# Reaching the unreachable using Android Technology: a new transition of Library and Information Services

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**Abstract:** With the advent of globalization, there has been an explosion of information in every sphere of life. Various new electronic gadgets emerged to make information accessible anytime and anywhere. ICT has made our daily lives by profoundly altering our social interactions, affecting our social bonds. As the android smartphone environment has changed the picture of connectivity between people, their engagement with the world has been connected through these small screens. As libraries are service-based institutions for satisfying the information needs of end users through different means. Nowadays libraries are also adapting these different mediums and technologies to cater the information needs of their users efficiently and effectively. This paper will focus on different services provided through smartphones and the use of smartphones for outreach services. The study will raise awareness about the importance of smartphones for implementing various library and information services.

*Keywords: Information Dissemination, Mobile Technology, Android Technology, Library Services, Library Outreach, Information Communication Technology, etc.*

**Introduction:** Libraries are inherently service oriented. Especially when it comes to helping our patrons, librarians have to make arrangements to reach their patrons in various ways that the library is changing its role and function in tune with the demand and needs of its users. As we are aware the advancement in information technology has made a drastic change in the academic environment, the librarian should have to mold himself with the change in the flow because the historical stereotype of library culture is not going to work in the era of ICT. So, librarians have to cope with the changing IT environment and accordingly to the demand of techno-savvy users.

**Technical Terms:**

**Information Communication Technology:** An umbrella term that includes all technologies for the communication of information. It encompasses any medium to record information (whether paper, pen, magnetic disk/ tape, optical disks - CD/DVD, flash memory, etc.); and also, technology for broadcasting information - radio, television, and technology for communicating through voice and sound or images- microphone, camera, loudspeaker, telephone to cellular phones. (IGI Global Dictionary, 2022; Reddick, 2009)

**Android Technology:** Android is the operating system for cellular telephones and tablet computers. Android began in 2003 as a project of the American technology company Android Inc., to develop an operating system for digital cameras. In 2004 the project changed to become an operating system for smartphones. Android Inc., was bought by the American search engine company Google Inc., in 2005. At Google, the Android team decided to base their project on Linux, an open-source operating system for personal computers. (Britannica Dictionary, 2022)

**Library Outreach:** This is about reaching out to users, encouraging the use of libraries, and engendering a positive image of the library. It is done mainly through programming that targets the needs and circumstances of the communities served by public libraries. (Ngulube, 2019)

**Data Perishability:** New concept has been arising in the field of data is Perishable data- which loses its initial value over time and must be acted on swiftly to yield any benefit from it. The technology is changing in the course of little time and new updates are coming in no time so knowledge managers/librarians should have to change their practices towards data delivery to their patrons.

Outreach is a way for libraries to actively encourage their services, explain value by engaging with stakeholders, and show their usefulness and entity in the new era of academia.

**Use of Smartphones for Library Services:**

This section discusses various library services that can be rendered through smartphone devices:

**1. Mobile Library Application:** These Mobile library services are an extension of the digital library in the mobile communication network. Digital libraries and mobile communication technology serve as the basic foundation upon which mobile library services can be built(Santhakumar, 2013). Various services are now converted to mobile-based apps, like mobile banking (e-wallets), b2c(business-to-consumer) service apps, and e-commerce apps these applications provide a platform to transact between services to their client within a safe and secure environment. A mobile library application is the same concept as any b2c or m-banking application. This mobile library application can be developed as target oriented, based on user needs. As we know a mobile device provides a different experience than a desktop computer and requires more than a resized screen.
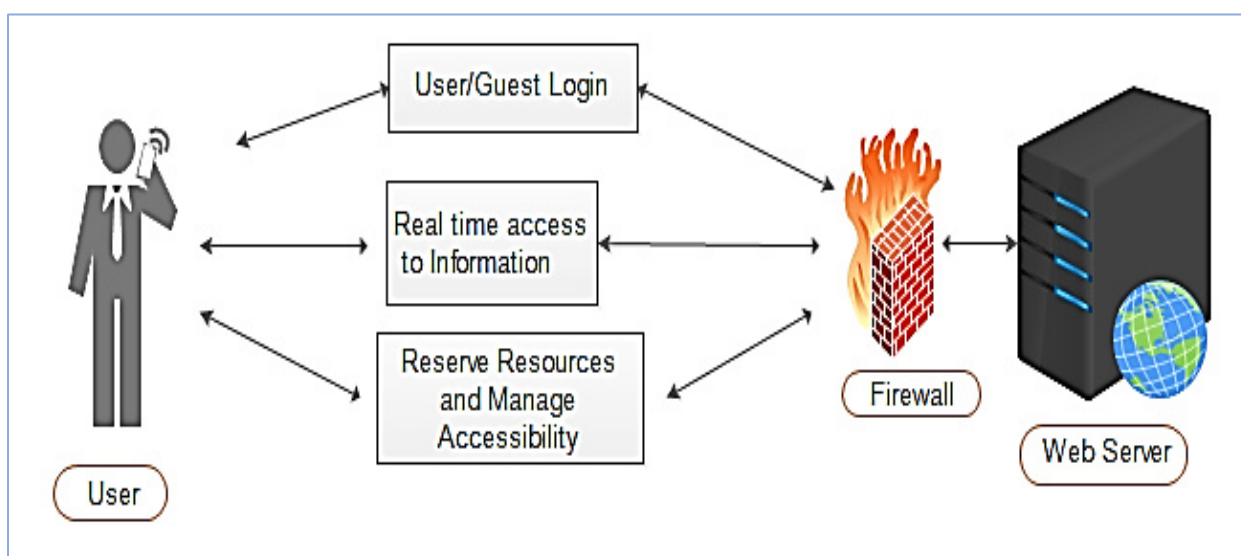


**Fig. 1: Basic use-case structure for library app**

Various libraries have developed mobile applications for rendering their services to mobile users. These applications provide dedicated services through these applications. The following diagram shows the interface of the android-based library application developed by IIT Gandhinagar. This application shows a menu of My Collections (here user can save their searches, wish lists of reading, etc.), Digital Resources, Library Services, Research Publications, Ask the librarian, Library Membership, Library Hours, and About.
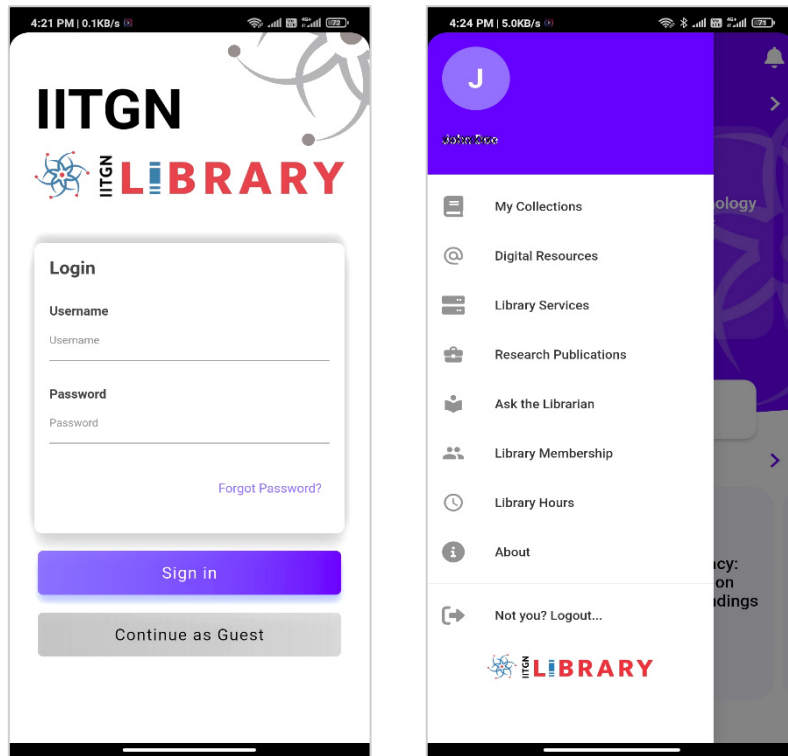
**Fig. 2 & 3: Mobile Library Application: Interface (Library@IITGN App)**

**2. M-OPAC:** M-OPAC is the term used for Mobile-OPAC. The library can provide the extension of the catalog in the form of an application for mobile devices or in mobile responsive web-page format by using the M-OPAC service. Users can search through mobile for the document or book they required, users can also know the status of the book whether it is available within a library, and can reserve it remotely. Some OPAC extensions withheld login-based services where users can know their account status like how many charged books are on their account and their due dates, fines of overdue documents, etc. As M-OPAC is a time and resource-saving tool so it supports the five laws of library and information science. The following images (Fig. 4,5 & 6) show the basic interface of M-OPAC implemented through the IIT Gandhinagar library
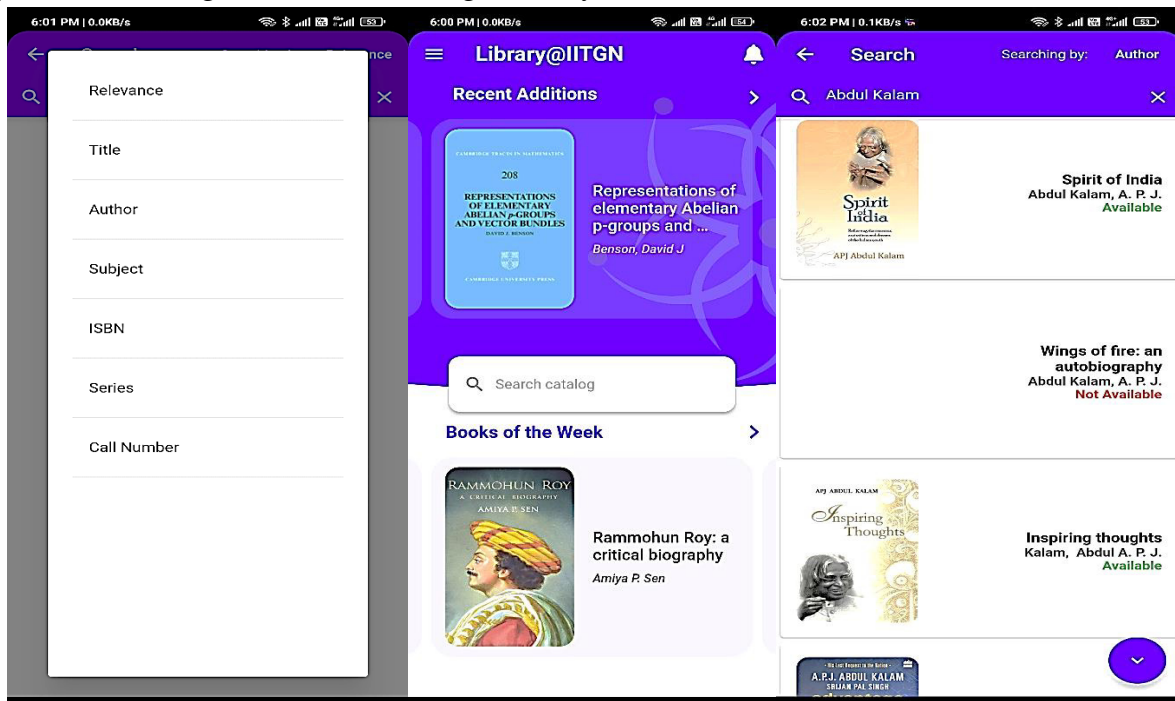


**Fig. 4, 5 & 6: M-OPAC: Interface, Search Options and Search Results (Library@IITGN)**

**3. Remote Access to Resources:** The increasing prevalence of handheld devices such as android smartphones has made its impact on the libraries and services they are providing through digital means. Various institutional and research libraries provide remote access to their subscribed web resources through the means of remote access. These subscribed web resources are bundled and provided through some web discovery platforms (e.g., Web of Science, Taylor, and Francis, Oxford university press, Springer, Scopus, etc.). These web resources can be accessed through login-based web proxy servers like EZproxy, RemoteLog, Knimbus, Myloft, etc. These web proxy servers are used by libraries to give access remotely or from outside the library's computer network to subscribed web resource websites that authenticate users by IP address. If users are aware that these are once logged in and authenticated within a library coverage by their login particulars, they can access these resources remotely. Usually, students have their mobile devices along with them wherever they visit they can easily access this proxy server wherever they want using their mobile devices. Various proxy server providers like Knimbus and Myloft have prepared their android applications and are available on the Google play store freely. Following are some images (Fig. 7,8 & 9) of remote proxy server application-mLibrary (Knimbus Platform), provided by Shivaji University Library, Kolhapur (BBKRC).
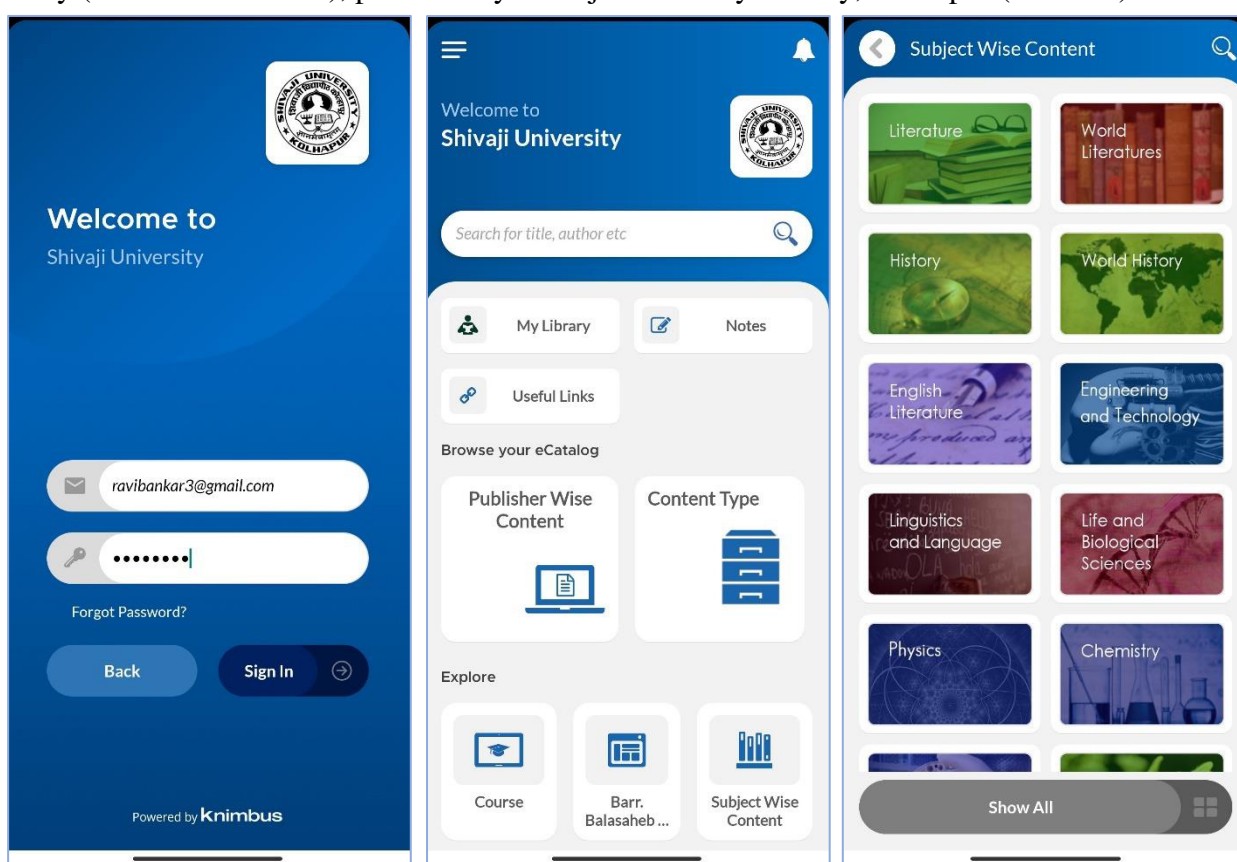


**Fig. 7, 8 & 9: Remote Proxy Server App (Login Interface, Home Interface, and Subject-wise Content (mLibrary@ Shivaji University)**

**4. Mobile Reference Service:** Among the many services capable of changing the library landscape, mobile reference can be one of the most significant impacts on library services(Panda, 2021). This service is to provide an interactive platform where users can communicate to the information reference manager in real-time and the reference manager will provide the real-time information solution to the library user. Some of the libraries are using bot-based reference services but bot-based reference service is not much effective because it uses the preset database and AI-based results for catering reference services.

**5. Current Awareness Service:** In the age of information overload, getting relevant and authentic information over specified has become a hectic job, these things have led to current awareness services of much importance. Libraries can provide user-dedicated faculty-specific CAS services using easy-

to-use interfaces for their patrons. Users can fill up their search profiles for individual needs using from their end. And relevant information alerts can be provided to the users in the required format as per the availability of information. SMS and Instant messaging services are also being used by libraries for CAS/SDI purposes. These services will be found most useful for higher education institutions and research centers.

**6. Personal Counselling/Bibliotherapy:** Smartphone devices can be the best medium for personal counseling. Various institutes with eminence have recommended mentor systems for the overall development of students through the help and support of their teachers or guides. Smartphones can be used as communication and tracking media for students' well-being. Bibliotherapy sessions can be arranged for users/patrons to cope with their real-life problems using different videoconferencing applications like Zoom, and Webex to communicate with and help them in their mental wellbeing.

**7. Responsive web portals:** Responsive design allows any website content to flow freely across all screen resolutions and sizes, and renders it to look great on all devices. Whenever a library website is developed make sure it must be mobile and tablet responsive. It gives a catchy environment to readers using small screens. Usually educational and e-learning websites are designed to be responsive to different devices. The library has to add so many resource links and forms on their website for providing web-based information services for their patrons so usually their page contents are high, so device-responsive web portals can be undoubtedly useful for readers. The following images (Fig.10& 11) show the difference between desktop responsive webpage and mobile responsive webpage.
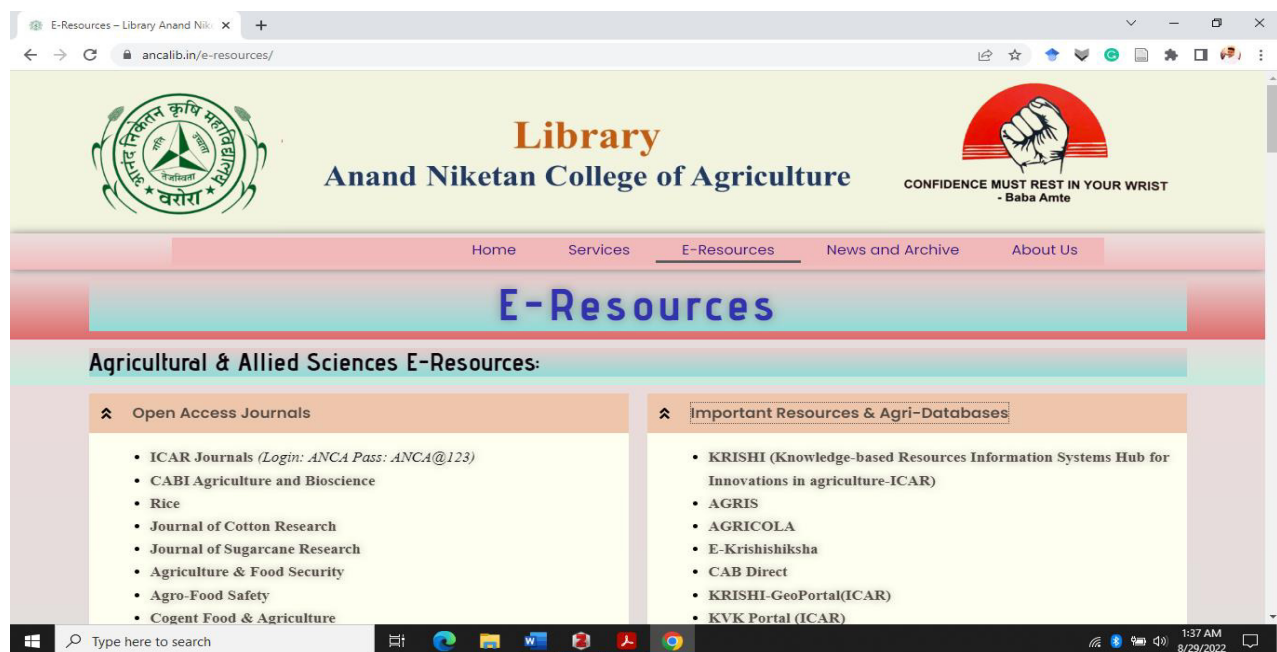


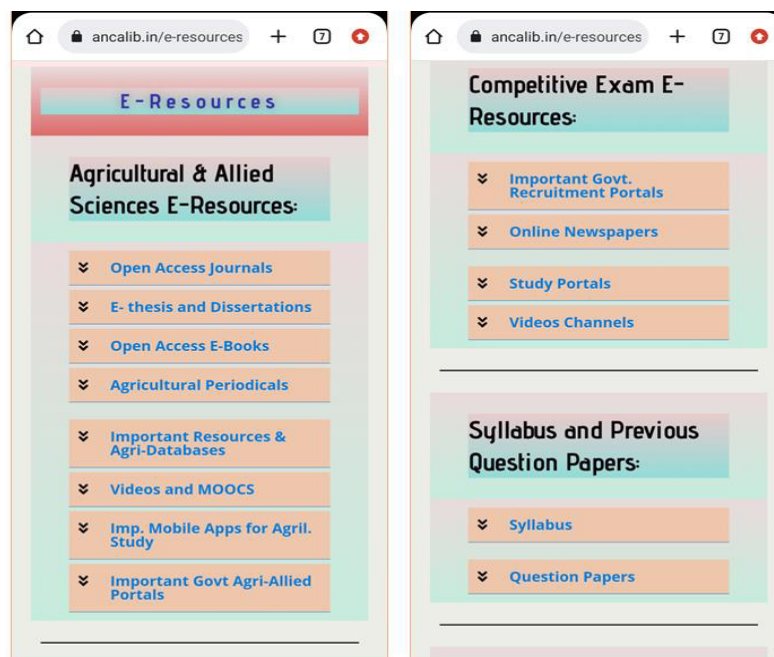**Fig. 10: Desktop Responsive Library Webpage**

**Fig. 11: Mobile Responsive Library Webpage**

**8. Distance and Virtual Learning:** Distance education with mobile learning is truly coming of age and offering huge scope for innovative solutions. During the dire period of covid-19, all the education systems were dependent upon smartphone devices. In developing countries there are access constraints for higher education, M-learning initiatives like IGNOU are offering huge scope for potential distance learners. IGNOU serves the educational aspirants through 21 Schools of Studies and an elaborate network of 62 Regional Centers, 2,300 Student Support Centers in India, and 52 partner institutions in 33 countries abroad. Libraries can build distance learning repositories of MOOCs, E-contents, and study materials that can access e-learning using mobile platforms for their patrons.
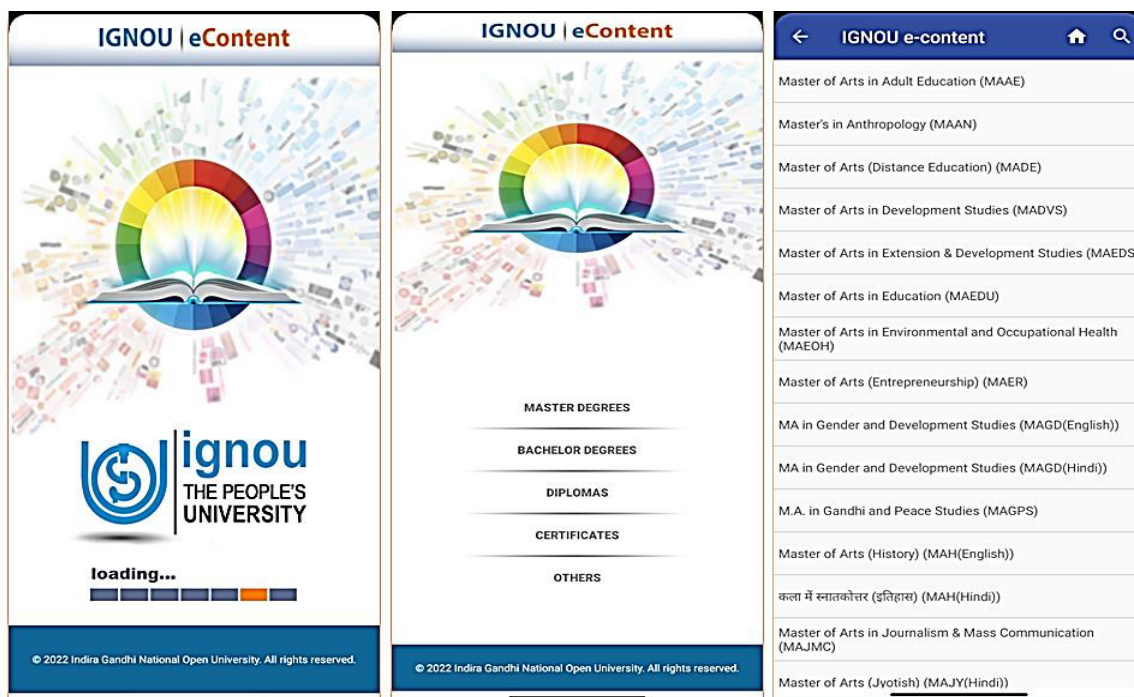


**Fig. 12,13 &14 Distance Learning E-content Application (IGNOU)**

**9. Services for differently abled:** For bridging the gap in the provision of library services and literacy support for the differently abled students, smartphone devices can be used as a medium of information by assisting using e-book reader applications, audiobooks, and custom screen readers for the visually

impaired users. Library and information can get support for aiding these services through government schemes like RUSA (Rashtriya Uchchatar Shiksha Abhiyan). By assisting differently abled users libraries can encourage the participation of these users in higher education. Libraries should provide training to such users for using screen reader applications like Google's Talkback app (inbuilt application in android OS) for using smartphone devices for learning purposes for the means of inclusive education.

**10. Library Outreach:** Libraries are service-centric and non-profit organizations inherently, as service platform libraries are necessary to promote themselves within the potential user community. Libraries can promote themselves using educational communities and social media platforms like LinkedIn, Facebook, YouTube, etc where libraries can showcase different initiates, programs, and schemes run by them. Social media can be a powerful tool for communicating and facilitating relationships with existing and potential users and is becoming increasingly popular within the library community. Different programs can be initiated for different focus groups by libraries. As the current users' are techno-savvy these initiatives can be easily captured by potential new users. SMS services as well as flash messages/instant messages can be used effectively to alert mobile users for library promotion purposes.

**Findings of the Study:**

In the findings, the following points will be positively drawn about rendering smartphone-based library services:

**1. Limitless information access:** As per the five laws of the library, information services are to be provided swiftly to the users so, the application of mobile technology for information dissemination will help in easy accessibility to users.

**2. Real-time and remote access:** Instant reach of authentic data is a need-of-the-hour use of smartphone devices for providing proxy-based resources and remains the best option in these conditions.

**3. Library promotion:** Outreach initiatives using social media, education communities, and networks will automatically lead to library and information center promotion.

**4. More interactive, more engagement:** Mobile web offers a participatory experience to the patrons, and they can create communities on educational networks. The interactive interface will give space for users to connect with the library admin directly through dialogue windows information needs, as well as users can give instant feedback and suggestions to the admin.

**5. Pacemaker to service in the academic arena:** To develop mobile-based services will help librarians to connect and provide updated data and resources instantly to users as per their required form and this will be useful as a catalyzer to the library services rendered.

**6. Developing reading habits:** The use of a mobile-based service module will undoubtedly help in increasing the reading habits of youngsters in the digital era because now they are habitual of using mobile apps, and ultimately it will help to develop their academic career and personality-building.

**7. Distance learning:** M-learning has the potential to support organizational training and professional development in various new ways.

**8. New methods and new potentials:** Learners can gather the information on their smartphones and can move with the data for reading it at their convenience, even after switching off the internet.

**9. Inclusive education:** Mobile base services to differently-abled students will help in inclusive education and increase their participation in higher education.

**Conclusive Remarks:**

Due to daily updates in information communication technology and information explosion, Information Centers are becoming more and more agile day by day. Libraries and information centers are converting themselves for coping with the transition of technology by various means. As the use of mobile devices has become an essential part of human life, libraries should provide such a

compatible technology using essential ICT infrastructure for effective and efficient service for their users. Library and information managers should get trained and skilled in providing new technology for the modern techno-savvy user. In conclusion, one can say that it is time to update the conventional versions to the new Library and information centers for exploring the new futures on small screens.

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