

# **Paradigm Shift of Library and Information Services with Special Reference to Mobile Information Services in 21st Century**

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## **ABSTRACT**

*In the 21st century, the library and information services are definitely changed with the new advancements in web and mobile. In the mobile revolution era, mobile technology is assuming a fundamental part where each individual gets to their necessary data on their hands. By applying these mobile technology advances in libraries provide mobile information services to their clients/patrons around the clock on mobile devices. The conventional library services are presently moving towards mobile information services. Presently days, the libraries are client-driven with the innovation-based climate, and by offering some value added services to them. M-learning has turned into another worldview that establishes another learning environment for clients/patrons. The current paper depicts how the customary library and information services are shifting to mobile information services depending upon the use of mobile technology, their services, and essentials for their execution, its benefits and limitations. The arising most recent patterns for future libraries were also discussed in this paper.*

**KEYWORDS:** Library services, mobile devices, mobile services, mobile technology, mobile library services, paradigm shift, 21<sup>st</sup> century.

## **1. INTRODUCTION**

Propels in correspondence advancements that structure some portion of IT are empowering us to scatter data while the sender and collector are on their turn. These advancements are mobile communication technologies and by applying these technologies in library and information centers can render dynamic information services such as mobile information services to their clients/patrons. With the mobile technology and utilization of web the clients/patrons are getting to their required data from anyplace whenever. They utilize various sorts of mobile devices like Smart Phones, PDAs, Tablets, E-Readers as indicated by their highlights, financial plan, value,

accessibility and organization upholds and so forth these gadgets have turned into the quickest driving contraptions which have been utilized regularly for getting to information in mobile computing era.

## **2. PARADIGM SHIFT OF LIBRARY & INFORMATION SERVICES**

### **2.1 LIBRARIES @ 19<sup>TH</sup> CENTURY**

In earlier days the libraries are merely considered as storehouses of knowledge and the information from the documents are restricted to closed access in order to prevent theft, but this discouraged free use and prevented loaning.

Ranganathan's first law of library science "*Books are for use*" places emphasis on the use of books rather than storage. This law has delivered the books to the users with the open get admission to in libraries. Now, the users have been expected to get their required information from the libraries. However, during this period of time the librarians were more concentrated on development of collection and maintenance rather than promoting its use.

#### **2.1.1 LIBRARY SERVICES**

Conventional library services offered by the libraries irrespective of the type of library, its collection and staff.

- Lending / Circulation Service
- Assistance in the Use of Library and its Tools
- Reservation of Documents
- Reference Service
- Reader Advisory Service
- Library Orientation
- Inter Library Loan(ILL)

### **2.2 LIBRARIES @ 20<sup>TH</sup> CENTURY**

During 20<sup>th</sup> century with the explosion of knowledge and the user's demand for information, libraries have transformed to library and information centers. These centers promote the use of library materials, connect the users with the library resources and meet the information needs of the users.

To reach the information needs of the users libraries have provided reference and information services.

Reference Services are services provided with direct personal assistance to the user who are seeking for information. It helps the library patrons to get access to the required information. Direct service such as assistance in using the library and its tools which includes in locating materials, using library catalog and using basic reference sources, ready reference and long range reference service, literature search, assisting in research etc. Whereas, indirect services covers selection, organization and maintenance of library material for reference service, and other tasks of reference section such as keeping a record of reference queries, preparation of publicity material, evaluation of reference section etc.

Information services are services provided in anticipation of various needs of the users of libraries which includes Current awareness services, indexing and abstracting service, etc. Generally, these services are provided on demand from the users.

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### **2.2.1 LIBRARY SERVICES**

- Provision of general information
- Assistance in searching and locating documents
- Reference Service
- Document Delivery Service
- Referral Service
- Current Awareness Service (CAS)
- Selective Dissemination of Information (SDI)
- Bibliographic Service
- Readers Advisory Service
- Information Literacy

### **2.3 LIBRARIES @ 21<sup>ST</sup> CENTURY**

In 21st century with the emergence of Information communication technologies (ICT), digital revolution and information seeking behavior of user's libraries has redefined their role in terms of creation, promotion, dissemination and storage of information. Hence, the libraries are not considered as store house of knowledge rather they act as Learning Resource Centres. The impact of Information communication technologies (ICT) is more on all type of libraries. To stand with the new information explosion, academic libraries ought to meet even more challenges and opportunities. Print materials are not enough to store information. CD-ROM databases, electronic document delivery, automated cataloguing, circulation systems and online information retrieval (OPAC) have turn out to be recurring during in recent times.

ICT enabled digital library services are:

- Online Public Access Catalogue (OPAC)
- E-Resources(E-Books/E-Journals)
- Electronic thesis and dissertations
- Web-based / Internet-based services
- Reference Service
- Bibliographic Service
- Subject gateways
- Digital archives
- Institutional Repositories

### **2.4 MOBILE TECHNOLOGY IN 21<sup>ST</sup> CENTURY**

“Mobile Technology is defined as handheld information technology devices or artifacts that encompass hardware devices, software (Interface and Applications) and communication (Network Services). Mobile Technology is the technology used for cellular communication. Mobile 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 paper to being a mobile phone GPS navigation device, an embedded web browser and instant messaging client, and a handheld gaming console. It can also be defined as technology that uses radio frequency spectrum in any band to

facilitate the transmission of text data, voice, video, or multimedia services to mobile devices with freedom of time and location limitation” (Kim, Mims & Holmes, 2006)<sup>3</sup>.

## **2.5 MOBILE TECHNOLOGY IN LIBRARIES**

Application of mobile technology in libraries may extend their new innovative services to a wide range of users remotely. Whereas, the users also have become more advanced by using these mobile devices for communication and transformation of information. “The implementation of mobile technology in academic libraries routines enables the users to access the resources of the library and make enquires remotely without physically being present at the library” (Cumplings, Merrill & Borrelli, 2010)<sup>1</sup>. “In libraries mobile information services can be provided in two ways through wireless mode and through text messaging. The wireless services can be provided through mobile sites and the text messaging services can be provided through SMS alerts, group chat” etc.

Mobile library services offering universities/Institutions were discussed below:

- The **Banaras Hindu University (BHU) Library system** is the largest University Library System in the country, which provides majority of the mobile information services through “BHU Library Mobile” site viz. “About us, General Information, History, Chronology, Contacts, OPAC, Member Account Status, E-resource availability, Portal for Hindi/ Sanskrit web resources, Mahamana Digital Library, Online Databases, Full text Journals, Online E-books, Useful Links, BHU Library 2.0 services e. g. Google Maps, Wiki And Library Blog etc”.

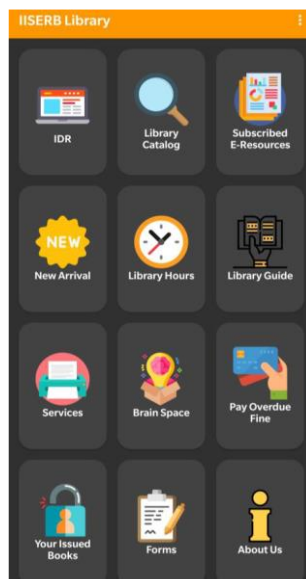


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- **Indian Institute of Science Education and Research (IISER) Bhopal Central Library** is a very unique place inside the IISER Campus with its rich collection of Books and journals inside the field of basic Sciences and related areas. IISER Bhopal Library Mobile App exclusively provides mobile based library services like searching of books online, Library catalog, Issued books, access to subscribed e-book/ e-journals/ major Full text e-databases, bibliographic e-databases, DOAJ e-journals contents, various LIS services, List of Ph.D. Thesis, Inter-Library Loan, Document Delivery Service, etc. It

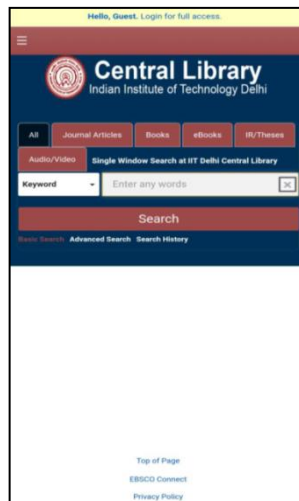
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also provides additional services to Library readers like Library hours, Photocopy facility, List of subscribed print newspapers/magazines, new arrivals, various library forms, Library guides, etc.



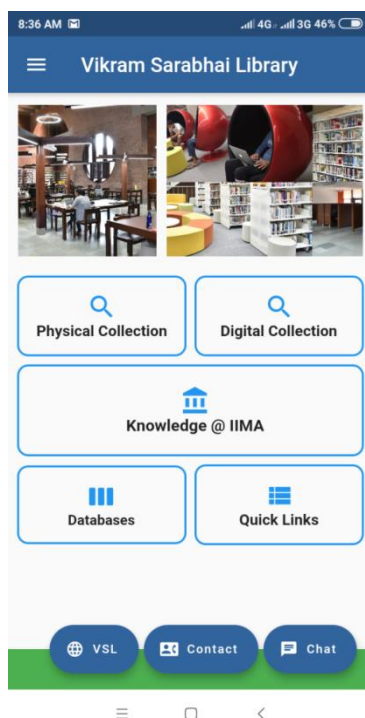
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- **IIT Delhi Library system** is the first movers of latest and emerging technologies. Through library mobile app users can search e-Books, e-Journals, subscribed e-Resources, Databases, Library catalog and in-house repository etc.



Source: (<https://library.iitd.ac.in/single-window-search-for-IITD>)

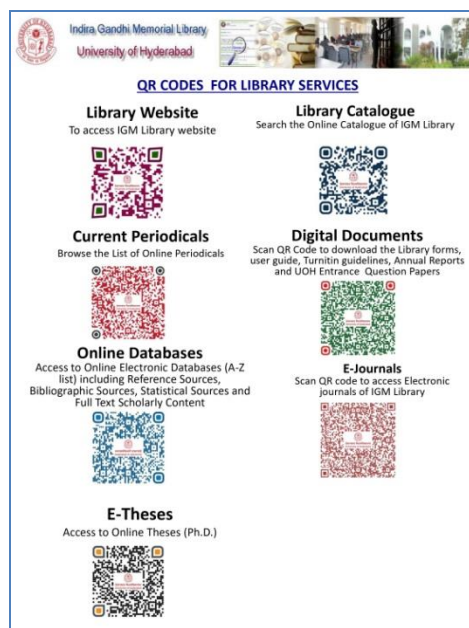
- **Vikram Sarabhai Library App** provides links to various library resources and services. A new feature "Knowledge@IIMA" provides links to faculty directory, research papers of IIMA (sourced from Scopus), doctoral thesis, access to subscribed e-book/ e-journals/ major Full text e-databases, bibliographic e-databases Quick links @VSL, Mobile reference service, Article/Book request service, new book arrivals, library guides, etc.



Source: (<https://library.iima.ac.in/service/android-app.html>)

- “The **ISRO satellite centre** have introduced mobile library services in the first phase to only senior scientists/engineers are allowed to use mobiles in the campus and the faculty and the students of Indian Institute of Space Technology (IIST). All information services hosted on ISAC library homepage accessible through intranet and space net can be straight away optimized to mobile based services. Initially library’s alert services like information on new books for suggestion, books on display, arrival on indented document, reserved documents ready for collection, books overdue, library circulars, information about important events, etc, by allowing users to comment on the items in catalog and letting users to comment directly from their PDAs and mobile phones to library databases. QR codes can be introduced in ISAC library web OPAC, web pages and virtual materials to help users to capture, store, and retrieve the information about library services and resources.” (S, Malathy & P, Kantha )<sup>9</sup>
- **Indira Gandhi Memorial Library of University of Hyderabad** is one of the most important central facility of the University which caters to the information needs of faculty, research scholars and students in Arts, Humanities, Social Sciences, Management, Sciences and Engineering. The University is providing mobile based library services through QR Codes for Library website, Library catalogue, list of Current Periodicals, link to e-journals & E-theses, Online databases etc.

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Source: (<http://igmlnet.uohyd.ac.in:8000/QR-Codes%20of%20IGM%20Library.pdf>)

### **3. MOBILE INFORMATION SERVICES (MIS) IN LIBRARIES**

#### **3.1 SMS notification services**

Short message service (SMS) and multimedia messaging service (MMS) is a service used to provide quick and easy access to library services through exchange of text messages, images, videos and audio files. Especially in libraries this service will alert the patrons regarding overdue fines, Item renewals, due date reminders, check-out & check-in notification, items available for pickup, interlibrary loans and new arrivals etc.

#### **3.2 Mobile library websites**

With the increased use of Internet through mobiles, libraries need to redesign their web pages to mobile optimized interactive and participative library web pages to provide dynamic information services to users on a 24X7 basis through mobile devices. Libraries should be aware of mobile web browsers, screen resolutions and size, etc., while creating web pages. Redesigned website must have fewer graphics, so that the pages will load much faster with minimal keyboard operations, to ease the mobile user. In this context, text-only websites are easier and faster to navigate and fabricate into new applications.

#### **3.3 Mobile apps (applications)**

Some of the libraries have developed mobile apps for smart phones which are specific to particular smart phone platforms like Android and Apple etc. Mobile applications provide simple user interface with improved access to information. Through mobile app the library services include patron account, new arrivals, E-resources, reference service and general information etc can be provided.



### **3.4 Mobile catalogue (M-OPAC)**

M-OPAC is the online public access catalog can be accessible through mobile phones. The optimized mobile online public access catalog provides simple search facility against the author, title, and subject. The search results should be informative containing information about the book, its availability in concise manner.

### **3.5 Alert services**

The library's primary and primary service is to provide information to its patrons/clients in a timely manner through SMS alert services or text message services when needed. Many of them use text messages to send news announcements and various reminders to individuals or groups of people, such as due date reminders, renewal request reminders, overdue reminders, request arrival reminders, news and event reminders, notification for items available for pickup, provision of call numbers and locations of a specific item, and so on. Patrons can also receive Current Awareness Service (CAS) and Selective Dissemination of Information (SDI) services.

### **3.6 Ask a librarian service**

Ask a Librarian is like an online reference service through which the users can ask questions through chat, e-mail and even through phone call at anytime from anywhere through smart phones which can be handled by the reference librarian or other staffs promptly. The reference librarians can easily provide reference services through smart phones in the form of SMS, MMS, e-mails, etc.

### **3.7 Access to e-resources with mobile interface**

E-resources are available in a variety of formats, including subscribed e-resources through aggregators, consortia-accessible e-resources, open source e-resources, and so on. Various e-resource providers, such as aggregators, suppliers, and vendors, provide their services to mobile users in one of three ways: through a mobile site, applications, or a partnership with the host site. The mobile site can provide access to consortium, subscription, and open access databases. Users can use their Smartphones to access a wide range of e-resources from anywhere on campus, as well as via remote login or pairing with a host outside the campus.

### **3.8 Location based services**

Location based services like virtual tours and maps of libraries can be provided to the Smartphone users more promptly. Direct navigation using Google map services (GPS) provide the exact library location and way to it at anytime. Whereas virtual tours are capable of providing the services within the library itself.

### **3.9 General information service**

General information regarding the library timings, library rules and regulations, holiday's, library membership, document delivery, library notifications etc are provided using smart phone to the users.

### **3.10 Text reference service**

Faculty members, Researchers and students are now becoming a needy of short-range reference inquiry which would be very helpful through mobile-based Text Reference Service. Some libraries are providing "text a librarian" services through which the users are getting their answers in brief for simple ideal questions. The reference librarians or other library staff may provide instant answers and real-time links to these particular reference queries.



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### **3.11 Mobile document supply/ Inter Library Loan/ Document Delivery Service**

Mobile technology opens up new avenues for sending document requests and scanned images, as well as tracking collection usage and automating administrative tasks. A user can request a document via SMS, email, or other means from their mobile devices.

### **3.12 Mobile printing service**

Library can also provide printing facility to users through their mobile phone for any instant requirement. However, the implementation of this technology is hindered because of its dependence on the capabilities of mobile devices.

### **3.13 Contact information service**

Contact Information service is another important service provided to the user which is quite helpful to communicate with the library staff about the personal and technical matters through call/e-mail/chat.

### **3.14 Mobile services for persons with disabilities**

The use of mobile technology in special libraries can help people with special abilities such as vision or hearing impairments. Because there is no special interface for them, such people are frequently unable to gain access. Screen readers, which are available on mobile devices such as smart phones, can assist the disabled in gaining access to information. Mobile phones with visual or vibrating alerts, voice recognition, and auto texting make them usable for people with physical disabilities. For example, LibriVox (Free access to over 24,000 audio books) is a gateway for such members who can use it from their mobile phones.

### **3.15 Quick response codes (QR)**

The Quick Response (QR) Code commonly referred to as QR Code invented in Japan by the Toyota subsidiary Denso Wave in 1994. QR code is a matrix barcode readable by smart phones with camera. QR code is an alternate terminology for a “Quick Response” or “2D” barcode that can be read by downloadable smart phone readers with camera-scanning capabilities. QR code acts as a good aid for libraries in marketing their services such as search, ask us, hours and locations, computer availability, video tutorials, and social media etc. User can scan the QR codes to access the library services offered by libraries as per their needs.

**Other mobile information services** are like Link to library guides, linking from print to electronic journal holdings, Marketing/promotional materials, connecting to useful Web-sites for further information, providing an electronic alternative to physical books and promoting online audio visual materials.

## **4. PREREQUISITES FOR IMPLEMENTING MOBILE INFORMATION SERVICES**

- Policy Framework by organization
- Automation
- IT infrastructure & Support
- Digital Library
- Mobile Devices
- Trained professionals
- Access to Internet (adequate internet bandwidth & unreliable power supply)

- Security Mechanism
- Budget

#### **4.1 ADVANTAGES OF MOBILE INFORMATION SERVICES**

- Improve working process
- Preservation of original copies
- No geographical restrictions
- Improved user participation
- Increased collaboration
- Enhanced marketing effectiveness
- User-friendly service
- Time saving

#### **4.2 LIMITATIONS OF MOBILE INFORMATION SERVICES**

- Implementation and maintain costs
- Privacy and security
- Expertise
- Digital rights management
- Low transmission speed

#### **4.3 EMERGING AND INNOVATIVE TECHNOLOGIES FOR FUTURE LIBRARIES:**

- Big Data
- Artificial Intelligence
- Block chain technology
- Internet of Things (IOT)
- Library Book Mark Apps
- Augmented Reality
- Book delivery Drones
- Self-service printing, photocopying, and scanning solutions

Libraries in most of the countries are actively embracing new technologies. These new services and spaces enable library users to discover and become familiar with emerging technologies, which often also become part of their work and social lives. Libraries must continue to invest in new technologies in order to stay relevant with changing technology and the evolving needs of library users, and library professionals must be up to date on information communication technology (ICT) skills and competencies as well as attuned to not only the benefits, but also the limitations of new technologies, as well as the disruptions and problems they may cause.

According to Kim “No matter what technology the library adopts and no matter how it changes the library’s services, programs, and other offerings, the library’s mission to empower people through knowledge and to facilitate and support their information-seeking and learning activities—does not change.”

## **6. CONCLUSION**

The transformation of conventional library services to mobile based library services in gift put up pandemic state of affairs has made the clients/patrons to attain their facts desires on their go at any time. Mobile technology has turn out to be a completely crucial part for our day-to-day activities. These mobile devices and its technologies are facilitating the patrons to train and analyze extra in the lives. It has turn out to be a boon for the libraries. With the aid of adopting the mobile technology, the libraries can reach the users remotely in its services. It is very essential for libraries to be dynamic and change their outlook to undertake/put in force rising contemporary technology and to market their library products and services thru online as per the user needs.

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