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Use Of Mobile Technology In Library Services

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Abs tract:-*Libraries have always set an example in experimenting with new technology developments, whether it is automation or adopting other information and communication technologies to improve their services. This paper presents an outline of the application and use of developments in mobile telecommunication systems, web technologies (internet/intranet) and geographic systems like GPS/GPRS to provide ubiquitous, user-friendly, personalized and dynamic up to date information services to library users. This new technology will be of great help to libraries towards strengthening their relationship and providing enhanced user experience to existing users. Libraries may well reach out to the new/remote users who were considered unlikely to connect because of absence of a medium. This should be adopted in compliance with the information security policies and standards of the parent organization.*

Keyw ords:ICT-Information and Communication Technology GPRS –General Packet Radio Service.

INTRODUCTION

Information is a valuable resource in all types of libraries, but the ICT tools that are important to create, collect, consolidate and communicate information are not yet used in majority of libraries. Information can be represented as a vertical and non-interactive structure through which people communicate or rather inform data, information or ideas to a larger number of receivers where the receivers remain passive in this one-way approach, whereas communication is a two-way process in which receiver is also a transmitter or giver and is thus a horizontal process characterized by interaction, which includes exchange of ideas, information, point of view, and experiences between persons and groups. Though information has priority over communication, it is the technology that makes communication both interactive and astir (Savio, 1990). The rapid developments in Information Communication Technologies (ICT) have given a solid foundation for revolutionary changes in the information handling capabilities of academic libraries and information centers all over the world. ICT includes acquisition, processing, storage, retrieval and dissemination of information by means of computers and communicating systems. In a dynamic and interactive academic learning environment, information communication technology also includes repro-micrographic technology, database creation and use, in addition to computer technology, digital technology, multimedia technology, network technology, telecommunication technology, barcode technology, web technology, wireless technology, Mobile Technology etc. Mobile technology is the technology used for cellular communication. Mobile code division multiple access (CDMA) 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 pager to being a mobile phone, GPS navigation device, an embedded web browser and instant messaging client, and handheld. Many experts argue that the future of computer technology rests in mobile computing with wireless networking. Mobile computing by way of tablet computers are becoming more popular. Tablets are available on the 3G and 4G networks.

WIRELESS NETWORK TECHNOLOGY -

Though there are a lot of developments in wireless network technology, in most academic libraries in India, cabled computer networks are more common than wireless broadband network. The emerging wireless, mobile and internet technologies may take some more time to have an effect in the niversity Libraries; however, a brief outline of some of the recent developments in wireless, mobile, internet and web technologies are listed below.

Bluetooth is an emerging wireless technology meant for broadband wireless communication between devices like digital cameras, laptops, mobile phones, Personal computers, printers, scanners, etc., within a short range. 3G telecommunication or third-generation wireless communication technology is meant for wide area wireless cellular telephone network. It can process audio, graphics, video, etc., at high speed. WiMAX (Worldwide Interoperability for Microwave Access) is a broadband wireless access capable of transmitting data over 30 metres of area. It provides data rates up to 70mbps greater than Wi-Fi's 54 mbps. GPRS or General Packet Radio Service is a mobile technology that helps to download web pages and send text messages in cell phones quickly. It helps the users to have uninterrupted access to internet through mobile phones or computer.

VoIP or Voice over Internet Protocol is an internet

technology to transfer digitized voice over roadband network. As communication is over internet, the cost of phone call is less than that of regular phone. VoIP can empower academic libraries to promote and expand their distance learning services, virtual reference services and other global collaboration services. RFID or Radio Frequency Identification or electronic tagging is a non contact automatic wireless identification technology to track objects at a distance from a couple of inches to 20 to 30 ft away (Li, 2009). It uses microchip, which transmits a stored code to a reader, which can be fixed or hand-held. Compared to traditional barcode technology RFID has many advantages like quick access, greater storage capacity, resistance to high temperatures, water-resistance, etc. RFID implementation in University libraries will help to increase efficiency in circulation section, in better security management and can be used for stock verification. Before implementing RFID tags in University Libraries, the cost involved, the range of frequencies applicable, and other issue-related standards, health issues, etc., are to be solved. Semantic Web is an intelligent web technology that allows machines to understand the meaning or "semantics" of information on the World Wide Web. World Wide Web Consortium (W3C) director Tim Berners-Lee coined the term. According to W3C, the core of semantic web is the resource description format (RDF), an XML-based mark-up language for defining metadata about web information (Semantic Web, 2010). The semantic web is a vision of information that is understandable by computers, so that computers can process the information on the web.

APPLICATIONS OF MOBILE PHONES-

The wireless technology and mobile phones are becoming an integral part of everyday life and are changing the way one connects and interacts with the world. Mobile phones have wide variety of applications. Already mobile devices have madesignificant impact on banking, tourism (Web GIS), andhealth services. An innovative application of mobilephones in agriculture is made where Indian farmersare using low-cost water pump activation system called'Nano Ganesh' developed by Tata Teleservices. Acell phone application with modem allows farmers toremotely access their irrigation pumps and to checkavailability of power to their irrigation systems andturn on/off the pumps. Doctors are also using mobilesto access electronic medical record, view medicalimages, access drug information, and take notes. Latest is mobile real-time remote patient monitoringand an iPhone application, iStethoscope to monitorheart rates of patients on the go. Already mobilephones are no longer a luxury, but a necessity notonly for simple voice or text communication, butalso for accessing the internet. Such connectivityseems to be the wave of the future.

PRESENT SCENARIO OF MOBILE COMMUNICATION -

There are wide range of mobile computing platforms in the market from smart phones to multimedia phones with different types, styles, models, and with many inbuilt features and capabilities like cameras, touch screens, bar code scanning, Wi-Fi, bluetooth, instant messaging, GIS/GPS, RFID, operating systems,varying additional storage space, etc. Revolutionary iPhones and smart phones (3G and 4G phones) can be used to run many software applications including internet access with faster connection Ability to Access Information -

Information access from anywhere at anytime will be of great help for users who cannot visit library in person and provides a constant link to required information resources.

Time Saving -

Users need not record information about resources while browsing and searching library resources orwait at library transaction counter to renew/reserve books and hence the time of the user is saved.

User Participation -

Libraries can enrich OPAC by allowing usersto incorporate user created content like notes or images uploaded by users.

Location Awareness -

Mobile communication enables libraries to offerlocation-based services/content through global positioningsystem (GPS) capabilities. Libraries can guide theusers to the location of specific document or servicethrough maps and navigational tools.

Limitless Access -

All online resources accessible on their desktop also become accessible through mobiles.

Access to Print-disabled Users -

Mobiles communications help providing services orally to vision-disabled and physically-handicappedUsers.

LIBR ARY & INFORMATION SERVICES ONSMALL SCREEN DEVICES -

In view of the capabilities and developments in mobile technologies and their advantages enumeratedabove, libraries can design and provide the following specific services on mobile devices, compliance withthe information security policies and standards of the parent organization.

SMS/Texting (Alert Services) -

Existing e-mail alert services like bringing new books to the notice of users for suggestion, intimationof arrival of indented documents by users, informing availability of reserved documents for collection,appraising about which/when books are overdue, library circulars, e-journals subscribed, change intimings, information about important events, etc.,can be upgraded by sending through SMS/textalertservices3 to meet the information needs of 'netgens'. Such alert notifications can be generatedautomatically using integrated library management system/ software. SMS messages can be sent togroup of users simultaneously through many free applications, and intermediary websites/clients.

Formal Education, Distance Learning andE-learning -

Students are very versatile in using theirmobile phones and various mobile applications.

Academic libraries can harness the advantage tolead implementation of library services through

mobile devices to support distance learning, formaleducation, and research activities in e-learning environment by making the information resource subiquitous. Libraries should redesign their serviceskeeping social networking sites in mind, which areheavily used by younger generation for interaction,communication, and information sharing. Libraryservices should also blend with teaching and researchpractice of colleges/universities, scientific communityor other patrons whom they serve.

Instant Messaging for Reference Services -

The reference and referral services have alreadybecome virtual with ICT applications and internet.The mobile devices can further appreciate the servicewith instant answers like definitions, meanings andother information from digital libraries and web. Ifthe organisation has its own secure and privateenterprise IM network, libraries may as well makeuse of these as they are more reliable and secure; orelse use web-based free instant messaging servicesfrom Google, America Online, Way2SMS, etc., asan intermediary to have interactive sessions withusers to answer 'reference queries'. As these freemessaging services can be withdrawn anytime by theproviders, libraries' may subscribe to fee-based toolslike Text a Librarian, LibraryH3lp, MyInfoquest, and Shoutbomb. These tools offer mobile customers allof the benefits of virtual reference services withoutbeing tied to a website. Librarians can provideinstant answers, and links to articles/referencesin real time.

E-resources with Mobile Interfaces -

Some publishers are already delivering e-books(both text and audio) that are accessible via mobilephones. Using free Plucker e-book viewer, one canaccess about 20,000 free e-books from ProjectGutenberg. Mobipocket of Amazon is one of thestanadard e-book reader applications and the websitehas over 40,000 titles (about 11,000 free). A largecollection of audio books both free-and subscriptionbasedservices are available for download andalso transferable to mobile devices. LibroVox isa collection of free audio books from the publicdomain. OCLC's NetLibrary collection is providinge-book and audio book titles on library subscription.Libraries can make use of multimedia messaging

service (MMS) on mobile devices to share photos,videos, and audio. Most of the e-book publishers provide 24x7 access to the library subscriptions fromany internet terminal within the campus, as well onmobile devices, such as iPads, Android devices,and Kindle. Just like any other library databases,users are prompted to log in using user-ID andpassword, when they are off-campus to accesse-books on their mobile devices.One can get todays' news on their mobileseither by accessing the web portals or SMS textmessaging on their mobile phones. Newspaperslike Wall Street Journal, Washington Post andChicago Tribune offer news for small screen. InIndia, NewsHunt, a mobile application by EternoInfotech Pvt. Ltd. is designed to read newspaperson GPRS-enabled mobile phones.With the increased use of Internet through mobile,libraries are required to redesign their web pages asmobile optimised interactive and participative libraryweb pages to provide dynamic information servicesto users on a 24X7 basis via mobile devices. Whileredesigning library must take into considerationthe basic models of mobile phones to the smartphones with greater capabilities and functionalitiesas some of the iPhones and smart phones arecompatible to access the web pages designed forlarger screens. But the time taken to access is moreand downloading is very slow and expensive. Toovercome these difficulties, it is necessary to makemobile-friendly websites by using (cascading stylesheets) CSS or auto-detect and reformat (ADR)software, which allows a website to rearrange itscontent and navigation to suit the size of the screenit is being viewed on. Libraries should be aware ofmobile web browsers, screen resolutions and size,etc., while creating webpages.

Library Instructions and Virtual Tours -

Library tours, instruction/induction/orientation programs have been quite significant in bringing the nonusers to libraries and also help the remotelylocated or users located in different geographicallocations. Library users, who don't have time orinclination to attend an on-site workshop, can getaccess to library tours on their mobile devices. Audio/virtual library tours can be produced fairly quickly,inexpensively, and could reduce the amount of stafftime spent helping new users to orient themselvesin the library and explaining the facilities available.It can easily be provided both as downloads fromthe library website and on mobile devices.

Online Library Catalogs on Mobile Phones -

Libraries are required to interact with the softwarevendors to create mobile compatible WebOPACs. Forexample, AirPac add-on product will auto detect thetype of device you are using and format accordinglythe catalogs without graphics for better viewing.libSirsi-Dynix, Innovative and Libraryanywheredeveloped by Library Thing have similar options.OCLC's WorldCat Mobile application pilot allowsusers to search for and find books and othermaterials available in their local libraries througha web application they can access from a PDA ora smart phone.To provide location-based services, librarieshave to use mobile telecommunication system, theinternet/web-based OPAC on intranet and geographicsystem like GPS. Many phones have built-in GPS,which allow users to navigate to locations and, ifactivated, allow others to find them. OCLC's Worldcatmobile application for iphones makes use of thisfeature when identifying local libraries.

Mobile-based Library Lending Service -

As in banking and financial sectors, libraries canformulate regulations for using mobiles for circulationof reading materials and maintenance of users account.The SirsiDynixcompany has developed a handheldcirculation

tool called 'PocketCirc', which enableslibraries to access the unicorn library managementsystem on a PDA device. This wireless solutionenables staff to assist patrons in the stacks, checkoutmaterials while off site, such as at community orcampus events, and update inventory items whilewalking around the library.Mobile phones make ILL/document deliveryservices faster and cut-down the time to request/visitdifferent libraries and complement the geographicallyremote users.

PREREQUISITES FOR IMPLEMENTINGMOBILE-BASED LIBRARY SERVICES

It is necessary to have a carefully plannedr equirement study to know the practical situation like, the kind of services to be provided on mobiledevices and type of devices to be used.

Library need to acquire the required hardwareand software after market survey.

Library must provide physical and virtual environmentfor using mobile devices and accessories.

One needs to ensure that the customers havingmobile phones of different network operators
are in a position to avail the services.

It is a prerequisite to optimise library OPAC,website, and databases for mobile devices and introduce new services wherever possible.

Security and authentication is a matter of concernin mobile services particularly due to availabilityof web contents on a 24x7 basis to preventdamage or loss to the data.Knowledge of hardware and software of mobiledevices

Create/tailor mobile-optimised content includinginteractive and participative library homepages,OPAC, virtual tours, and databases Familiarity with internet/intranet services likeusing e-mail, SMS and spam preventing, etc.

Develop expertise in protecting privacy andsecurity levels as more personalised information is involved in using mobiles for library services

Skills related to searching and navigating throughmobile devices, mobile web applications like push e-mail, etc.

Skills for interacting with users via smart phoneapplications, mobile-friendly webpages, and thirdparty intermediary clients

Skills relating to training and user orientationto market these services to users.

CONCLUSION-

Library policies and services should be flexibleand open so that new information needs of users in pursuit of organisational needs are met withnew technologies. The task of libraries is to exploitnew technology in a more effective way to promoteand integrate them into the design of future libraryservices in a cost efficient manner.However one cannot neglect the policies and standards of information security of the organisation.Since, the feature like 'always on' and continuousconnectivity makes new devices more vulnerable tosecurity threats, the same need to be addressedcautiously before setting up the library services formobile devices. While the financial institutions likebanks are making use of such technologies withoutexposing the customer to much risk, it may not bean impossible task for the libraries to overcome suchsecurity threats in providing library and informationservices on mobile devices. It is very essential forlibraries to be dynamic and change their outlook toadopt new technologies and to develop new kindof relationships with users.

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