

Library in Hands: Incorporating Mobile Technology into Library

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Abstract – Libraries have boosted their services with the introduction of ICT. This arena of advanced technology helps the users irrespective of geographical boundaries on real time basis. Mobile landscape has broadened considerably and currently libraries are exploring to launch mobile technology. Mobile technology has connected library to its world readers within short awhile. This digital system has brought about revolutionized change. The current paper discusses leading methods that Advanced libraries are incorporating to deliver services through mobile devices. Rising mobile apps are paving way to be user friendly and accessible to massive context of resources of the library. In the current paper we've focussed on mobile application and challenges in library services.

Keyword: - Mobile Library Services, MOPAC, Mobile App, QR Code (Quick Response Code), Skills needed.

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1. INTRODUCTION

Current trends in libraries are yet in need of extending library services to off-location and inaccessible areas. Small screen technology has been noticed to be undoubtedly used by a large section of people. Digital Innovations have brought in unimaginable modifications to library services. The easy accessibility and cheap Web Data browsing has affected people's reach of fetching and accessing data. Boundaries that so far created impossible for data to disperse easily are shared swiftly through the introduction of wireless technology resulting in One World One Family data dispersion. Because of the incorporation of new digital enhancement with easy and quick accessibility, information transmission among the mobile users has risen. Mobile devices like Smartphones, PDAs (Personal Digital assistant), iPods, Tablets, e-Readers and Netbook have brought in a change for individuals the way through which interaction is completed. Among these, smartphones have currently become the primary most popular selections for individuals to communicate and share info. With this innovation of smart phone it is easy in interaction growth, accessibility to data, individualised operations, convenience of users in participation, in addition to unlimited access of information. ICT Technology in the form of smartphones offer a common forum for data transfer. Smart phones working on Wireless Technology, is transportable, so most popular across users. Mobile Technologies has currently come up with "Libraries in Hand". Users from their own homes and offices will have access to libraries through smartphones or PDA's; that to providing services

around the clock. Digital collections are often created accessible with the help of digital library on user's smart phones. Smart phones helps in searching previous visited pages and geographical positions are often customised to give exact personalised data and searches. Mobile phones are simple to hold and versatile that makes students use for fast reference and conducting an in depth search. Kumbhar and Pawar (2014) bring the libraries digital journey from personalised libraries technological library and so to automatic functioning, digital archiving and small screen services. Before the development of ICT's newspapers, micro strips and slides were the only options. However with the introduction of digital library, the operation of library has transformed to computer, small screen device with web connectivity. However if libraries are hoping to build numerous innovations, as data disseminators, then these organisations ought to perceive and explore current ICT facilities and use digitalisation in giving service to the patron's, whose desires are ever increasing and ever changing. As smart phones are the common disseminators of data in Indian context. So, it is used as a main component to provide In-touch Library Service to users and increase the reach to vast number of readers. It is the correct time for Readers and Library Professionals to cater the thirst for data with the advent of mobile technology. The librarians and different data professionals got to be connected with this new change of technology to remain in link with the

readers at all times and supply facility for future generations to come.

2. OBJECTIVE OF PAPER

The vital purpose of the paper is to:

- * Figure out the advanced mobile apps in library field.
- * Establish a standard to mobilise library services.
- * Analyse the advantages of using Mobile Technology in libraries.
- * Highlight the library services provided through smartphones.
- * Discuss the challenges faced by libraries in providing these services
- * Find solution to make global use of mobile-based services.
- * Identify libraries that have already enforced mobile library services.

3. TRANSFORMATION OF LIBRARY SERVICES INTO HAND-HELD DEVICES

3.1 QR Code

Quick Response Code are two-dimensional barcode which are to be scanned by QR Code Reader through mobile phone camera. It includes basic data regarding an item like call number, stack location, etc. It'll save time of patron in addition as build the services more appealing.

It has numerous uses like (i)Linking from print materials to connected E-Resources (ii)Connecting to helpful websites for any details (iii)Offering contact details of library employees (iv)Group study room Schedule (v)Library audio tours (vi)Embedding video clips

3.2 MOPAC

It is the online Public Access Catalogue that is accessible through mobile. To get the facilities in Smart Phone, Libraries have to collaborate with vendors, who can develop Software Package which is mobile compatible, one of which is (WEB-OPAC). OCLC's World Cat Mobile Application is an example where readers get books and journals, etc. over the internet on their Smart Phone. Users may enter numerous search terms like author, keyword, book title or book Subject.

Example:- AirPac, LibSirsi-Dynix, Innovative and Library Anywhere.

3.3 Easy Access to Journal

Total text of journal, newspaper and magazine, etc. which enables user to access by library journal provider with links to titles. One can take out prints of the journals. American University Library has already started providing journals through mobile phones.

3.4 Personal Service

My Library could be a personal library area where every user can log-in their profile and Search for data and objects of their interest. Readers can get their items of interest, get to know their dues, interlibrary loans and paper requests of Library. So that they can give preferences for catalogue searching, check due dates and Fine charges, manage notification, etc.

3.5 Recommend an acquisition

Librarian can ask for any advice or request for books from the registered readers through Smart phones. This recommendation and suggestion can enhance the library performance and quality therefore.

3.6 SMS Notification

Through short message service, Library Professionals will inform/alert the users of arrival of recently acquired titles/documents informing availableness of reserved documents for Pick-up, Information regarding overdue item and date, e-Journals subscribed, data concerning library events like Orientation Program, Exhibitions and so on. It offers patrons speedy news, announcement associated with profound works and awards. With the help of Library Management these SMS alert are push triggered automatically.

3.7 Reference Service

On incorporating Smartphones to digital libraries one can get meanings, definitions and alternative info over the net. Also Google services using Web to get free Instant Messaging System. Just in case these services are withdrawn by supplier, My Info quest, Library H31p, Text a Librarian and Shout bomb are the tools which library can buy on payment basis to get immediate feedback and preferred journals on real time, library users can enquire libraries through live chat and texting(SMS) with mobiles additionally. Library employees provide reference service to researchers from distance through mobile.

3.8 M-Learning

Academic Libraries can offer library services on smartphone, to fulfil the need of creating atmosphere, where all data should be omnipresent in distant learning, research activities

and formal education this Small screen service is the most convenient medium. The need of younger generation that is communication, data exchange and sharing study materials by libraries through the Social Network sites. The ISRO Satellite Centre in collaboration with College of Indian Institute of Space Technology(IIST) have incorporated mobile library services as an pilot project entitled only to senior scientists/engineers within the campus. Example: Smt. Hansa Mehta Library (HML) of MS University, Baroda, Gujarat has designed M-Library Platform to develop effective Learning and teaching.

3.9 Library instructions & Virtual Tour

Library tour and Instruction/Orientation programs are quite vital to bring non user to libraries from even remote locations. Library users who are unable to attend orientation program in person, will get access to library tours on their mobile devices by either scanning QR Code or through YouTube video link. Audio/Virtual Tours will be made in less time, inexpensively and cut back overstaffing and facilitate new comers to get full knowledge of library and provisions offered. Example:-A Series of Webcasts are provided for library researchers to access information while moving by East Carolina University's "Research first Aid". University of Limerick, Ireland services audio Instructions to the library patrons.

3.10 Internet Facility

Today Smartphones with 4G facility are in vogue through which one can get secured access to library facility. Library Professionals have taken over the management of library on Smartphones. One can get media access control address (MAC) of library and then have access to off campus web that distinctly identifies allotted users. Through Web, users can access new digital publications inside library campus.

3.11 Mobile Collection

Third party content suppliers like Publishers are collaborating with participating libraries to provide e-resources like e-journals, dissertations, e-books across all medias. These resources will be downloaded from the web site of library on user's smartphone or libraries provide devices containing e-resources. Libraries will build use of MMS (Multimedia messaging Service), text article on whole, whole size figure and saving history through its mobile app. These are the facilities given by Nature Publishing Group. Green Stone Server registered patrons can only get the looking out and browsing from Green Stone Digital Library Software.

3.12 Mobile Database

Currently several libraries have developed a mobile accessible info for users which will be accessed by registered users with authorised Login ID and Passcode. Some Publishers/Libraries give the mobile info accessibility through registered IP based mostly inside Campus area and additionally off campus. PubMed is a useful mobile application provided by National Library of Medication. The EBSCO is very usable mobile info to find and access of data on mobile devices anyplace and anytime over the net.

3.13 Exchange of Information

Through ICT operation, we can send and receive documents through scanning. Also helps in controlling all received documents. Users will get non-print material and different multimedia system contents from their smartphones. Through Mobile printing one can get the hard copy of non-print material stored in their devices by connecting the printer wirelessly through smartphone. It will support Electronic fund transfer, provide Chain Management, E-Marketing, on-line dealing Processes, Electronic Information Exchange and automation of Library Management.

3.14 Library Circulation

It is a mobile tool that improves library service. The SirsiDynix Company has developed a hand-held circulation tool referred to as PocketCirc that permits Librarians to access the Unicorn Library Management System on a personal digital assistant. This facility enables employees to help patrons within the stacks, investigate materials whereas offsite, and update inventory things whereas strolling round the library.

3.15 Mobile Service to Help Deaf & Arduous of Hearing

Mobile devices like smartphone that have screen readers which will facilitate the disabled to access data through mobile interface. Visual or vibratory Alerts, Relay Services and Hearing aid compatibility devices build smartphones accessible for deaf and arduous of hearing, whereas options like voice recognition and auto-text are required by those with physical disabilities.

4. SETTING UP MOBILE WEB SITE, OPAC AND APPS

Libraries can build their own dedicated, fully functioning websites with mobile interfaces using techniques such as CSS(Cascading style Sheets) or ADR(Auto-Detect and Reformat Software). There are software that enables an internet site to

set up its management and resolution to fit the size of screen.

There are several solely websites that offers to form library websites with mobile interface.

- (1) **JQ Touch:** It helps to create websites for iPhone users in the context of library with enclosed coding Tutorial. There are several websites providing style and ways to create apps compatible to various Operating Systems like iOS, Android, HTML and OS X.

Access- (JQTouch)

- (2) **Mobisite Galore:** It helps to create a mobile website within an hr. No technical or programming language needed.

Access- (Mobisite Galore)

- (3) **Mofuse:** It offers to create an interface for pre-existing website or Web-blog that is accessible through smartphone with its platform of content management.

Access- (Mofuse)

- (4) **Mobile Tuts+:** It provides manuals and guidelines for all mobile varieties, notwithstanding its Operating System. It embraces steps for creating mobile applications and websites.

Access- (TutPlus)

- (5) **Mobile Best Practices 1.0:** It sets guidelines and instructs for accessibility of Web-based resources into own smartphone interfaces. This app is developed by World Wide Web Consortium (W3C)

Access- (Mobile-Best Practice)

- (6) **W3C Mobile OK Checker:** It helps to check mobile optimized websites whether in compliance with current Web Standards. Report specifies degree of danger, type and explanation of the error along with the best ways for fixing errors and issues.

Access- (Mobile Checker)

There are several websites providing style and build out of mobile applications for various different Operating Systems like iOS, Android, hypertext mark-up language and OS X.

- (1) **Android Developer:** It provides guidelines for making Android Mobile Apps along with enclosed videos for creator's help.

Access- (Android Developer)

- (2) **Boopsie:** It has specialization in Public and Academic libraries. Boopsie offers for the development of mobile applications compatible with all smart phones.

Access- (Boopsie)

Other websites that make mobile app are: Appery.io, Mobile Roadie, The App Builder, Appy Pie, App Makr, App Machine, etc.

There are numerous different mobile compatible WebOPACs which will be accessed through the subsequent websites.

- (1) **AirPac (Innovative Interfaces):** It provides small screen based library catalog that shows First page image, location of library by GMap and other customer oriented services

Access- (Airpac)

- (2) **Library Anywhere:** It's a mobile catalogue for any library factor. It includes mobile web and apps for iPhone, Blackberry and android.

Access- (Library Anywhere)

5. MOBILE WEBSITES

In situ of small screen applications, there are various organisations and firms that co-jointly work for transforming websites to enable its access through handheld devices.

- * **Encyclopaedia Britannica:** It gives the facility of search box and recommends search options. Result includes information at a broader level with attached pictures.

Access- (Encyclopaedia Britannica)

- * **World Cat:** This mobile application search the world cat catalog for books, movies, music and games. Result includes things accessible at local libraries.

Access- (World Cat Catalog)

- * **Medline Plus:** This is created by the U. S. National Library of Medicine. It offers medical based help by providing data on diseases, their symptoms in addition to medical lexicon, current health news, prescribed medicine, etc.

Access- (Medline Plus)

6. ONLINE LIBRARY CATALOGS

An online library catalog is an electronic listing database that describes the books, videotapes, periodicals, etc. carried by a specific library.

AirPac provides an add-on product that automatically detects the kind of device used and format consequently the catalogs for improved presentation/showing.

LibSirsi-Dynix, Innovative and Library Anywhere developed by Library thing.

OCLC's World Cat Mobile Application is World's largest library catalog.

Open Library is an open, editable library catalogue building towards a webpage for each book ever printed.

7. MOBILE APP

7.1 Idea of Mobile Library App

App stands for application. It is a software system that usually runs on a smartphone or tablet. Completely different app development tools are required for various operating systems (platforms). For example, Apps developed for Apple users are created using X-code setting in Objective-C programming language for use in iPhone, iPod Touch, or iPad, whereas android apps are created in Java language and used for android devices. There is an app for each and every work nowadays. Various applications of apps are access to Library e-resource list, OPAC, data or bulletin of a library, news email, social networking sites, newspapers, and podcasts.

7.2 Features of Library App

There are some Basic Features as follows:

- Device/platform independent and provides seamless operation.
- Quick access to library resources
- User-friendly and easy operation
- Good performance of App and fast page loading
- Security is that the main concern of any software application.
- Timely update required to incorporate new
- Customized updation pertaining to need and desire of users.

7.3 Benefits of Mobile App to library users

- Access to the tailored library catalog.
- Optimize use of user's personal library accounts.
- Intimation of library working hours and current trends.
- Information of library professionals.
- Graphical library map that is user-friendly.
- Links to library websites and collections over mobile interface.
- Quick reference tools for research scholars.
- Connecting library through mobile features such as messaging in various ways
- Links to library databases.
- Web 2.0 and 3.0 accounts in social networking sites
- Schematic diagram of Floor maps
- Status of vacancy in discussion and computer rooms enabled by digital cameras fit in the library.
- News related to library programmes, conferences and activities.
- Transfer of library information through Webcast.

7.4 Few samples of Library App for Library Professionals and Library Users

1. **EasyBib:** It is a small screen App service which is free accessible for all types of cell phones. It allows patrons to form bibliography in different formats like MLA, APA and Chicago style. One can introduce the books data to their Bibliography list of their assignment by scanning books barcode through inbuilt camera feature.
2. **Lib Anywhere:** This library application developed by library Thing permits users to view data's through devices running on different platform. It helps showing catalogues, changing hours, reminder of approaching library events, place a hold and reserve things. The app itself is on the market for download without charge. Library

anywhere collaborates with collaborating libraries.

3. **National Digital Library of India (NDLI):** MHRD below its National Mission on education through ICT has initiated this Trial project in order to establish a network of virtual repository of e-resources for gaining knowledge accessible through one unique source. Refined and linked results obtained that enables quick searching through less difficulty. NDL India is aimed at supporting education for all levels be it formal or non-formal or specially-abled learners from all fields and in different language. It ensures access of library resources from various devices. It facilitates researchers to perform mutually related study and survey from more than one source.

4. **Access My Library:** This free of cost App available to all types of OS users. This application is useful to students and faculty of different institution libraries having gale databases. They are able to access through a login id. Students are benefited by detailed texts of e-journals from different erudite publications that can be browsed through smart phones. It helps to access outstanding resources on-line from each collaborating library – public, school, university and a lot of. AML uses your location to search out libraries near so permits you access to those libraries' on-line resources.

5. **Article Search:** This free app. is designed only for Apple users. It helps to seek erudite journals published by different sources. Users are able to search updated papers, view full content of journal and scan abstracts. It also gives the opportunities to save and share articles as desired through different ways.

6. **Over Drive:** This free app offers you access to over 18,000 libraries worldwide and enables you to "check-out" audio books, e-books and streaming videos with a valid card. You ought to have a valid account with a collaborating library. Titles are mechanically returned thus no late fees. Every library builds its own assortment of titles thus you only got to inform them that you simply are using overdrive.

7. **Reference Manager Mobile Apps:** Reference management software, citation management software or personal bibliographic management software is software for students and authors to use for recording and utilizing list citations (references). Example: Zotero, Endnote, Redcube, Mendeley, etc.

8. **Amazon Kindle:** This app permits users to access and browse e-resources whether or not purchased or borrowed from Amazon's Kindle store. This free app runs on all devices be it iOS and android. Users also can explore e-books from collaborating libraries. Several classic titles that aren't any longer lined by copyright laws are liberated to download.

8. THINGS ESSENTIAL FOR IMPLEMENTING MOBILE BASED LIBRARY SERVICE

Digital Library: It holds a vast collection of e-resources. To cater the needs of users it needs online facilities with Higher Bandwidth that ensures uninterrupted information flow. Physical Location and time is no more a hindrance for users seeking information from the library

Library Automation Software Technology: This Software manages all the library operation be it circulation, classification, cataloguing, acquisition, etc. They provide services like all types of notifications in the form of SMS, payment due, login, registration detail, etc. This Software enables creation of library websites that could be accessed through hand held devices by appropriate design and size optimisation

Skilled staff: Smart and knowledgeable library professional with the following potentials:

- Skills to promote these advanced facilities to patrons through training and user orientation
- Skills for approaching to users via smart phone apps, and library websites with mobile accessibility
- Technical Knowledge for seamless service
- Develop trust of users by providing security.
- Adept to mobile interface services like usage of mail, SMS, antivirus and spam preventing etc.
- Filter the library homepage, OPAC, databases in order to update the library contents accessed through smartphone.

9. EXAMPLE OF LIBRARY WITH MOBILE WEBSITES

1. **Adelphi University Libraries Mobile (AU2GO).** Offers working hours, employees contact details, a web link to

the library's Web blog "Bibliography" and a lot of.

2. **Albertsons Library, Boise State University.** Easy navigation of text offers numerous ways to search out the library resources. A stimulating characteristic is that the provision of a "Find in Our Building" option, that lists index and call number locations along with directions to Discussion rooms and computer room with graphical floor map.
3. **North Carolina State University (NCSU) Libraries.** Attractive graphical interface for different options like space reservations, cluster finder, and Webcams. Another fascinating feature is to check-out status of accessible computers for accessing e-resources.
4. **PENN Libraries, University of Pennsylvania.** A large number of data at your place in your hand like accessibility of image search, library video clips, databases and more.
5. **University of California Riverside Libraries.** Shiny icons showing different options, together with links to the library's social media profiles, research guides, library workshops, etc.
6. **Virginia Tech University Libraries.** An easy and useful design that provides data regarding library timing, library staff details, schematic diagram of library location and easy access to books.

10. CHALLENGES

- Content possession, licensing and digital rights management
- Usually costly and resource intensive
- Limited storage capability and slow process speed of mobile devices
- The initial investment cost for providing digital services.
- Holding the privacy and security of their collections by prohibiting violation of IPR, copyrights, unpermitted distribution, modification, etc.
- Issues associated with trust and security - Libraries ought to be cautious of providing user data to locations within the cloud which will supply a unique level of protection from that provided inside library campus.

- Some of digital content will solely be accessed on certain specific devices i.e. the content could also be device dependent. Lack of flexibility for an application to be displayed properly on a broad varies of devices. As an example learning resources in Adobe PDF format aren't supported by Blackberry devices.
- Accessibility of an external merchant into the digital resources and use of advanced technologies.
- Lack of technological experience among employees members and fewer acquaintance with mobile based mostly service
- Increasing employees reductions and alternative cutbacks

11. SUGGESTIONS

Libraries ought to conduct analyses and build sensible choices, such as –

- Support library employees training for technical information
- Users additionally got to be trained regarding a way to utilize these services.
- Initial free text messaging service for experiment
- A common interface compatible to any or all mobiles/networks ought to be developed.
- Nominal charges for data dissemination by mobile operators
- Explore partnerships
- New funding models for implementation of mobile based mostly library services
- Build a solid foundation of data regarding mobile services among the organization.
- Protect themselves from deceptive content agreements with third party suppliers.
- Conducting discussion or lectures to publicize enhanced features of mobile library.
- Sensitize users of various e-books freely available for use under initiatives as Project Gutenberg.

12. FUTURE TRENDS OF MOBILE APPLICATION IN LIBRARY

Hosting various conferences, debates, blogs that are helpful for all library progress through Mobile web 2.0 and 3.0 social networking sites. At present the advanced technology has already incorporated various techniques such as barcode readers to scan the book through RFID and customized OPAC that works on GIS (Geographical information systems). Still there are some areas within which the library has got to work more so as to create the mobile based mostly service additional profound and a lot of user-interactive.

- * Implementing the internet of thing (IoT)
- * Libraries connected with Clouds services (Public, Private, Hybrid)
- * Transform remote e-resources access while not incurring additional charge
- * Promote open information culture with cooperative approach
- * Preserving new content varieties and formats.
- * Providing area for brand new instrumentation and works designs
- * Providing manuals on the device itself associated with the content
- * Developing Mobile Apps for libraries by library professionals
- * Improved Virtual Reference Service
- * Licensing information merchandise for mobile devices.

13. CONCLUSION

Mobile Technology has become essentially necessary segment of our lives these days. Use of mobile technology in advanced library services is the want of the hour. Mobile applications will support learning by creating library resources a lot of Omni potential, by increasing participation of non-users to the library through enhanced accessibility to the library collections, and by making a brand new path to enhance relationships between patrons and libraries. The impact of mobile technology implementation has increased sturdy awareness among library professionals for the need to accumulate skills to understand the underlying advantages. The challenge of libraries is to create digital content accessible in an exceedingly manner that readers can realize not solely embraced, however trimmed to their desires. The mobile

revolutions throw challenges which are to be transformed into opportunities for libraries. Within the current situation, mobile technology has potential to succeed in the data towards remote person with single faucet for connecting with the globe of data. To push the digital transmission of library service in mobile world several libraries, publishers and library vendors are engaged to develop mobile apps, e-resources and services which will be utilised over mobile networks on mobile devices. Digital transformation of library e-resources and services are dramatic challenges to alter information landscape in close to future And ensure that all the knowledge of world are going to be in user hand with Mobile technologies.

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