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Global Trends in Mobile Technology and Their Impact on Your Library

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Introduction

In the early days of the Internet, logging on was a complicated process with FTP protocols, gophers and telnet. The introduction of the Netscape Navigator and Internet Explorer browsers in the 1990's allowed access to the World Wide Web (WWW) at the click of a button. With the development of Wi-Fi and Internet accessible devices, users were no longer tied to a desktop computer that is plugged into the wall. Because of their portability, Wi-Fi and 3G/4G network access, longer battery life, and other features, mobile devices such as cell phones, iPods, tablets, Kindles and other portable e-readers can go almost anywhere people can.

In early 2009, a literature search on mobile devices in libraries produced few results and most were several years old with a focus on PDAs in medical libraries. Medical users were early adopters of mobile devices, because of the accessibility of medical records, and drug and treatment information. One year later, a literature search produced a number of current articles indicating the growing interest in mobile devices and recognition of the potential impact on libraries. The growth and advancements in mobile technology has implications for both U.S. and international libraries with usage crossing racial and economic lines.

Smartphone ownership is rapidly increasing, and owners are eager to use them in new and unique ways. Although libraries want to offer mobile services to their patrons, many face budget cuts and fewer staff. How can they provide additional mobile services under these conditions? This paper will examine some global trends in mobile usage and discuss some ways mobile services can be offered without spending a lot of money or time, and not requiring much technical expertise. Results of a survey on how ACL libraries are utilizing mobile technology is also included.

Review of Worldwide Mobile Trends

The importance and potential impact of mobile computing has been recognized by technology trend analysts. The Horizon Report, which addresses major technology trends in education, has cited mobile technology as one of the top trends every year since 2008 (Horizon Reports, 2008; Johnson, Levine, and Smith, 2009; Johnson, Levine, Smith, and Stone, 2010; Johnson, Smith, Willis, Levine, and Haywood, 2011). In the same year, the Pew Internet and American Life Project predicted that by 2020, mobile devices would become the primary means of web access for the world's population (An derson and Rainie, 2008, p. 3). According to *On Device Research*, in 2010 there were six countries in Africa and Asia (see Table 1) where mobile access was *already* predominant for at least 50% of the users (Hill, 2010, Screen 8). In Egypt, 70% are mobile-only. This study defined "mobile only" as those who never access the Internet with a desktop or do so less than once a month. Users in more "developed" countries such as the U.S. are less likely to be mobile-only than in developing countries.

Table 1. *Mobile-Only Web Users* (Hill, 2010)

Country	Percent
Egypt	70%
India	59%
South Africa	57%
Ghana	55%
Kenya	54%
Nigeria	50%
Indonesia	44%
Thailand	32%
China	30%
United States	25%
United Kingdom	22%
Russia	19%

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ABSTRACT

Contrary to the impression of many Americans, some less technologically developed countries are more actively using mobile technology than we are. As mobile technology is exploding in both our personal and professional lives, this is impacting our libraries and our users as they reach out to us with their mobile devices. This article will examine some of these trends and discuss ways that libraries can begin to institute mobile services even if they do not have a lot of funds or technical expertise. Results of a survey of how ACL libraries are using mobile services in their libraries are discussed.

The growth and advancements in mobile technology has implications for both U.S. and international libraries with usage crossing racial and economic lines.

The 2011 Millennial Development Goals Report indicated that 90% of the world's population has access to a mobile signal and there are 5.3 billion mobile cellular subscriptions to 3G networks (United Nations, 2011, p. 63). Gartner predicted that 85% of the new phones sold in 2011 will have internet access (Gartner, 2010). In the United States, 87.4 million people owned smartphones in September 2011 representing an increase of 12% in the three previous months ("comScore Reports," 2011).

User surveys have documented the increase of ownership and expanding use of mobile technology. According to the EDUCAUSE Center for Applied Research (ECAR), student ownership of smartphones in colleges and universities across the U.S. jumped from 51.2% in 2009 to 62.7% in 2010 (Smith & Caruso, 2010, p. 45). In 2009, 29% accessed the web daily on their phone and in 2010, daily use had increased to almost half (49.5%) of the group (p. 49).

In the U.S., 'mobile only' use skews towards lower incomes. Mobile users with a household income of under $25,000 per year are 19% more likely to not use, or rarely use the Internet on a desktop (Hill, 2010, Screen 11). Other research also supports this trend.

According to the Pew Internet and American Life Project report *Mobile Access 2010*, African Americans (64%) and English-speaking Latinos (63%) are more likely to use wireless internet than whites (57%). These minorities also own more cell phones: African Americans and Latinos 87%, whites 80% (Smith, 2010, pp. 3, 9). Nielsenwire's report also confirms higher ownership of both mobile phones and smartphones by minorities (Kellog, 2011).

Mobile Services in Libraries

The capabilities of today's smartphones continue to expand far beyond the basic functions of making phone calls and sending text messages. Although feature phones have increasing functionality, smartphones can utilize advanced computing capabilities. Smartphones allow users to access the internet, send email and instant messages, take pictures and video, utilize GPS, read ebooks, watch videos, play games, and listen to music. Specialized apps expand these capabilities even more.

As smartphone owners find new ways to use their devices, they continue to push the envelope to find more applications. As the research has already shown, they are accessing the internet more, and libraries can facilitate their users' mobile access to library websites. Library database vendors have recognized this trend and many of them offer a mobile version of their website in a stripped-down format. Libraries can also create a link on their home page to the databases that are already providing mobile formats. Linking to proprietary databases will require authentication even in a mobile format. Here are a few databases that have a mobile web page. This list is not meant to be exhaustive.

- American Institute of Physics (AIP)
- Cambridge Journals Online
- Ebscohost
- Hoovers
- IEEE Xplore
- JSTOR
- Lexis Nexis
- Project Gutenberg
- Psychiatry Online
- PubMed
- Questia
- Refworks
- Safari Books Online
- SciVerse
- Scopus
- Social Sciences Research Network
- Summon
- Westlaw

There are other mobile services libraries can offer their patrons. Some options may require a significant expenditure, others can be implemented at a much lesser cost although lower cost may mean increased staff time to implement the service. Here are some mobile services libraries are offering.

Mobile catalog

Although a mobile catalog can be developed in-house, the simpler, but possibly more expensive method is to purchase one from your integrated library system. Innovative Interfaces offers AirPAC and Polaris has Mobile PAC. SirsiDynix offers an iPhone app called BookMyne.

Tours

One common way for libraries to add mobile services is through audio tours. The tours may utilize GPS coordinates, QR codes (see section on QR codes below), or other ways to indicate points of interest. Some libraries provide a mobile device for their patrons to use; others allow the patron to download the tour on their own device.

E-readers and other mobile devices

Libraries are experimenting with circulating different types of mobile devices including e-readers and iPads. Others have digital content that can be downloaded onto the patron's own device.

Check computer availability

Patrons can use their mobile devices to find out how many computers are open in various parts of the library.

Send call number from the catalog

When a catalog record is opened, it will display a link to send a call number to the patron's phone instead of needing to write it down or print it off. Each call number must be done separately and it may require multiple steps making it convenient if multiple items are needed.

Podcasts & videos

Libraries can provide content in the form of podcasts or videos that can be downloaded to the patron's mobile device.

Reserve study rooms

Access to a room booking system can be provided for mobile phones.

Circulation services

Many patrons are interested in receiving text messages to inform them of overdue books, holds ready for pick-up or to renew their books online. Some ILSs such as Innovative's AirPac provide some of these services.

Ask-A-Librarian

Text messaging and IMing the reference desk are very popular services.

Twitter

Twitter is a natural for mobile communication and libraries can utilize it to keep their patrons informed.

Another way to add mobile services is with QR Codes (Quick Response Codes). QR codes are scanned with a barcode application on your phone and they link to additional online material. If you don't know what they are, you are not alone. A May 2010 survey of the Association of Christian Librarians discussion list revealed that 28% of the respondents were not familiar with them. Once you become aware of them, you will see them everywhere. See Figure 1 for an example.

Figure 1. *This QR code connects to the James C. Kirkpatrick Library website*

QR codes are simple for the library to create with QR code generators, and for the patron to use with barcode scanners that may already be available on their phone or downloaded from the internet if they are not. The patron uses the app to scan the QR code for options to open the URL, email it, or save the image. QR codes can also link to a text message or images rather than a website. When creating the QR code, it is helpful to use a shortened URL resulting in a simpler image that is easier for scanners to read.

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Use in a library is limited only by your imagination. Place them anywhere you would like to give additional user information by linking you patrons to a website, a map, text, or images. Many of the mobile services already mentioned could be adapted to a QR code such as library tours with the QR codes at various points around the library, checking for computer availability or booking study rooms. Here are some other uses:

Event Advertising & Displays
The QR code will provide additional information about the event or display. One good use at my own library would be the display cases. Each spring we have a Children's Literature Festival with over 40 children's authors and illustrators participating. Pictures of the participants and their works are included in the library display cases. A QR code in each display could connect the viewer to the author/illustrator's web page or to our catalog listing of the books we have in our collection.

Text / Email / IM
Using QR codes for Ask–A–Librarian service simplifies the process for the user. For texting, it eliminates the need to input the text number. That information is automatically generated when the code is scanned and the patron can go directly to their question.

Instructions
If you have a new scanner or other equipment for which users may need instructions, post a QR code to connect the user to the instructions.

In the catalog
A QR code on an item record could open up a map of the library to show the patron where the material is located.

In journals or on journal shelves
This could link the patron to full text versions of a journal title in the library's databases.

In books
Link to information about the author, other works by the author, reviews of the book, etc.

For registrations

The JCK Library recently had a Murder in the Library event and the participants could scan a QR code on the advertising posters and flyers to preregister in Survey Monkey.

Although QR codes are growing in popularity, many people are still not familiar with them. If you are interested in implementing then in your library, it would be helpful to educate your users. Put up simple posters with information about what they are and how patrons can use them, and don't forget to mention them in you instruction sessions, and on your website.

Two of the librarians at Kansas State University recently conducted user surveys on the use of QR codes. They concluded that QR codes should only be used if they will provide access to additional information. If the link simply duplicates the original print information, it is not helpful and it can even be frustrating. Consider what other information they might be interested in. (Coleman, J, & Lo, L. Putting QR Codes to the Test. Brick & Click presentation, November 4, 2011).

Mobile Web Pages

Standard web pages contain too much information to view easily on the small screens of mobile devices and scrolling across columns is aggravating. A page designed for mobile viewing needs to be in a simplified format. Barry Bailey (Mobile Devices in the Library, SIDLIT presentation, August 4, 2011) suggests looking at your library home page to decide what your users really need. Most libraries choose some or all of the following items for mobile pages: hours, contact information, directions to get to the library, catalog search, computer availability, Ask–A–Librarian, social networking links, mobile databases, search, news/events, library account, web search and college/university home page.

Mobile web pages can be implemented in several ways. If you have a skilled IT person, a mobile-friendly page can be developed in-house. For libraries that do not have the

staff to do this or prefer not to, there are web-based services such as LibraryThing for Libraries and Springshare LibGuides mobile web page. Some libraries prefer to use an app like Boopsie which is able to integrate with any ILS database. Cedarville University has adopted Boopsie for their mobile catalog.

In their presentation 'Putting the Library in Your Pocket: Creating a Library Website for Mobile Devices,' Fox and Croft give the following suggestions for designing mobile web pages. First, keep it simple as a mobile screen does not have much room and you want your users to easily find and view the information. Then make sure you test it on multiple mobile devices and browsers, get feedback from your users, and challenge your staff to find problems with it. Finally, using a table to format your home page is a good way to organize it ("MLA Annual Conference," 2001, p. 5)

Survey of Mobile Services in ACL Libraries

At the end of May 2011, the Association of Christian Libraries discussion list was asked if their libraries were using mobile services. Although this was not a scientific survey, the 51 responses do provide a snapshot of how ACL libraries are using mobile services as shown in Figure 2.

Although 45% of the respondents indicated that they were not yet offering any mobile services, many of them are. The most common service was a mobile-friendly OPAC (29%). All other responses were less than 20 percent. Mobile-friendly web pages was the next most

popular service, closely followed by a library Facebook widget and downloading ebooks on mobile devices. Text-a-librarian and text-a-call number from the catalog were each provided by 10% or more. The following items were used by 6% or less of the respondents: podcasts, iPod tours, tutorials, Twitter, PDA downloads, SMS hold/pick-up notices, SMS overdue notices, down-loadable maps and guides, and subject directory of mobile content. No libraries were using it for room booking.

The survey revealed that 8% were already using QR codes in their library, but over half were not (see Figure 3). Another 6 % were currently considering their implementation and 2% did not know. Over a quarter of the respondents did not know what they were. ACL libraries are using them to promote their Facebook page, special events such as Game Night, inform patrons about special services and to let them download mobile apps.

Consider what mobile services might benefit your own users and try to meet those needs.

Figure 2. *Most Used Mobile Services*
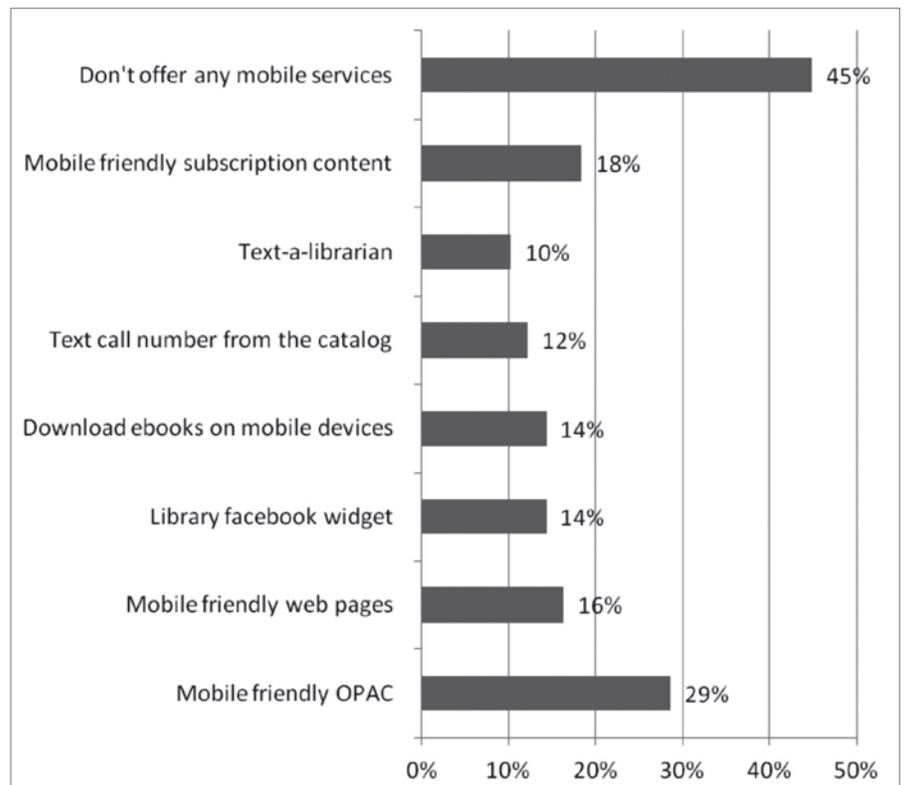
Conclusions

The exponential growth of ownership and use of mobile devices has implications for libraries in both the United States and internationally as mobile use can be even more prevalent in other countries. Libraries interested in developing mobile services for their patrons should start at M-Libraries best mobile practices wiki to learn more about how other libraries are offering mobile services (http://www.libsuccess.org/index.php?title=M-Libraries#Libraries_offering_mobile_interfaces_or_applications). Then consider what mobile services might benefit your own users and try to meet those needs. Although libraries can invest significant amounts of money or time to institute some types of mobile services, especially mobile web pages or catalog access, there are also easy and inexpensive means to implement some basic mobile services. When the cost in dollars or time is small, you can feel freer to start small, experiment and understand that it is ok if all your efforts are not always a rousing success. Learn from your efforts and try something else. ✠

Figure 3. *Are you using QR codes?*
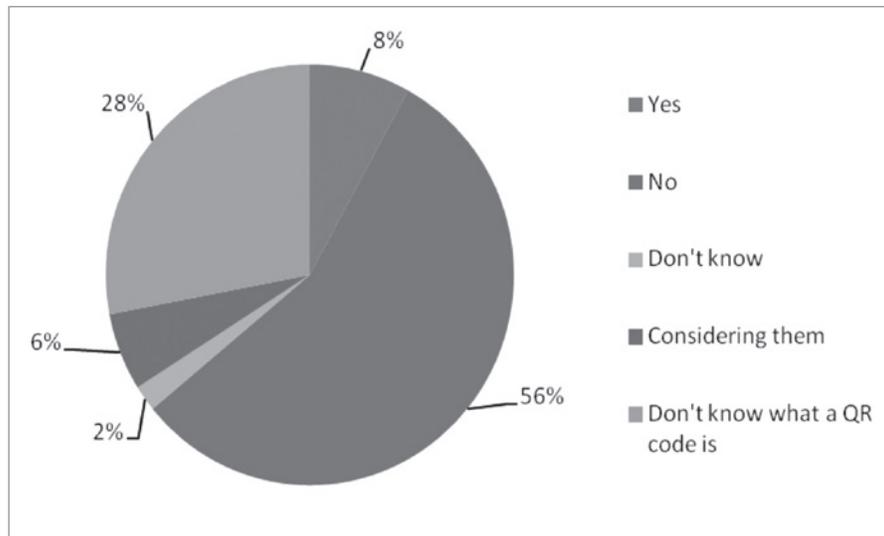
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