has not been done in the area of provision of information services through mobile technology. There were, however, some related studies to the present study. To review, therefore, we focus on the following areas:

- i. Mobile technology
- ii. Adoption of mobile devices and mobile services
- iii. Library and mobile library website features
- iv. Information architecture and Information quality
- v. User perspective on mobile library services
- vi. Library information services provision

Mobile Technology

Although, the use of mobile devices is becoming ubiquitous, there are barriers to consider in the use of this technology in providing mobile library website to users (Fox, 2010). These barriers include subscription to data plans, availability and maintenance of open source software, content choice and presentation and user needs (Hahn, 2008). Mobile devices are task specific in use in comparison to website which are more free form and flexible for the user to navigate, browse and search (Shrestha, 2007).

Conversely, this technology provides unique learning opportunities and has advantage of portability and mobility. Academic, public and special libraries could use mobile technology in service innovations, m-learning, instruction in mobile device, web lectures, reference services and catalogue searching (Hahn, 2008). Vendors are now developing portals for the mobile platform, specifically; Gale Cengage now offers a series of library resource applications called Access My Library through the Apple Appstore (Gale Apps, 2011; Martine, 2010). Smartphone are not the only mobile device used by libraries. E-books, readable on Smartphone and E-readers depending on format are becoming prevalent with indications that 66 percent of public libraries nationwide in the United States offer patrons free access to them (Emery, 2010).

There are ongoing issues with this type of content provided to patrons on mobile devices as libraries negotiable contracts and DRM licenses with content vendors and publishers. Mobile devices can be used to link to the internet or mail clients through QR codes, which are becoming more visible in libraries and library catalogue (Walsh, 2010).

Mobile devices have been used in conjunction with QR codes to access instruction and subject guides and location-based information. Further issues in the area of mobile technology and libraries include the increasing popularity of tablets, especially the iPod, used by both patrons, and library personnel. Libraries need to consider such aspects as time, resource investment and cost benefit analysis in creating mobile applications of their library website (Emery, 2010).

Adoption of Mobile Devices and Mobile Services

Mobile service subscribers in HongKong reached 12.48million in 2010, representing a penetration rate of 178 percent, one of the highest in the world (given that the population of HongKong is about seven million). Short messages (SMS) were commonly used with each HongKong citizen old enough to use mobile services on average using it more than twice daily (Office of the Telecommunication Authority, HongKong, 2010).

To learn how the youths adopt and use mobile services, the HongKong Youth Association conducted in 2010 a phone interview with 512 youths of ages 12-34 selected through random sampling. The interview found that 78.5 percent of the interviewees, in particular, those of older ages, possessed internet capable mobile devices (including mobile phones and laptops).

On average, each youth spent 3.45 hours using their mobile devices. It was also found that 65.5 percent of the interviewees read news on the internet; 43 percent uploaded or view social current affairs short videos at You Tube, and 33.6 percent voiced their opinions on the internet. Besides, 22.5 percent of them used blogs or social networking sites to keep in touch with friends. Of all the interviewees, 72.3 percent engaged learning on the internet on various aspects with 49.3 percent engaging quite frequently and 11.1 percent very frequently (Youth Research Centre, HongKong Federation of Youth Groups, 2010).

The situation of the United States is used as a Comparison Mobile Access, 2010, a study of the Pew Internet and American Life Project, reported that in the United States, nine out of ten youths of 18 - 29 years old owned cell phones and 95 percent of them (representing 85 percent of this group) used text messages. Seven out of ten youths owned laptop computers. While 65 percent of the youths accessed the internet with their cell phones, 84 percent went online using either cell phones or laptops (Smith, 2010).

The ECAR study of undergraduate students and Information Technology, on the other hand, focused on undergraduate students of the United States to see how they used information technology in daily life and their studies. In 2010, 36,950 undergraduate students were surveyed. It was found that about two thirds of the respondents (62.7%) owned internet capable handheld devices (including iPhone, Treo, Blackberry, other internet capable cell phone, iPod touch, PDA, Pocket PC, etc) and about half used the internet from their handheld devices daily. Social networking websites and text messaging were used by nine out of ten respondents (90.4% for social networking sites and 92.3% for texting), with a median frequency of daily use for both.

About three quarters of the respondents (72.9%) used text messaging daily. Library websites and learning management systems continued to be core technologies for their course studies. Nine out of ten respondents

used the college and university library website (94.2%) and 33.7 percent of them used it several times a week or more. The learning management system was also heavily used, with 90.3 percent of the respondents using it. 35.2 percent uses it daily and 79.6 percent using it weekly or more. About a quarter of the respondents used E-books in a course (Smith and Caruso, 2010).

Library and Mobile Library Website Features

The number of universities with a web presence in the III English speaking members of the Association of Research Libraries is 39, with 15 universities having only a university mobile site, 14 only having a library mobile website and 10 having both university and library websites (Aldrich, 2010).

Institutions often solicit feedback from student and faculty about the most useful features of their traditional library websites when considering developing mobile counterparts. Functions most commonly found on library websites include library hours, library directory, and library catalogue and contact us. "Mobile campus" type services include easy access to administration contacts, the library, email, news and search tools - more broadly provided services would be of the following types: individualized accounts, community information and resources, campus life and usage guides (Choi, 2009).

The Seeholzer and Salem (2011) study of the mobile web focused on one location - Kent State University. The purpose of the study was to determine which features of the traditional website would be most useful on a mobile device and how much time was spent using the web, library features they used and other available services users were interested in having access to.

Recurring themes included students desiring a more interactive, customizable experience, with the ability to perform a variety of tasks, such as read, chat and connect to resources beyond the basics of finding library hours, locations and directions (Seeholzer and Salem, 2011).

Libraries are discovering that mobile devices are a new way to reach out to their communities (Seeholzer and Salem, 2011; Hahn, 2008). Mobile devices allows freedom of movement from one location to another and the ability to access the web to complete specific tasks of relatively short duration. Apps in mobile devices reduce information into prepackaged forms and are discrete units isolated from the larger context, which users can access depending on their information need (Aldrich, 2010). Functions most commonly found on university mobile websites includes event calendars, directories, news and campus maps (Aldrich, 2010).

Specific research studies reviewing mobile website functions in depth include MIT, Ball State University, Duke University, the University of Texas, North Carolina, Nebraska and Rice University. The study by Aldrich in 2010 suggests that more dynamic interactive and

student-centric features should be incorporated into university mobile website, as well as functions that meet education needs and address access for people with disabilities.

Weaknesses of mobile website design include their more simplistic format and more minimalized look, as well as lack of services provided (Seeholzer and Salem, 2011). They further found 10 links the upper limit on mobile website interfaces, with adequate spacing between the required as well as link to the full university library website.

Mobile devices have small screens with content formatted within one column, making it difficult to display interface – rich web pages, wireless connection can be slower, memory size smaller and graphic support lacking, such as the non-use of Adobe flash by Apple mobile device products (Shrestha, 2007; West, Hafner, and Faust, 2006).

These drawbacks influence the variety of features libraries can provide on their mobile websites to developing mobile library websites, libraries need to ensure these applications are user friendly and functional in interface design.

There are institutions providing more comprehensive features and resources for the mobile device platform. Library High Tech News (2009) and Multimedia Information and Technology (2009) published articles highlighting Duke University was offering the most comprehensive digital image collection specifically formatted for the iPhone, which includes 32,000 images over 20 collections. Additional services include campus news feeds, a campus map and an expanded schedule of courses. Institutions such as Duke University stand as examples of libraries embracing innovative technologies to provide content to the communities and expanding the range of services they provide to their users.

Information Architecture and Information Quality

Many studies have been done on how the information architecture of the webpage affected information searching. Morville and Rosenfeld defined information architecture as (i) the structural design of shared information environment, (ii) the combination of organisation, labeling, search, and navigation systems within websites and intranets, (iii) the art and science of shaping information products and experiences to support usability and findability, (iv) an emerging discipline and community of practices focused on bringing principles of design and architecture to the digital landscape.

There are four components of the information architecture the organisation systems that govern how the information is categorized, the labeling systems that determine how the information is represented, the navigation systems that facilitate the browsing and moving through the information, and the searching

systems that allow searching of the information accessible at the website (Morville and Rosenfeld, 2007: 4, 49).

How deep the information is under the menu options has impact on information searching as well. Menu content organized in two levels of depths resulted in fewer searching problems than three levels regardless of breadth, and the layout as well as the labeling of the web content played a role (Larson and Czerwinski, 1998).

The participants of the focus group study done by Cowley, et al voiced similar opinions sharply. The participants had problems with library terminology or jargon in navigating the websites, and remarked the process required to find information on the library website was complex and confusing. They desired all needed information to be grouped on a single page for immediate access (Crowley, Leffel, Romirez, Hart and Armstrong, 2002).

Interrelating with the information architecture, the information quality explains and determines whether people use the web services. The Technology Acceptance Model (TAM) explained the behavior of people towards their acceptance of a technology in terms of two dimensions – Perceived Usefulness and Perceived Ease of Use (Davis, 1989). People would accept and use the technology that was perceived to be useful and that could be used easily. Heijden, 2003 added the Dimension Attractiveness to supplement the TAM.

Chae, Kim and Ryu (2002) identified four dimensions of information quality in their study on mobile internet services. Connection, Content, Interaction, and Context. These four dimensions determine whether people find the services satisfactory, and in turn whether people are likely to use the service. Interaction includes navigation and how various elements are structured and presented, thus closely related to TAM's ease of use. Content correlates to TAM's usefulness. Content demands that the information needs to be relevant to the users task at hand (Koirumaki, Ristola, and Kesti, 2008). Connection requires a smooth, stable, and reliable connection to the mobile internet services. The findings of these previous studies are helpful to the design of web services, whether mobile or not.

User Perspective on Mobile Library Service

Kim (2011) suggests three varying perspectives of a traditional library website usage which include the user, the website design and library service quality. Access to a library website enables user to optimize their time by allowing them to access information and online resources whenever and wherever needed.

Users appreciate website that offer the library services they are looking for including library catalogue and databases, reference services and campus news and information. Kim and numerous studies mentioned the importance of the user perspective in the design process (Blandford and Buchanan, 2003).

Perspectives of website design are measured in simplicity and complexity, with users perceiving library website design as challenging (Kim, 2011). Library resources users would likely access on their mobile devices include research database and subject manuals, services such as contacting a librarian or the reference desk and logging into a personal library account (Seeholzer and Salem, 2011).

Accessing library websites through the mobile devices will provide users with new opportunities, such as social engagement, outreach programs and in-learning tools. Usability of mobile devices poses a challenge on a variety of fronts for the user. Negative aspects for users of mobile websites include scrolling long pages of information, unclear organisation of information and page structure, difficulty in typing in fields and forms, ease in selecting links and correcting mistakes (Shrestha, 2007). Overall design and navigation of mobile library website is an important consideration for the user. Institution developing website library websites should not only include the user perspective in the design stage but could look into the realm of digital libraries and the user perspectives. There are more studies available in this space than the user perspective of mobile library websites and the findings may be transferrable. User preference in digital library features includes information should be easy and quick to find, simple to use visually-based interfaces, search results of one page in length and materials and resources classified in varying ways (Elahe, Ghinea, and Chen, 2006).

A structured and multi-leveled presentation of information relevant to the tasks users want to perform is also important (Tsakonas and Papatheodorou, 2008). Many structures representing information provided in mobile library website interfaces should be easy for the users to understand and navigate.

User accessing library websites on mobile devices want more customizable features and interactive services such as chat and connecting to resources. Essentially, users are demanding features beyond the basis (Seeholzer and Salem, 2011).

Library and Information Services Provision

Joint (2010) writes that librarians are trying to make a technology that did not originate in the library world look as though it is a library technology. He also argues that the revolutionary nature of web services has not, at least, until now, revolutionized the library services.

Joint (2009) also provides an insight into library decisions at Strathelyde University to move away from the experimental usage of web services like Instant Messaging (IM) and Second Life.

Breeding (2007) highlights the work of confining the use of the web within the library context, when specific tools are promoted. He argues that before libraries move to the next generation of services, many will have to catch-up with the previous generation (Breeding, 2006). There

is the danger that we may already have gone beyond that point by labeling some new provision as “2.0 service strategies”, but the same time we are branding some services, the dissemination of information and libraries’ (physical) social networks, to name but a few.

Brown-Sica and Beall (2008) address the problem of “hate speech” that arises with the inclusion of user-generated content in library information systems, while Wolf (2008) argues that the web has been a breeding ground for hate, especially through its mainstream services like YouTube, Facebook, and MySpace.

Davenport (2008) points out that another task associated with web use, not only by librarians but in a general social context, is lack of diversity and the lack of diversity and the risk of conformity. The Beluga Project investigated user’s opinions of next generation of library catalogues and found that users are unwilling to create content (tags, reviews, ratings) and share literature lists, that they disapprove of linking catalogue to Amazon metadata, and they complained about the over-simplicity of the catalogue interface (Christensen, 2009).

Kim (2010:70) reports that the users of an academic library find it hard to customize its website while Meroun and Zummer (2008:247) recognize the impact that the web had on library catalogues but they also state that many of the ideas and concepts behind the next generation catalogue are older than the web itself.

Nasta and Mi (2011) are among the few who place the next generation library services in a historical perspective. They examined the websites of academic libraries in New Jersey and HongKong to document the adoption of web services and they concluded that libraries implement these services without evaluating their potential.

Harinarayana and Raju (2010) studied the library websites of the top 100 universities for the year 2007 according to the Times Higher Education university rankings, and they concluded that RSS and IM have the highest integration. Inpathi and Kumar (2010) examined 277 randomly selected academic library websites. The integration of the six web services that they studied ranged from 2.2 percent (Vodcast) to 43.7 percent (IM).

Kim and Abbas (2010) conducted a research study that focused on US academic libraries and the use of several of the services that are also examined, and concluded that RSS and weblogs are the most widespread choices. They also found that the utilization of those services by library patrons is rather limited.

Han and Liu’s (2010) study in Chinese university libraries showed that the use of web applications is quite low. Chua and Goh (2010:206) browsed the websites of 120 academic and public libraries in North America, Europe and Asia, and found weblogs to be the most popular service and tags the least.

In addition, they found that North American libraries engage more web technology than European and Asian libraries. Dickson and Holley (2010) reviewed the

features as “web services” and “service strategies”, even though, they have been in libraries for decades in other forms, including instant messaging, user-centered literature on the use of social networking tools in American academic libraries from 2006 to 2009, acknowledging that their research was limited by the absence of statistical analysis of the effectiveness of social networking and a possible shift in the popularity of these services. They identified several well-founded concerns about the use of social networking sites by academic libraries they are time-consuming, they are not heavily used, and users already have a negative view of them.

Xu, et al (2009:329) surveyed the websites of 81 academic libraries in New York State. They concluded that IM (Instant Messaging) is the most popular choice with an adoption rate of 42 percent and podcast is the least popular with 2 percent uptake. They also tried to identify the key qualifications and roles an academic librarian should have to successfully support this new service orientation creativity, user-orientation, active participation, contributor, organizer, facilitator and coordinator.

Linh (2008) investigated 47 university libraries in Australia and New Zealand. He found that there was general interest in web tools, but the general level of implementation was low. RSS was the most used and IM the least used services.

METHODOLOGY

Research Design

The research is a descriptive research based on survey design.

Population of the Study

The research population of this study consists of all the categories of library users in two selected academic libraries namely: Fatai Ademola Akesode Library of Lagos State University, Ojo and Michael Otedola College of Primary Education, Noforija, Epe.

The categories of library users in both academic libraries include students, staff and external users.

Sample and Sampling Procedure

The sampling procedure of non-probability of convenience or accidental sampling method was adopted due to accessibility of respondents (sample) and time available for the research. Therefore, a total of 200 respondents were selected to form the sample of the study.

Instrument of Data Collection

The questionnaire used was a self-designed and made up of six sections. Section A contains questions on

search; Section D is on preferences for mobile devices in information search; while Section E discusses the provision of information services through mobile technology and Section F examines the hindrances to the provision of information services through mobile technology.

Section B contains 1 open-ended question. Section C, D, and E contains statements to which a tick is required to show the respondents view. The last section which is F contains structured statements with four response options based on Likert-type scale. These responses ranged from Strongly-Agreed (SA), Agree (A), Disagree (DA), to Strongly Disagree (SDA) and the respondents are required to indicate the extent to which they agree or disagree with the statements.

Validity of Instrument

In order to ensure the face and content validity of the instrument, the questionnaire was edited, corrected and proof-read by the researcher's supervisor. The correction

personal data of the respondents; Section B is about the possession of internet capable mobile devices; Section C deals with the usage of mobile devices in information

and editing gave room for necessary amendments in the questionnaire, prior to the final administration to the respondents.

Method of Data Collection

Copies of the questionnaire were administered on 200 library users in two academic libraries namely, Fatai Ademola Akesode Library of Lagos State University and the Library of Michael Otedola College of Primary Education. The data used in this study was collected through the questionnaire administered in both academic libraries by the researcher alongside some friends.

Procedure of Data Analysis

Data collected from respondents were hand-scored on scoring sheet for analysis. Simple percentage, average, mean scores and standard deviation was used in analyzing the data collected and presented in tabular form.

RESULTS AND DISCUSSION

Table 1: Administration and Retrieval of Questionnaire

Name of Library	Copies		Copies	
	Administered		Retrieved	
	N	%	N	%
Fatai Akesode	100	100	100	100
Library				
Mocped Library	100	100	82	82
Total	200	100%	182	91%

Table 1 shows that 200 copies of questionnaire were administered and 182 copies were retrieved. Only 82 copies (91%) were retrieved from the 100 copies sent to

Mocped Library and the researcher had 100 % retrieval from the copies sent to Fatai Ademola Akesode Library.

Table 2: Demographic Characteristics of Respondents

		N	%
Category of User	Student	168	92.31
	Staff	14	7.69
Sex	Male	128	70.33
	Female	54	29.67

Source: Author Survey Data, 2012

Table 2 shows that 92.31 % of the respondents were students with the staff having 7.69% of the total population. Also the majority of the respondents were

male with 70.33% while the remaining 29.67% of the population were female.

Table 3: Forms of Library Services

	Frequency	%
Traditional	38	20.88
Electronic	13	7.14
Mobile	0	0
Traditional and Electronic	131	71.98
Traditional, Electronic and Mobile	0	0
Total	182	100

Source: Author Survey Data, 2012

Table 3 indicates that 20.88% of respondents acknowledge that their library offer services only in the traditional form, 7.14% of respondents show that their libraries offer electronic form of services only while 71.98 acknowledge that their library offer services in both

traditional and electronic form. None (0%) of the respondents indicated the mobile form of service and the use of all form of services option i.e. traditional, electronic and mobile services together.

Research Questions

1 What extent do library users possess internet capable mobile device?

Table 4: Possession of Internet Capable Mobile Device

S/N	Description	Frequency	%
1	Blackberry	66	36.26
2	Nokia 3G	34	18.68
3	I-phone	19	10.44
4	Tablets	05	2.75
5	Notebook	08	4.40
6	Samsung Mobile	07	3.85
7	Techno Mobile	07	3.85
8	Blackberry and Notebook	21	11.54
9	I-phone and Notebook	15	8.24
Total		182	100

Source: Author Survey Data, 2012

From **Table 4** above, the analysis shows that 36.26% of the library users own a blackberry phone, 18.68% of them own a Nokia 3G, while 10.44% has I-phone and 2.75% claimed to own a Tablet. Other result showed that 4.4% of the respondents own a Notebook, 3.85% each own a Samsung Mobile Phone and Techno Mobile Phone

respectively. About 11.54% of the respondents own more than one internet capable mobile device which is a Blackberry and Notebook with the remaining 8.24% having I-phone and Notebook.

2 What ways are mobile devices used for information search as perceived by library users?

Table 5: Usage of Mobile Devices for Information Search

S/N	Description	Frequency	%
1	Visit to Blogs	94	51.65
2	Social Networking Sites (e.g. facebook)	138	75.82
3	Video Sharing Site (You Tube)	89	48.9
4	Rss Feeds	45	24.76
5	Google	172	94.5
6	E-book/E-journal	74	40.66
7	Visit to library website	39	21.43
8	Others, Specify	03	1.64

Source: Author Survey Data, 2012

Table 5 revealed that 51.65% library users get information through their mobile devices by visit to blogs, the use of social networking sites to get information using mobile devices with 75.82% response rate. Video sharing sites were used to get information using mobile devices. Other sources used to get information using mobile device were electronic book or electronic journal 40.66%;

visit to library website 21.43% and other ways mentioned specifically were research works and electronic publication with 1.64%.

3 How much do library users prefer mobile device in information search to other traditional means as perceived by library users?

Table 6: Preferences for Mobile Device in Information Search

S/N	Description	Frequency	%
1	Easy to reach information	78	42.86
2	Easy operation of mobile device	85	46.70
3	Simple and tidiness of page	05	2.75
4	Wordings easy to understand	02	1.10
5	Consistent navigation on every page	06	3.30
6	Colorful	01	0.50
7	Rich in information	05	2.75
Total		182	100

Source: Author Survey Data, 2012

Table 6 shows that easy to reach information was why respondents preferred mobile device in information search by 42.86% of the total population, 46.7% preferred mobile device for information search because of easy operation of mobile device, while simple and tidiness of page and rich in information were preferred by 2.75% respectively. Only 1.1% preferred mobile

device in information search for wordings easy to understand leaving the remaining 0.5% to the preferences of mobile device being colorful.

4 What extent do libraries use mobile technology for information services provision as perceived by library users?

Table 7: Information Services offered through Mobile Technology

S/N	Description	Frequency	%
1	Update of Current Acquisitions	0	0
2	Query answers through mail	0	0
3	Self-help service	0	0
4	Selective Dissemination of Information	0	0
5	Current Awareness Services	0	0

Source: Author Survey Data, 2012

From Table 7 above, analysis revealed that none of the respondent had information service through mobile technology from their libraries which gives a 100% non-response on the question posed.

5: What information services would library users want their libraries to offer through mobile technology?

Table 8: Information Services to be offered through Mobile Technology

S/N	Description	Frequency	%
1	Update of Current Acquisitions	142	78.0
2	Query answers through mail	105	57.7
3	Self-help service	101	55.49
4	Selective Dissemination of Information	102	56.0
5	Current Awareness Services	118	64.8

Source: Author Survey Data, 2012

From Table 8 above, analysis showed that 78% of the respondents would want update of current acquisitions as information service to be offered through mobile technology, 57.7% preferred query answers through mail, 55.49% preferred self-help services, 56% preferred

selective dissemination of information and 64.8% preferred current awareness services.

6 What are the hindrances to the use of mobile technology in information service provision as perceived by library users?

Table 9: Hindrances to provision of Information Services through Mobile Technology as perceived by library user

S/N	Description	Total Score	Mean Score	Standard Deviation
1	Network access	623	*3.42	*45.93
2	Complexity of mobile web design	418	2.63	35.23
3	Cost of provision of services	513	*2.82	*37.82
4	Scarcity of materials and resources	453	2.49	33.40
5	Lack of personnel	452	2.48	33.32
			13.84	185.70
Total			2.77	37.14
Benchmark				
			*Significant	2.80

Source: Author Survey Data, 2012

From Table 9 above, the analysis revealed that the hindrances to provision of information services through mobile technology are network access with a total score of 623, and mean score of 3.42; complexity of mobile web design with a total score of 478, and mean score of 2.63, cost of provision of services with a total score of 518 and mean score of 2.82; scarcity of materials and resources with a total score of 453, and a mean score of 2.49; and lack of personnel with a total score of 452 and a mean score of 2.48.

Discussion of Findings

The findings of this study showed that all library user own one or more internet capable mobile device ranging from Blackberry, Nokia 3G, Techno mobile, I-phone, Notebook and Samsung mobile. This is attested to Murray (2010) that says library users often carry mobile devices with internet capabilities. It is therefore, pertinent to note that library users would have a means of accessing information services provided through mobile technology and thus, also justifies the provision of information services through mobile devices by academic libraries.

The study also found that majority of library users uses their mobile devices to access their information needs through Google and social networking sites (e.g. facebook, twitter etc.). Other ways were blogs, video sharing sites (e.g. You tube), Electronic books or journals, Rss feeds and just a few more mentioned the library website and few more mentioned specifically Electronic publications. This finding is in consonance with a survey conducted through phone interview in 2010 with 512 youth of age 12-24 by Hong Kong Youth Association to learn how youth use mobile device (Youth Research Center, Hong Kong Federation of Youth Groups, 2010). The Google and Social Networking Sites are gradually hijacking library users in terms of providing them with information needs. The finding suggests that libraries should redirect their effort and face the reality of the need for mobile services.

Furthermore, the study revealed that library user preferred the use of mobile device in information search because of the ease of operation of mobile device and easy access to information. Other preferences were consistent navigation on every page, simple and tidiness of page, wordings easy to understand, rich in information

and colorful. This finding implies that academic libraries should take into account all these preferences in providing information services through mobile technology. Library users would be more comfortable and satisfied with the use of mobile technology if ease of interaction and use, attractiveness, context and content are all incorporated in information services provision through mobile technology. This finding also revealed that none of the academic libraries presently provides information services through mobile technology despite the high rate of possession of mobile devices by their clientele. Therefore, library users have learnt to patronize other channels instead of the library.

Nevertheless, this finding suggests that academic libraries resume their obligation to providing information services to the users in the manner most useful and accessible. Further study on what library users would want their libraries to offer in terms of information services through mobile technology revealed that update of current acquisition and current awareness services was priority for most library users. Others include Selective Dissemination of Information, Query answers through mail and self-help services. This finding signifies that library users are willing to adopt mobile technology in the provision of library information services if it meet the information needs of the users.

Lastly, findings in this study reveals that there are certain factors that hinders the provision of information services through mobile technology which are network access, cost of provision of services, complexity of mobile web design, scarcity of material and resources and lack of personnel. The most significant factor, which is network access, is peculiar to African settings. This has

Conclusion

Academic libraries are expected to serve the purpose for which they were established, which is to be the intellectual heart of the educational institution. Since the possession of internet capable mobile devices is prevalent among library users and their information need always on the rise; it becomes justified for the provision of information services through mobile technology. Academic libraries should see it as an opportunity to serve their clientele better and therefore, adopt mobile form of service since their community is willing to embrace it.

Recommendations

This research has generated the following recommendations from the researcher as follows:

- Academic libraries should consider the developmental process of adopting mobile technology in the provision of information services.

implication for Information Technology Policy in Nigeria and the need for improved infrastructure in this direction. Another significant factor which is cost of provision of services is concomitant to the funding policy of libraries in the country and as such it implies that adequate and sufficient funds should be at the disposal of libraries if mobile technology is to be adopted.

SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary of Findings

The major findings in this research include:

- That, library users possess internet capable mobile devices
- That, library users search for information through their mobile devices from different sources
- That, library users prefer mobile devices in information search for ease of use, ease of interaction, content, context and attractiveness
- That, academic libraries have not adopted mobile technology in provision of information services
- That, library users are willing to adopt the use of mobile technology if used to provide information services.
- That, library users perceive hindrances to the provision of information services through mobile technology.

- Academic libraries should liaise with their clientele to enable them know their priorities in information services provision through mobile technology.
- For Academic libraries to remain indispensable, it should provide information services in forms that are more likely to be accessed easily by the clientele.

Suggestions for further research

The researcher suggests that other academic libraries be selected for this study. The research could also be extended to other types of libraries (e.g. public libraries, school libraries, and special libraries). Further research could also be done on a wider sample (respondents).

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