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Review Article

Mobile Device Innovations and Library Services

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ABSTRACT:
The use of Mobile device technology has become an integral part of our daily lives. Mobile technology is fast becoming the preferred method for connecting to the Internet, especially for people on the go. Mobile technology and Mobile devices are playing an important role in the educational system. It offers Libraries and Librarians a host of opportunities to reach out to its users and to show the value of their institutions and profession. Librarians must keep pace with this trend and integrate themselves into the mobile realm if they wish to deliver enhanced user services. This paper gives an overview of mobile technology and its application and challenges in library services.

Keywords: *Mobile Technology, ICT, Mobile Devices, Mobile Phones, Libraries, Library Services*

INTRODUCTION:

Mobile technology has revolutionized the day-to-day lives of ordinary people by playing a vital role in the communication of information. Mobile phones do not use wire or cables, but work with radio waves and can be carried about and used anywhere. Before the advent of Information Communication Technology (ICT), communication in the library was done through books, newspapers, microforms, slides, etc. Electronic communication systems began to develop with the increase in scientific knowledge. The use of telephones and computers led to the development of Internet. With the application of telecommunications, an automated library can give more efficient library services to its patrons. The use of social media applications and mobile devices are the latest technologies that academic libraries are taking advantage to enhance their overall service delivery.

Many types of Mobile Operating Systems (OS) are available today for smartphones, including: Android, BlackBerry OS, webOS, iOS, Symbian, Windows Mobile Professional (touch screen), Windows Mobile Standard (non-touch screen), and Bada. Among them most popular are the Apple iPhone, and the newest – Android. Android is a mobile operating system (OS) developed by Google. Android is the first completely open-source mobile OS, meaning that it is free to any cell phone mobile network. Since 2008, customizable OSs allows the user to download applications (apps) like games, GPS, Utilities, and other tools. Any user can also create their own Apps and publish them e.g. to Apple's App Store. The Palm Pre using web OS has functionality over the Internet and can support Internet-based programming languages such as Cascading Style Sheets (CSS), HTML, and JavaScript. The Research in Motion (RIM) BlackBerry is a smart phone with a multimedia player and third-party software installation.

The Windows Mobile Professional Smartphones (Pocket PC or Windows Mobile PDA) are like that of a Personal Digital Assistant (PDA) and have touch screen abilities. The Windows Mobile Standard does not have a touch screen but uses a trackball, touchpad, rockers, etc. (Wikipedia, 2011). Mobile technology has changed the way that we develop websites. It has led to the rise of responsive web design, which is a mobile-first approach to designing websites. This has brought about the introduction of popular responsive framework such

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as "Bootstrap". Wearable technology such as Google Glass, Oculus Rift and GoPro Cameras is starting to emerge as a serious category within the realm of mobile technology (Rawlins, 2016). In an electronic environment, learning and using of mobile technologies such as mobile phones/ smart phones, iPhones, PDAs, iPod are especially boon for the people who are very busy with their work, career builder, and job seekers. The development of technology has given a tremendous growth in the application of mobile technology for information seekers. Today everyone is using this handheld device for text messaging, internet access from their mobiles, e-mail and for doing many interactive activities with various features of handsets. According to a recent survey, the number of mobile internet users in India has reached 371 million by June 2016, and is on the track to cross 500 million users by 2017 (Economic Times, 2016). Technological improvements like cell phones, low cost connectivity and faster data transmission are among the important factors that led to the growing use of mobile devices.

What is Mobile Technology?

Mobile technology is exactly what the name indicates – technology that is portable; it refers to any device that we can carry with us to perform a wide variety of tasks. It is a technology that allows those tasks to be performed via cellular phone, PDA, laptops, etc. A standard mobile device has gone from being no more than a simple two-way pager to being a cellular phone, a GPS navigation system, a web browser, and instant messenger system, a video gaming system, and much more. It includes the use of a variety of transmission media such as: Radio wave, Microwave, Infra-red, Global Positioning System (GPS) and Bluetooth to allow for the transfer of data via voice, text, video, 2-dimensional barcodes and more (Sharma & Sahoo, 2014).

Examples of Mobile devices includes: -

Laptops, Tablets, Netbooks, Notebook computers, Cell phones and Smart phones E-book readers Audio players such as MP3 players Cameras Mobile devices can be enabled to use a variety of communications technologies, including: Wireless fidelity (Wi-Fi) - a type of wireless local area network technology. Bluetooth - connects mobile devices wirelessly. 'Third generation' (3G), 'Fourth generation' (4G), Global System for Mobile communications (GSM) and General Packet Radio Service (GPRS) data services - data networking services for mobile phones. Dial-up services - data networking services using modems and telephone lines. Virtual Private Networks (VPN) - secure access to a private network.

Advantages of Mobile Technology in Libraries:

The following are the advantages of mobile technology in libraries (Malathy & Kantha, 2013)-

- User friendly- Aid Personalized Service
- Ability to Access Information
- Time Saving
- User Participation
- Location Awareness
- Limitless Access
- Access to Print-disabled users

Mobile Phones and Library Services:

The development in ICT has shifted the applications in library from the traditional to hybrid library, then automated library, digital archives stages, Library 2.0 and mobile phone services. Libraries can render new services and provide faster access to its collection with the help of mobile devices (Kumbhar & Pawar, 2014). Mobile technology has come up with the trend "Libraries in hand". Within a very short time, mobile phone devices can access information from the remote sources and can be used as a good alternative for accessing digital libraries. The digital collections can be made accessible through digital library on the mobile phones of users. Now, as Internet access is increasingly being provided wirelessly by satellite, new Mobile Hotspot technology allows libraries to check out the Internet to their patrons. This takes Internet access outside the library walls. With this small mobile device, they can connect to high-speed satellite Internet wherever they go. The Hotspot has a single button, which makes it easy to use. The button creates a local Wi-Fi signal, and the access is controlled by a password. Patrons can then connect their personal computer, tablet or other device to the Wi-Fi signal and access the library's Web site or any

other online resource they choose (Fernandez, 2015).

Libraries of all types must consider what needs to be done to support the technologies their patrons use because increasing number of patrons use mobile technology. Many library users are now also primary mobile users, so a library risk losing this group of users if it does not provide mobile access to its collections and services. Librarians can also be benefitted from using mobile devices when providing outreach and communication with users beyond the library. Presentations and teaching can be facilitated by mobile devices. Productivity apps for note taking, document sharing, and research should become familiar to all librarians, especially in academic settings. The built-in GPS capability along with new mobile technologies such as QR codes should be explored for creative use in libraries (Gleason, 2015). By embracing the growing capabilities of mobile technology, libraries can serve better to their users. They can promote and expand their existing services by offering mobile access to their websites and online access catalogues; by giving mobile reference services and by providing mobile access to e-books, journals, video, audio books, and multimedia content.

Some of the possible library services which can be provided through mobile technology are listed below (Shrivastav, 2015):-

- Mobile Library website
- Mobile Online Public Access Catalogue (MOPAC)
- Circulation services
- Reference Enquiry services
- Current Awareness Service (CAS) and Selective Dissemination of Information Service (SDI)
- E-mail and SMS notifications
- Distribution of E-resources through mobile website
- Library Maps and floor plans
- Library News, Events and Blogs
- Library Hours and Library Tours
- Mobile database - PubMed for Handhelds is a mobile web portal for the National Library of Medicine.
- Inter Library Loan Service (ILL)
- List of new Arrivals
- Books and Journal article's search
- Mobile apps for library
- Library instructional programmes through mobile website
- Subject guide, path-finders, etc.
- Photo/Video gallery
- Library Surveys
- Feedback/Comments/Suggestions
- Contacting library staff for help

Challenges of Mobile Technology in Libraries:

The challenges of mobile technology in libraries are as follows (Kumbhar & Pawar, 2014):-

1 Defining content for the Mobile library:

Present mobile devices are limited by the speed to access internet connection, small screens, slow processing and limited storage capabilities. One of the most important barriers is the limited memory of mobile devices. An important factor of a successful Mobile library is how technology or the medium affects the information displayed, defining what amount and what type of information is appropriate.

2. Design of the format:

The formation of contents is suitable for a desktop computer may not be suitable for a mobile device because of the limitation of a small screen size. Content for mobile display should be in smaller segments and information needs to be re-organized. Such as the size of the text, images, graphics and tables, and the size and physical location of pop-up windows will need to be re-defined.

3. Separate the content from the format:

The successful mobile library is that which should work for a broad range of devices. In other words, it should be device independent. This object may be resolved through efforts to broaden the capabilities and flexibility of web browsers which separate the content from the format.

4. Display models:

This is an important challenge for library professionals to select display model because display models for various operating systems and

browsers vary. We should use a program to recognize whether the device is a portable PC or a mobile device. Afterwards, the system chooses the proper style sheet and display model to specify the sight of the page. Even though the two sets of style sheets and display models result in difficulties in design and maintenance.

5. Lack of a standard:

Limitations in existing technologies, present operating systems and web browsers make a challenge for mobile library creators. They presently lack of capability or the flexibility for an application to be displayed properly on all devices. The mobile library developers should maintain a standard to display contents properly on devices.

6. Handling of PDF documents:

The most mobile library has links to learning resources in Adobe PDF format. But, there is a problem to PDF support on Blackberry devices. A Blackberry user cannot view a PDF document using his/her web browser. To avoid this problem, documents widely used in the mobile library site are re-organized into HTML for viewing with a Blackberry.

7. Handling of multimedia file types:

This is a great challenge for the future development as large and complex learning objects require flash, shockwave, java applets and other plug-ins because the mobile library site has links to a wide variety of audio and video files. There is problem to support audio/video for the model being tested and all of these may not work on the all-mobile devices.

CONCLUSION:

Mobile devices and mobile technology have the potential to facilitate the teaching and learning process in a great way. Application of mobile technology in library services is the need of the hour. Mobile technology is the key to keep touch with the modern world. So, libraries and librarians need to cope up with the constantly changing world of mobile technology otherwise they have to face the risk of becoming obsolete in the increasingly mobilized future. Mobile technology can be used to provide innovative services to our users, who may think of libraries as just places for physical books only.

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