Investigation of the Mobile Resource Settings in University Libraries

Masinde Johnson Mulongo
Master of library and information science, College of Information Management, Central China Normal University, Wuhan, Hubei, China
masindelitho@gmail.com

Abstract

This study investigates the mobile resource settings in a number of Academic libraries. The survey is imperative as it can provide a current and lucid picture of Academic libraries' mobile service experiences; contributing to clear, superior and wide-ranging generalizations on mobile resource implementation and the notable gaps that should be addressed to ensure mobile library user needs satisfaction. The study employs systematic random sampling to select a sample of 15 University libraries. Through in depth web analysis, the researcher examines each of the University libraries' mobile resources. The findings indicate that all of these libraries offer at least 8 of the 9 categorized services. The 9 categorized services are mobile access to the library catalogs, databases, electronic books, quick response codes augmented reality, text messaging services, and mobile applications, mobile websites and mobile access to instruction services. The Academic libraries also offer the resources in multiples and their full websites are responsive to both mobile and desktop browsers; a clear indication of responsive design.

Introduction

A Mobile library resource is that information service included in the mobile device that is deemed meaningful to clientele instead of that which is conventionally meaningful to the library[1]. The Mobile resource setting's pro of mobility and accessibility has led to its augmented adoption in different spectrums with literature review perceiving it as the fasted ever adopted form of technology. The concept has been termed the latest form of technology to enter Academic libraries' mainstream and the need of the hour if Academic libraries are to keep pace with contemporary society[2,3].

Even with the numerous pros' that come with the mobile culture, implementation has not been wholly uniform with a number of Academic libraries still green on the technology. A good example is Academic libraries in Croatia which did not have any form of mobile service as of 2014[4]. The most affected libraries are however those in developing nations [5]. The mobile services being offered too have no prevalent predictability; a clear intimation that Academic libraries do not have a basic framework for implementation of the services[6,7]. Previous research however alludes to mobile websites, mobile applications, mobile access to catalogs and databases, electronic books, text messaging services and quick response codes, augmented reality and mobile library instruction as the predominant and most repeatedly cited mobile library service categories[9]. For instance the authors mention the services as follows:

"The most common mobile services discussed in the literature are mobile friendly websites or apps, mobile friendly access to the library's catalog and databases text messaging services, QR codes, augmented reality, e-books, and information literacy instruction facilitated by mobile devices" .

In the same vein the researcher seeks to ascertain the presence of these service categories in the selected University libraries.

This investigation emanates from prior studies that examined how Canadian and United States University libraries had responded to the hastily evolving mobile milieu[6-9].

The Mobile Resource settings in University Libraries: Researchers in the mobile library world are undertaking investigations perpetually to help keep abreast of the hastily evolving mobile setting. The studies mention the ubiquitous and indispensible nature of mobile devices as one of the rationale behind academic libraries prompt implementation of the services[10]. Academic libraries more so in the developed countries such as United States, China and Canada have made tremendous strides in the adoption of mobile services[7,8,11]. In China for instance, at least 90% of Academic libraries under Project 985, (A Chinese government initiative with the aim of transforming Chinese Universities into world class Universities) offer some form of mobile resource[7]. In Canada the observations are no different as every academic library has or plans to implement the mobile library service[11,12].

The implementation has not however been uniform as research quotes some of the academic libraries as still green on mobile culture. A good example is Academic libraries in Croatia which did not have any form of mobile service as of 2014[4]. The most affected are however academic libraries in developing nations[5].

The tremendous development of mobile services in industrialized counties is not being reflected in developing nations. Technology in the form of computers and internet access, and even electricity, is scarce or absent in developing nations. The Academic libraries are completely in the dark and still use the card system to serve users. Very few academic libraries have adopted the integrated management systems. The mobile library concept is still an imagination far from reality in developing countries[5].

As Academic libraries implement mobile services, some studies have dwelled into the most predominant and probable mobile service categories as a guide to the implementation process. For instance, a study on mobile resources in top 100 university libraries mentions mobile websites, mobile applications, augmented reality and Quick response codes, reference services and mobile library instruction, mobile access to library catalog, library databases and mobile access to the library's electronic books as the commonest and most predominant[9]. These resources are categorized either as traditional or those created specifically for mobile devices. Traditional library resources are mobile resources tailored to be accessible through mobile devices. It is not however possible to tailor all the resources to the mobile device. Library service personnel ought to choose only those they deem meaningful to their users.

Another study that investigates whether mobile services are meeting the information needs of users categorizes the services into two main classes; Primary and secondary access[6]. Primary access denotes such service categories as mobile applications and mobile websites that are used to access other mobile services such as library hours, group study booking, and direction and account services. However, secondary access is further subdivided into two; passive and active access. Passive access concerns passive information of the library such us hours, directions or maps, contact information, library account access, social media links and computer availability. Active access on the other hand delineates active functions of the library such us mobile library catalogs, mobile access to library databases, Ask-a-Librarian services, subject guides, and course reserves.

Conversely, A study on Canadian academic libraries and the mobile web categorizes the services into two; mobile websites and mobile applications[8]. The study further conduct searches in the two categories to ascertain the kinds of resources present. The services identified include library catalog, contact information, library hours, library location, users' account access and library news, main library website links, references services, computer availability, group study bookings and feedback information, electronic databases, workshops, course reserves, bibliographic management software, full-text article finder, social networking and frequently asked questions. These studies indubitably demonstrate that there is still uncertainty in implementation of mobile resources in Academic libraries. The resources being offered have no prevalent predictability.

Methodology

The study conducted web visits to ascertain the kinds of mobile service categories offered by the University libraries and how the services were being offered. The University libraries were selected from the M-Libraries page through systematic random sampling. The findings were then interpreted to form a thought through and current picture of Academic libraries' mobile service experiences.

Participants: A modified systematic random sampling technique was employed to select 15 from a possible frame of 134 University libraries on the M-Libraries page[13]. The 134 University libraries were all divided by 15 (the sample size) to attain a sample fraction of 9. The sampling fraction (9) was then used as a constant difference among the subjects; hence the selection of every 9th participant to come up with a sample size of 15. The 15 Academic libraries are: i. University of Illinois libraries, ii. Cambridge University libraries, iii. Cornel University libraries, iv. McGraw Hill University libraries, v. Ryerson University libraries, vi. Toronto University libraries, vii. Iowa State University libraries, viii. University of Baltimore libraries, ix. California State University, Monterey Bay, x. Ball State University Libraries, xi. Massachusetts Institute of Technology Libraries (MIT), xii. Indiana University Libraries, xiii. University of California Irvine Libraries, xiv. Harvard University libraries, xv. Michigan State University Libraries.

Systematic random sampling technique was preferred because it was the most suitable method of selecting the participants owing to the fact that it ensures fairness and generality as the population is evenly distributed. It is also less cumbersome when compared to simple random sampling since the whole sampling frame is not directly involved.

The M-Libraries page is a comprehensive list of both mobile services and University libraries offering mobile resources. The page is updated from time to time to keep current with the hastily evolving mobile environment. The page is frequently used to help identify the kinds of mobile services being offered by University libraries and the University libraries offering the services[8]. For instance Robin, Canuel & Chad Crichton mention the value of the M-libraries page as follows: "Originally, institutions were selected for inclusion in that survey based on the list of academic libraries offering mobile interfaces or applications on the M-Libraries page of the ("Library Best Practices Wiki" 2010)." Its credibility was therefore assured.

Procedure: Web visits were conducted from November 12-23 2015. Each of the 15 Universities' library webpage was thoroughly analyzed for the most predominant mobile services cited in surveys under the following categories: i. Mobile access to catalogs, ii. Mobile access to databases, iii. Mobile access to electronic books, iv. Quick response codes, v. Augmented reality, vi. Text messaging services, vii. Mobile applications, viii. Mobile websites and ix. Mobile library instruction.

The investigation was based on a review of the universities' library homepage as well as the main Universities' webpage for links that would lead to mobile interfaces and other mobile resources. Where no link was established, a search was conducted for the term "mobile" in every accessible site search icon on the University's homepage. The findings were then explored for the presence of the resources. An investigation was also executed on iTunes store and the Android market to establish whether there were any other resources that would not have been advertised on the Universities' mobile web.

Even with the actuality that web visits proffer a concrete and coherent picture of mobile resource settings; this technique has its own short comings. Foremost, only those mobile resources that appear on the library WebPages are ascertained. Some mobile services such as library instruction service and user account service do not appear on the webpage. Such resources usually go unnoticed. Library WebPages are also known to provide only a snapshot of the resources being offered as libraries maybe implementing or planning to implement other mobile resources. Password protected mobile resources meant for users and faculty are also not accessed. To address these shortcomings another comprehensive survey that would engross library service personnel is mandatory.

Results and Discussion

Study findings present convincing results that Academic libraries have come of age and entered the fray of what has truly become a mobile revolution. All the 9 categorized services are predominant among the 15 University libraries substantiating previous investigations that projected a full mobile revolution in the coming future[14]. As per the observations in Figure-1, nearly all the 9 categorized services are offered by all the 15 University libraries. Mobile websites, mobile catalogs, text messaging service, mobile access to databases and mobile library instruction, electronic books and augmented reality are offered by all the 15 (100%) libraries. 14 (93.2%) out of the 15 offer Quick response codes while mobile applications are offered by 11 (73.2%) out of the 15. The figure below shows percentages of the Academic libraries offering a particular service as per the categorized services.

The findings as well indicate that of the 9 categorized services, every University library offers at least 8 of the services. Another key observation is that 10 (67%) out of the 15 University libraries offer all the 9 services while 5 (33%) of the 15 offer 8 of the 9 services. The average service delivery for the 15 university libraries is 8.

The observations are a clear intimation that a good number of University libraries offer multiple mobile resources with mobile websites, mobile catalog, and access to electronic books, databases, and mobile instruction, text messaging and augmented reality being offered by all the 15 University libraries. The resources are also comparable. For instance, through the mobile browser, the researcher was able to access instruction services of the 15 libraries; all offering brief and precise services. Some libraries also invite users for full classes on the same.
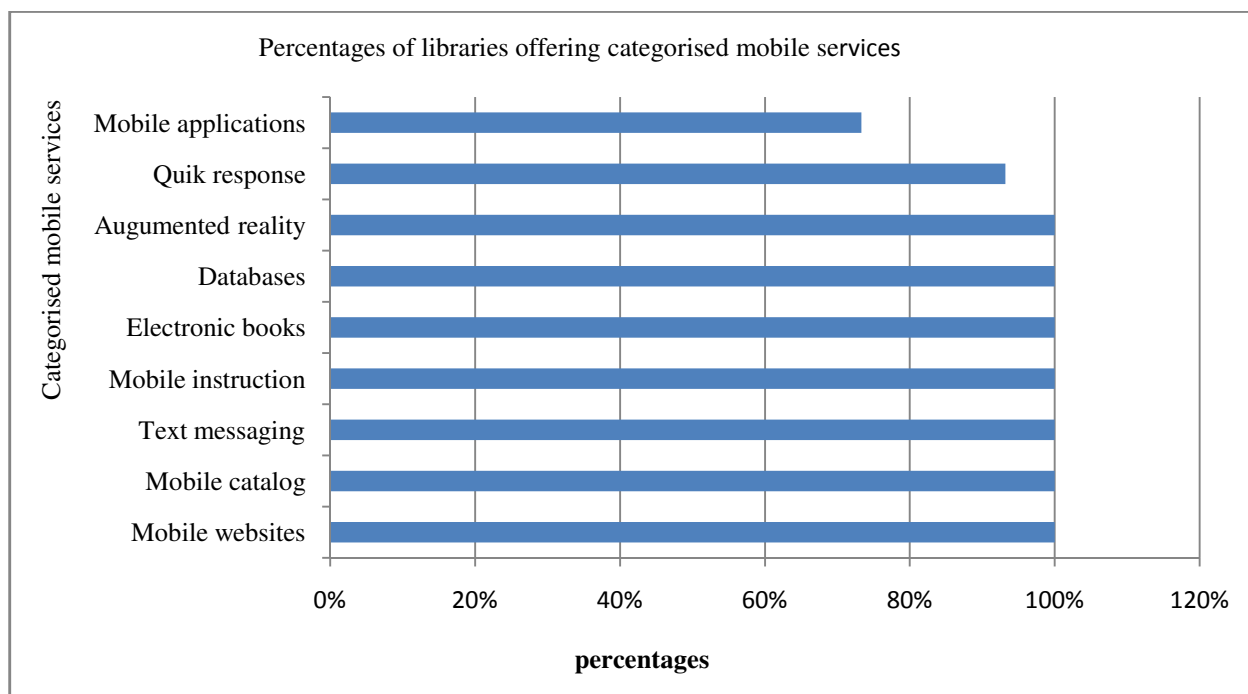

Figure-1
The categorized mobile resources being offered by the 15 University Libraries

The four University libraries that did not offer mobile application resources have icons on their mother Universities' main mobile applications. Students and faculty members are still able to access library resources through these applications. The rationale behind creation of icons on the mother Universities' main mobile applications rather than having own applications would be to minimizing on costs, time and expertise required in creation of the services. The Universities' management would have also wanted to employ one universal application for all the key services.

The findings are in line with previous studies which mention library services as shifting from desktop to mobile computing speedily; with a forecast that at least every library would offer mobile resources in the coming future[8].

Services offered on mobile websites: Mobile websites have repeatedly been cited as the most predominant of the mobile library service categories; probably because they are much easier to implement than other mobile resources such as mobile applications[8]. For instance Robin, Canuel and Chad Crichton mention mobile applications as follows: "Consequently, many libraries will no doubt begin with a mobile website to establish their mobile web presence: and establishing such a presence should be a priority" .

Ergo, in addition to exploring whether the 15 Academic libraries had mobile websites; the study further investigated the resources offered on the mobile websites of the University libraries. The results indicate that 100% of Academic libraries include library hours and library location in their mobile websites making these the most predominant. Access to full website, Search the catalog, Contact us and Ask the librarian are also predominant with the former receiving 14 (93%) while the other 3 received 13(87%) each. The other common services are Social media links 11 (80%), Mobile databases 11(80%), News and Events 10(67%), Group study booking 9(60%) and computer availability 9 (60%). The least common service is my account 4 (26%). The findings are illustrated in Figure-2.

These observations are intriguing as; overall, they indicate lower percentages for specific services than the findings in question 1 (categorized services). For example, in question 1, mobile databases were offered at 100% while in mobile websites, the same services received only 80%. The same findings are reflected in mobile catalogs which received 80% in mobile websites and 100% in question 1 (categorized services). The observations would be as a result of responsive design of the websites {14 (93%) offer full library web access on mobile devices} that has enabled full access through mobile browsers.
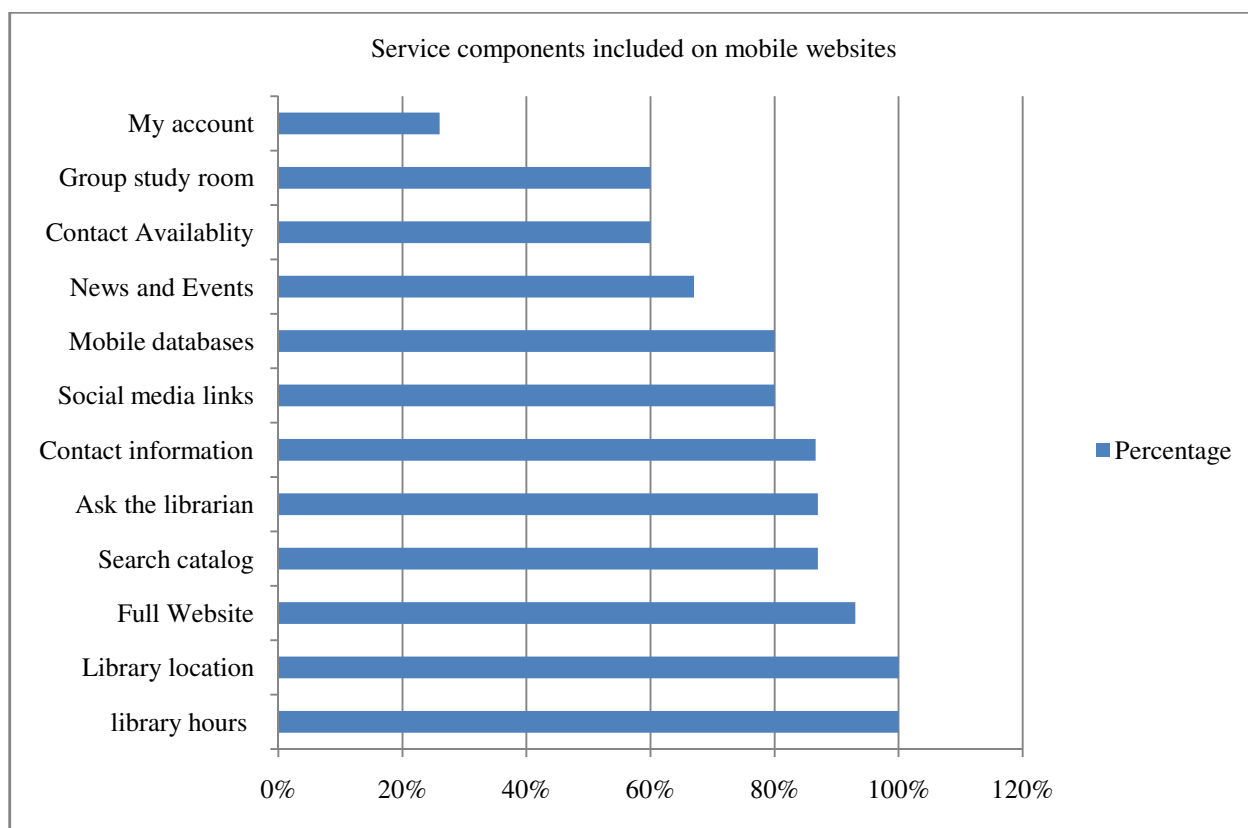

Figure- 2
The services on mobile websites and percentage of Academic libraries offering them

The study also noted the predominance of social media links in mobile websites of Academic libraries (Received 11, 80%). The findings would be as a result of the popularity of the resources among young people who happen to be the main clientele of the libraries creating an avenue for academic libraries to capitalize and reach their target population[15].

My account services recorded the lowest percentages probably because the resource is password protected; consequently inaccessible to the researcher. The observations suggest that Academic libraries with the mobile websites are more likely to offer other multiple resources such as catalog access, database access etc.

Popularity of social media as a reference service: Social media is fashionable and popular among young people[16]. Therefore, owing to the popularity of social media among young people who happen to be the main users of Academic libraries; the study sort to ascertain how the service as a medium of reference services compares to other forms of reference services in the 15 Academic libraries. The other predominant reference services in the libraries are Chat services and text messaging.

Study results show that all the 15 Academic libraries have embraced social media as a medium of reference services. Same is to text messaging as all the libraries also offer the resource. 3 (20%) of the libraries however do not offer chat services. Figure-3 illustrates the percentage of University libraries offering each of the three mobile reference services.

Social media and text messaging are the most popular among the libraries as all the 15 University libraries offer the two resources. These observations indicate that many libraries see value in both resources. Social media platforms usually have a mobile version available that the libraries can take advantage of. Young people have also been known to spend long hours on social media platforms probably another reason as to why the resource is popular in Academic libraries[15].

Chat services are not predominant possibly because of suppressions from text messaging as both resources have similar functions.

Service variations: The researcher noted some mobile resource variations among the 15 University libraries, a pointer fact that Academic libraries do not have a basic framework for implementation of the resources[7,9,17]. For instance, ask us, contact information and a times Ask the librarian refers to a similar service in some libraries while in others, different levels of library service personnel are reached depending on service selection. For example, University of California Irvine's Ask the librarian service also refers to ask us while at Indiana University libraries, Ask us and Ask the librarian are two different services. Ask the librarian service in a number of libraries is also offered either through phone, text, email chat or IM (instant messaging) as is the case with University of Illinois library. Some libraries are however specific on the kinds of medium to use. Harvard University library advises its users not to use chat services.
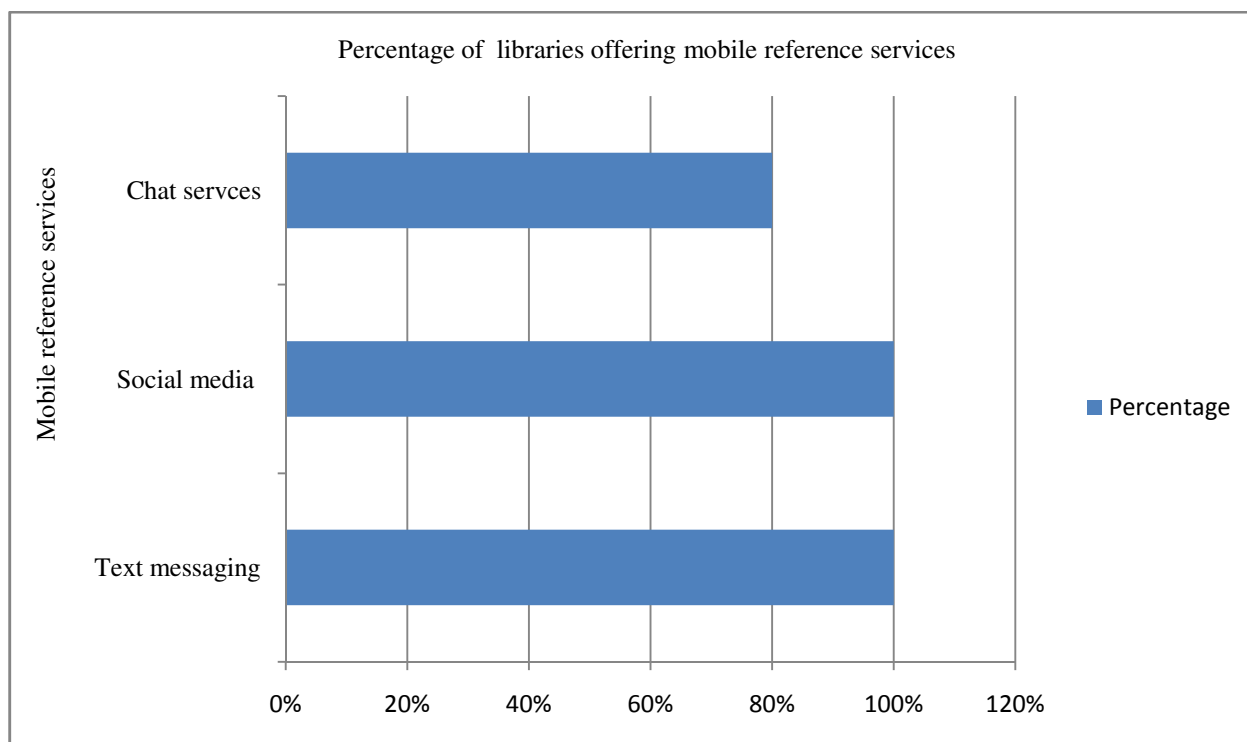

Figure-3
The percentage of University libraries offering each mobile reference service

Although some libraries allow users to access their accounts, and renew information resources, others restrict such services prompting the researcher to make presumptions as to whether they offer the services or not. For instance, Iowa State University library allows users to access their account services vie mobile devices, whereas Cornel University library restricts the service and instead requests for eligibility status before proceeding to access such services.

Maps also refer to location and vise versa. Although some maps have directional help, a number are linked to Google maps. Others provide general Universities' maps. Some libraries also provide virtual tours around the library while some provide only directions. A case in point is University of California Irvine that provides virtual tour services around the library whereas Toronto University libraries offer location services. Toronto University libraries also use location to imply directions whereas California State University uses Maps to denote the same service.

It was also observed that some libraries provide staff directories with pictures, email addresses and phone numbers whereas others provide only phone numbers. Others even provide a single phone number probably for the main reception desk. For instance, California State University Monterey Bay provides a Staff directory with both phone numbers and email address while Michigan State University library provided a single phone number, probably for the reference desk.

Discussion: As per the findings, it is worth noting that University libraries have made tremendous strides in the implementation of mobile services with the resources at present ubiquitous. Not only have the libraries implemented the resources but are also offering them in multiples. For instance, all the libraries offer at least 8 out of the possible 9 service categories. The predominant services are Mobile websites, mobile catalog services, and text messaging services, mobile instruction services, mobile access to databases, electronic books and augmented reality. The libraries also offer other mobile resources such as library hours, library direction/maps etc. The resources are generally comparable, advanced; refined and easy to access both on apple and android products, a clear indication that mobile technology has come of age in University libraries.

Even though mobile resources are ubiquitous in Academic libraries; the investigation reveals that mobile applications and quick response codes have not been fully implemented. For instance Massachusetts Institute of technology (MIT) library, University of Cambridge's library and Harvard University library do not have mobile applications. The libraries have however created icons on their mother Universities' mobile applications. Mobile applications are more resource intensive than other mobile services such as mobile sites. Their content is packaged and designed in a manner suitable for the mobile environment; an explanation as to why the libraries have created icons on their mother Universities' mobile applications. On Quick response codes, University of Baltimore library is the only Library that does not offer the service. The researcher recommends another Survey that would engross library service personnel to ascertain whether the service is password protected or the library is in process of implementing it. In general, mobile applications and quick response codes were offered at 73.2% and 93% respectively another proposition that the resources are predominant in University libraries.

This investigation as well shows that the mobile library world is evolving rapidly; with new-fangled superior services being launched concurrently. A case in point is the design of fully responsive websites to both mobile and desktop browsers that has enabled access to full library websites on mobile devices. Michigan State University libraries, University of Illinois Libraries, Harvard University libraries, Ball state University libraries, University of California Irvine libraries just to mention but a few have their full websites responsive on both mobile and desktops browsers. This is just but one of the innumerable revolutions taking place in the mobile library world. This study therefore can only hold waters at this particular period of time. The author recommends perpetual surveys to help keep abreast of the speedily evolving mobile environment.

The findings additionally show that Academic libraries face technical challenges when offering mobile resources. Some of these challenges include proxy issues when users access the resources off campus, compatibility issues with different browsers and lack of timely Information communication technology support. A case in point is University of California Irvine library that offers a-connect from of campus service on its mobile website, a clear intimation that clientele encounter technical challenges when accessing mobile resources of campus. Academic libraries ought to come up with a set of measures on how such shortcomings should be addressed to ensure clientele access the resources anywhere and at anytime with no hindrances.

As is experiential in the investigation, Academic libraries have not mobilized all their resources. Users' access limited numbers of mobile resources as per the implementation policies of the library. Academic libraries must ensure the challenge is addressed as users would like to access each and every service at their own expediency.

Conclusion

This study clearly demonstrates up-to-the-minute modernized mobile resource patterns of Academic libraries in the digital world, an inkling that mobile services have come of age in Academic libraries[18, 19]. The websites of the Academic libraries have undergone responsive design to enable access on both desktop and mobile devices. Their however still is the need to develop an accord for adoption of mobile services as is clearly demonstrated in the study.

References

1. Gregory V. (2011). Collection Development and Management for 21st Century Library Collections: An Introduction. Neal-Schuman Publishers, New York London.

2. Lippincott J.K. (2008). Mobile technologies, mobile users: implications for academic libraries. ARL, 261(8), December, www.arl.org/bm doc/arl-br-261-mobile.pdf.

3. Yee A. (2012). Mobile technology: academic libraries in Australia and beyond. Paper presented at VALA.

4. Ivana Pažur (2014). Attitude of the Rudjer Boškovic Institute's scientists to the small screen mobile devices library services: A user survey. *Library Hi Tech*, 32(4), 628- 644.

5. Laura Bolton Palumbo (2014). Mobile phones in Africa: opportunities and challenges for academic librarians. *New Library World*, 115(34), 179-192.

6. Catharine Bomhold (2014). Mobile services at academic libraries: meeting the users' needs. *Library Hi Tech*, 32(2), 336 – 345.

7. Yang and Gui (2014). Factors influencing academic library users' intention to use mobile systems: A comparison of current users and potential adopters. *Chinese Journal of Library and information sciences* (Quarterly), 7(3).

8. Robin Canuel and Chad Crichton (2011). Canadian academic libraries and the mobile web. *New Library World*, 112(3), 107-120.

9. Liu and Briggs (2015). A library in the palm of your hand: mobile services in the top 100 university libraries. *Information Technology and Libraries (Online),* 34.2, 133-148. doi: 10.6017/ital.v34i2.5650.

10. Johnson L., Levine A., Smith R. and Stone S. (2010). The 2010 Horizon Report. The New Media Consortium, Austin, Texas.

11. Thomas A. Peters (2011). Left to Their Own Devices: The Future of Reference Services on Personal, Portable Information, Communication, and Entertainment Devices. *Reference Librarian*, 52, 88- 97, doi:10.1080/02763877. 2011.520110.

12. Alan W. Aldrich (2010). Universities and Libraries Move to the Mobile Web. *EDUCAUSE Quarterly*, 33(27).

13. Wiki: M-Libraries (2010). Library Best Practices Wiki: M-Libraries Page. M-Libraries, IBS Success.

14. Griffey J. (2010). Mobile Technology and Libraries -The Tech Set. New York, Neal-Schuman Publishers.

15. L Al-Sharqi K. Hashim and I. Kutbi (2015). Perceptions of Social Media Impact on Students' Social Behavior: A Comparison between Arts and Science Students. *International Journal of Education and Social Science*, Vol. 2(4).

16. Dresselhaus A. and Shrode F. (2012). Mobile technologies & academics: do students use mobile technologies in their academic lives and are librarians ready to meet this challenge. *Information Technology & Libraries*, 31(2), 82-101.

17. Chang Chiao-Chen (2013). Library mobile applications in university libraries. *Library Hi Tech*, 31(3), 478-492.

18. Ashford Robin and Rolfe Alexander, (2013). Serving Your Mobile Users: the Essentials. Faculty Publications- George Fox University Libraries, Paper 12. http://digitalcommons.georgefox.edu/libraries_fac/12.

19. Mairn C. (2013). Practical Mobile Web Design. Peters, T.A. & Bell, L. (eds.). The Handheld Library, mobile technology and the librarian, Santa Barbara, Libraries Unlimited.