



## DEVELOPING MOBILE APPLICATIONS TO ENHANCE LIBRARY SERVICES IN INDIA

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### I. INTRODUCTION

In past years, the rise of mobile technology has changed many areas, especially library services in India. As more users depend on smartphones for information and communication, libraries need to change their services to keep up with these tech changes. Mobile apps offer a useful way to boost library involvement by giving users quick access to resources like e-books, digital journals, and different library databases. By adding features that make navigation easy and provide personalized suggestions, these apps can greatly enhance the experience for library users. Moreover, options like chat support and instant alerts about new materials can create a more engaging and responsive library setting. Therefore, creating specific mobile apps not only meets current user needs but also acts as a strategic way to close the digital gap and support lifelong learning for varied groups in India.



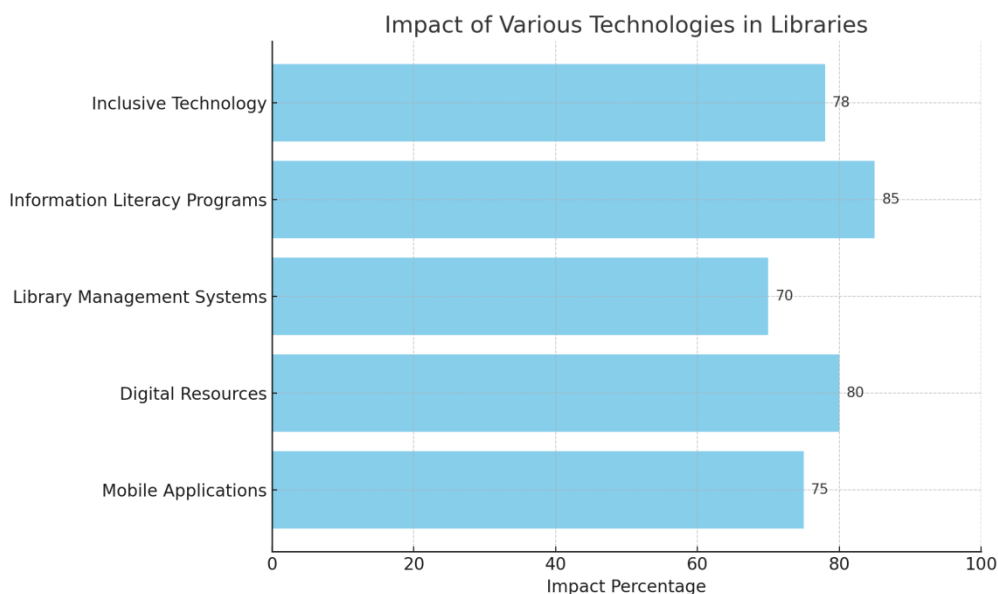
### A. Overview of library services in India

Library services in India have changed a lot, especially because of fast technology growth and new user needs. In the past, libraries mainly kept printed materials, but today's library services focus more on digital access, user interactivity, and engagement. Many libraries now use information and communication technologies (ICT) to better serve their users, making e-books and online databases easily accessible. However, there are still problems, like differences in internet availability and the need for better digital infrastructure in rural areas, where most of India's people live. Using mobile apps can help solve these problems by allowing users to easily access library resources from anywhere, improving service quality and inclusivity. Such improvements not only encourage user engagement but also support lifelong learning in different communities across the country.

### B. Importance of technology in modern libraries

Using technology in today's libraries is important for improving library services, especially in places like India. With more digital resources and online tools, libraries are moving from simply storing books to becoming active centers of information that meet user needs. Using mobile apps can help this shift by making it easier to access library catalogs, e-resources, and involve the community (cite3). Additionally, the speed at which new ideas in library management systems are developing is very important. It has been observed that change in libraries includes not just tech improvements but also better user experiences and practices (cite4). By using these tech tools, libraries can create a more welcoming space that encourages learning and information skills, which helps users and enhances

education in India. Therefore, technology is crucial for updating library services and expanding their accessibility.



The chart illustrates the impact percentage of various technologies utilized in libraries. Information Literacy Programs have the highest impact at 85 percent, highlighting their importance in promoting learning and empowering users. Digital Resources also show significant impact at 80 percent, while Library Management Systems, Mobile Applications, and Inclusive Technology follow with impacts ranging from 70 to 78 percent. This demonstrates the varying degrees of influence these technologies have on enhancing library services and user experience.

### C. Role of mobile applications in enhancing services

Mobile apps have changed how libraries provide services, especially in India, where it is very important to reach users and engage them. These apps make it easy to get to electronic resources such as e-books and journals, meeting the different needs of library visitors and helping create a learning space that includes everyone. For example, Dr. GRD Memorial Library's mobile app uses tools like Jotform and Chatbase to improve user interaction and make information easier to access (Image1). These new tools help libraries connect with users instantly and promote their active participation in library services, improving overall satisfaction. Also, using features like personalized content suggestions and interactive services shows how mobile apps can increase user engagement and retention, which supports the main aim of enhancing library services in today's digital world (Akyuz et al.)(Swain et al.).

### D. Objectives of the essay

The main goal of this essay is to look at how mobile apps can change library services in India, especially in areas that lack resources. The essay shows how using Information and Communication Technology (ICT) in library systems can help users who often miss out on digital resources. Studies have shown that ICT can make these services work better and be more open, which can lead to higher user engagement and satisfaction (Bhatnagar et al.). Additionally, the discussion points out the important need to tackle the digital divide while using mobile technology to make it easier to access e-books, online databases, and interactive materials, thus making library services more focused on the user (Nityesh Bhatt). In the end, the essay aims to highlight the framework needed for effectively using mobile apps to change the library scene in India, ensuring that information access is available to everyone.

### E. Significance of the study

The importance of the study on the development of mobile apps to improve library services in India is many-sided, targeting key issues in accessibility and user interaction. With more people living in cities and becoming digitally savvy, libraries need to use technology to connect with more people, especially in less advantaged areas where getting information is hard. Using mobile apps can help reduce this digital gap, allowing users to get library resources, like e-books and databases, on their smartphones, which helps promote literacy and spread knowledge (Bagla, 2005) (Nityesh Bhatt). Additionally, by using features like live chat and custom resources, libraries can create a more engaging and user-friendly experience, which is important for encouraging a love of reading and learning. Therefore, this study not only provides a guide for updating library services but also supports larger societal goals like education and access to information, meeting a vital need in India's changing educational environment.

## II. CURRENT STATE OF LIBRARY SERVICES IN INDIA

In India, right now, library services are changing from old methods to new and tech-focused ways. Although there are improvements in digital resources and more internet use, many libraries still have issues like poor buildings, different access levels in regions, and many people not knowing about the services offered. Mobile apps are becoming an important way to solve these issues, allowing easy access to library resources, e-books, and interactive catalog systems, which helps get users involved. Also, using mobile tech in library services makes information easier to reach and fits with the growing use of digital marketing strategies that show how valuable libraries are today ((Lalitha Aswath et al.)). By using these tech improvements, libraries in India can possibly turn into active community centers, promoting knowledge spread and supporting ongoing learning efforts.

| Year | Total Libraries | Public Libraries | University Libraries | Mobile Library Services | Digital Library Users | Total Book Holdings | Library Staff |
|------|-----------------|------------------|----------------------|-------------------------|-----------------------|---------------------|---------------|
| 2023 | 1               | 80               | 800                  | 150                     | 1.5                   | 34000000            | 120000        |
| 2022 | 1               | 78               | 780                  | 140                     | 1.3                   | 33500000            | 115000        |
| 2021 | 1               | 75               | 750                  | 130                     | 1.1                   | 33000000            | 110000        |

*Current State of Library Services in India*

### A. Types of libraries in India

The variety of libraries in India shows the country's cultural and educational richness, with different types meeting various community needs. Public libraries in both cities and villages give free access to materials and encourage reading and learning for life. Academic libraries linked to colleges and universities help with studies and research, usually having large collections of specialized resources needed for academic work. Moreover, special libraries in government offices and businesses focus on certain topics, providing specific resources for workers. With the rise of mobile technology, there's an increasing chance to improve library services through special apps. These changes not only help with access to online resources but also boost library engagement and outreach, making them more vital to community life and learning spaces in India, as shown by the findings noted in several reports (Swain et al.)(San Jose State University).

| Library Type       | Number of Libraries | Primary Users                        | Key Services   |
|--------------------|---------------------|--------------------------------------|--|
| Public Libraries   | 10000               | General Public                       | Book lending, Information services, Community programs |
| Academic Libraries | 3500                | Students, Researchers, Faculty       | Research support, Access to databases, Study spaces    |
| Special Libraries  | 500                 | Specific institutions, Organizations | Access to specialized resources, Research guidance     |
| Digital Libraries  | 200                 | General Public, Students             | Online resources, E-books, Virtual assistance          |
| School Libraries   | 15000               | Students, Teachers                   | Educational resources, Literacy programs               |

*Types of Libraries in India*

### B. Challenges faced by libraries

Libraries in India are trying to keep up with new technology, but they face many challenges that make it hard to serve the community well. One major issue is the lack of good digital infrastructure, which is necessary for using mobile apps to improve library services. Libraries often have poor internet connections and staff that need more training, which makes it tough to use new technologies effectively ((Ahmed et al.)). Also, users' expectations are changing quickly, as people want immediate access to digital resources and interactive tools that are not yet fully available in traditional libraries ((Bharti et al.)). Moreover, many libraries have limited budgets, which restricts their ability to buy the right technology and provide training for their staff. It is crucial to tackle these challenges to develop mobile applications that can genuinely improve library services, making them easier to use and more accessible.

| Challenge               | Percentage | Description  |
|-------------------------|------------|--|
| Lack of Funding         | 60         | Many libraries experience budget cuts and insufficient funding to maintain and develop services.         |
| Technology Gap          | 55         | There is a significant gap in technology adoption and digital literacy among library staff and users.    |
| Infrastructure Issues   | 50         | Many libraries lack the necessary infrastructure to support modern services, including internet access.  |
| Limited User Engagement | 45         | Many libraries struggle to attract and engage users effectively through programs and services.           |
| Content Accessibility   | 40         | Access to digital content remains a challenge due to licensing and copyright restrictions.               |
| Staff Shortages         | 35         | There is a shortage of trained library professionals to manage and operate library services efficiently. |

*Challenges Faced by Libraries in India*

### C. User demographics and needs

Getting to know user types and what they need is important for making good mobile apps that improve library services in India. Many people are using smartphones and mobile tech quickly, so it's crucial to understand that user groups are different, including students, researchers, and casual readers, all with their own needs. For example, students might want easy access to school materials, while researchers need advanced search tools for large databases. Also, as shown by (Beckman et al.),

the rise in mobile data use highlights the need for apps that can offer content well, especially in areas where internet is not very strong. By taking these different user types into account when designing apps, libraries can reduce access issues and boost user participation. Therefore, focusing on users in mobile app creation not only meets specific demands but also establishes libraries as key players in the digital world, encouraging ongoing learning and information skills.

| Age Group    | Percentage of Users | Preferred Features                  | Needs                                 |
|--------------|---------------------|-------------------------------------|---------------------------------------|
| 18-25        | 30%                 | Mobile access, e-books              | Availability of digital resources     |
| 26-35        | 25%                 | Online catalog, reservation system  | User-friendly interfaces, mobile apps |
| 36-45        | 20%                 | Research databases, tutorials       | Enhanced access to academic resources |
| 46-60        | 15%                 | Information literacy programs       | Assistance in using technology        |
| 60 and above | 10%                 | Print materials, community programs | Support for digital literacy          |

*User Demographics and Needs in Library Services in India*

#### D. Existing technological infrastructure

In making mobile apps to improve library services in India, the current tech setup is very important for how well these services work and are used. New progress in information and communication technologies (ICT) helps add mobile apps to libraries, letting users get to things like e-books and research databases more easily. Also, the creation of Free Economic Zones has boosted innovation and money in tech across many areas, which can help schools and libraries too (Britchenko et al.). But, problems like shaky internet connections and different skills in using digital tools among users need fixing to make sure mobile apps really help improve library use and access. By using current tech systems and fixing infrastructure issues, libraries can better their services in a world that is becoming more digital.

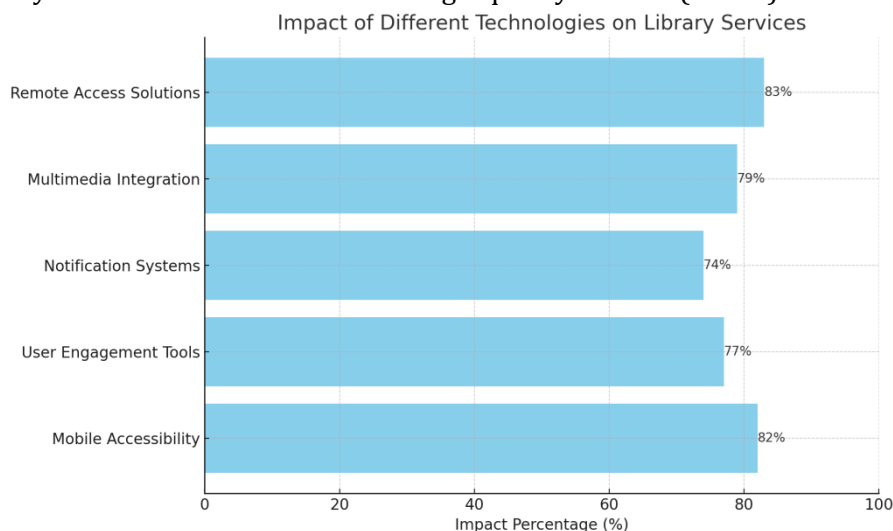
#### E. Importance of accessibility in library services

The role of accessibility in library services is very important, especially when making mobile apps in India. Libraries want to help many different kinds of people, so it is crucial that everyone, including those with disabilities, can use their resources and services to promote fairness and inclusion. Mobile apps can improve accessibility by providing easy-to-use features like text-to-speech, adjustable font sizes, and simple navigation for users with different needs. Furthermore, using mobile technology helps libraries reach communities that lack services, broadening their reach and making information available for everyone. These improvements align with findings showing that local solutions work better than generic ones, suggesting that customized applications can meet specific user needs (Law et al.). So, making library services accessible through mobile apps is not just an upgrade; it is a vital part of fair information access in today's digital world.

### III. BENEFITS OF MOBILE APPLICATIONS FOR LIBRARIES

Using mobile applications in libraries has many benefits that improve how users experience and access information. With mobile tech, libraries can give users easy access to many resources—from online catalogs to e-books—right on their devices. This makes it easier for users to get involved with the library and meets different information needs, especially for those in remote areas where regular library services might not be available. Also, mobile applications help improve communication between libraries and users, making it possible to send updates about new books and events quickly. Studies show that well-implemented technology can make library services better by increasing efficiency and

responsibility (cite23). In addition, mobile apps can help bring in multimedia services, which is important for today's users who want varied and high-quality content (cite24).



*The chart illustrates the impact percentages of various technologies on library services. Remote Access Solutions and Mobile Accessibility rank highest, showing the significant influence of these technologies in providing convenient and accessible library resources.*

### A. Improved user engagement and interaction

In the changing world of library services in India, mobile applications are very important for improving user engagement and interaction. By offering easy-to-use designs and quick access to many resources, libraries can greatly improve the user experience. For example, apps made for this purpose usually include features like real-time alerts about new books or events, which help keep users informed and engaged. Additionally, options like personalized suggestions based on user search history make the experience better, creating a feeling of ownership in their learning process. A study showed that using tools like Chatbase for interactive questions can help communication flow better between users and library services, which enhances user satisfaction ((Akyuz et al.)). As libraries keep updating their technology use, the focus on providing engaging and dynamic digital experiences is crucial for creating a lively informational ecosystem in academia.

### B. Enhanced access to library resources

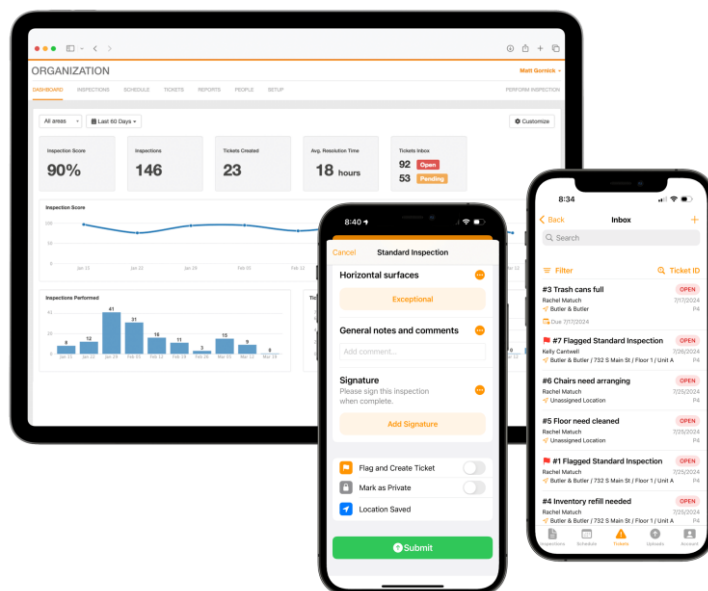
Mobile apps are changing how people access library resources in India, making information sharing more efficient and fair. These new technologies allow quick access to large electronic databases, e-books, and academic journals, which many do not use because of location and infrastructure issues. With tools like those shown in [extractedKnowledge1], users can easily find library resources, improving their interaction with academic materials. Additionally, user-friendly features like personalized search options and real-time help help lessen the digital gap, bringing services from cities to rural areas. This supports Keniston's idea that investing in information and communication technologies (ICT) can meet both advanced information needs and basic community needs (Nityesh Bhatt). These efforts not only upgrade library services but also promote a continuous learning culture that is important for educational growth in modern India.

### C. Streamlined library management processes

The rise of mobile apps presents a big chance to make library management better, especially in Indian libraries. By using technology, libraries can work more efficiently and improve how users connect with their services. For example, apps can handle everyday tasks like cataloging, circulation, and inventory management. This allows library staff to spend more time with patrons and selecting



resources. Also, mobile platforms enable access to data and communication in real time, making workflows smoother and lessening administrative delays. Using frameworks like those shown in , libraries can create digital dashboards that show management insights, from inspection metrics to user engagement stats, which helps in making decisions based on data. As mentioned in research summarized by (Carlo Vezzoli et al.), adding these tech improvements not only makes library systems work better but also enhances the user experience, making library services easier to access and more responsive to community needs.



*Image1. Digital Dashboard for Inspection Management*

#### **D. Promotion of reading and literacy**

Promoting reading and literacy through mobile apps for library services in India is important for creating a learning culture. With mobile technology, libraries can give users quick access to many reading materials, boosting engagement and promoting regular reading habits among users. Apps can have features like selected reading lists, fun book clubs, and engaging literacy games, which work well to inspire younger users. Also, having easy-to-use interfaces and tailored suggestions can improve the user experience, making reading easier and more fun. Successful examples from around the world, like those mentioned in (Akyuz et al.) and (Gater et al.), show that using educational technology can help fix literacy issues and expand access to information. This can turn libraries into lively community places for learning and discovery.

#### **E. Facilitation of remote services and support**

Remote services and support are key in improving library services in India, especially since mobile apps help connect users with resources. By using new technology, libraries can give services like online reference help, e-book loans, and access to digital materials, thus broadening their reach past old limits. For example, strong mobile apps can let users talk to librarians instantly, creating a community feel while offering quick help to satisfy their information needs. Also, as libraries change to meet the demands of the digital world, focusing on user interaction through these methods is very important. This change is vital for libraries to stay relevant in a world more and more focused on online resources, ultimately aiding in creating a more knowledgeable and linked society within India (Hanna et al.)(Ahmed et al.).

#### IV. KEY FEATURES OF EFFECTIVE LIBRARY MOBILE APPLICATIONS

When making mobile apps to improve library services in India, some important features are necessary to make them work well and be easy to use. First, a clear and easy-to-use interface is very important, so users can move through the app easily and find resources quickly. Also, having personalized experiences, like suggestions based on what users have borrowed before, is crucial to keep users interested and to encourage them to often visit digital collections. Good search options, which let users find books and articles with little effort, are also vital for handling different types of content. Adding multimedia resources, such as e-books, academic journals, and fun learning materials, makes the app more valuable as a complete educational tool. Lastly, having a way for users to give feedback helps keep the communication between library staff and users open, leading to better services. All these features work together to make library mobile apps more effective, improving user satisfaction and engagement in India.

| Feature                     | Description  | Importance  |
|-----------------------------|--|---|
| User-Friendly Interface     | An intuitive design that allows users to navigate easily.    | Enhances user experience and encourages usage.            |
| Search Functionality        | Advanced search options including filters and categories.    | Helps users find resources quickly and efficiently.       |
| Account Management          | Users can create and manage their accounts and preferences.  | Personalizes the experience and improves user engagement. |
| Notifications and Alerts    | Real-time updates on new arrivals, due dates, and events.    | Keeps users informed and encourages return visits.        |
| Integration with Catalogs   | Seamless access to digital and physical library catalogs.    | Facilitates resource discovery and availability checking. |
| Mobile Check-Out            | Enables users to check out items directly from their device. | Streamlines the borrowing process and reduces wait times. |
| Access to Digital Resources | Provides e-books, journals, and databases within the app.    | Increases access to resources beyond physical walls.      |

*Key Features of Effective Library Mobile Applications*

##### A. User-friendly interface and design

A good, easy-to-use interface and design are very important when making mobile apps to improve library services in India. For these apps to gain popularity, they should focus on being simple to use, using ideas from technology acceptance research like perceived ease of use and perceived value, especially in areas where people may find it hard to adapt to new technology ((E. M.Rogers et al.)). Additionally, since mobile apps often target a wide range of users, including students and professionals, the design must fit different literacy levels and preferences. Allowing users to try out features before fully committing can really boost user involvement ((Dearden et al.)). The use of visual elements, like easy navigation and quick access to resources, should meet users' needs, promoting smooth interactions that encourage continued use of library services. In the end, a well-crafted interface can improve user experiences, making library resources easier to access and better at fulfilling the educational needs of the community.

##### B. Integration with library databases and catalogs

When making mobile apps for improving library services in India, linking with library databases and catalogs is very important for offering user-friendly services. By allowing easy access to digital materials like e-books and academic journals, mobile apps help users do research and find information while they are moving, which leads to better library interactions. Good integration makes sure that updates on book availability, catalog searching, and user account handling are clearly shown through easy-to-use interfaces. The NMC Horizon Report: 2014 Library Edition states that using mobile



technology not only gives quick access to library resources but also greatly enhances user experience by providing tailored suggestions based on past borrowing and preferences (New Media Consortium). This innovative method fits with current trends in library services, making libraries key educational centers in India's digital world.

### **C. Features for personalized user experiences**

In the development of mobile apps to improve library services in India, it is very important to create personalized experiences for users to boost their engagement and satisfaction. Features like customizable interfaces, where users can choose their preferred color schemes and font sizes, greatly enhance accessibility and usability. Additionally, using smart chatbots can help answer user questions quickly by giving instant replies based on what each user needs, as shown by the progress in AI interaction systems (Drigas et al.). Furthermore, using recommendation algorithms that look at borrowing history to suggest materials helps users find new resources that match their interests. This kind of personalization increases the feeling of ownership and promotes ongoing engagement with library services, which ultimately improves the educational environment in India. These careful integrations are vital for developing effective, user-focused mobile library applications.

### **D. Offline access to resources**

When looking to improve library services in India, providing offline access to resources is very important to solve the accessibility problems users face in different areas. Many places in the country have unreliable internet, which makes it hard for patrons to use digital materials. Creative mobile apps can help with these issues by giving users options to download e-books, articles, and multimedia content for offline use. This method supports ongoing learning and agrees with research that shows educational technology should focus on user needs and local practices (Gater et al.). Moreover, these solutions can help ensure fair access to knowledge, especially in communities that lack resources, which promotes inclusive education. Therefore, adding offline features to library mobile apps is necessary to enhance engagement and resource use among various demographic groups throughout India.

### **E. Support for multiple languages and accessibility options**

When making mobile apps to improve library services in India, it is very important to support many languages and options for accessibility to ensure that everyone can access information. India has a lot of languages, so adding regional languages to mobile apps not only reaches more people but also follows the ideas of Universal Design for Learning (UDL), which aims for fair access to educational materials for all users, including those with disabilities (Banes et al.). Additionally, accessibility features like text-to-speech and high-contrast visuals help users with different abilities engage with library resources effectively. As libraries change into digital spaces, adding these features is critical to creating a place where anyone, no matter their language or physical abilities, can use and benefit from library services (Asari et al.). In the end, focusing on these elements tackles both educational fairness and user satisfaction in India's libraries.

## **V. CASE STUDIES OF SUCCESSFUL MOBILE APPLICATIONS IN LIBRARIES**

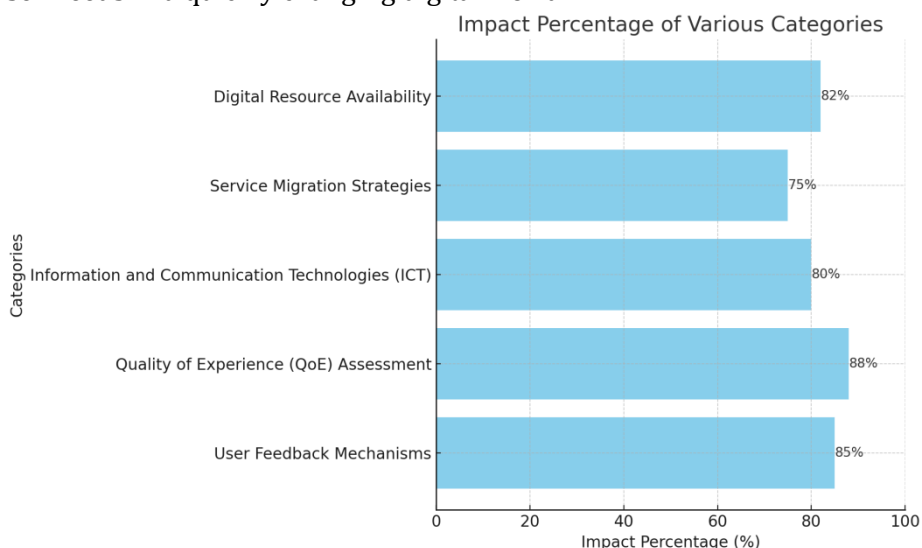
Mobile apps have become important tools for improving library services, as shown by many successful examples worldwide. A key case is the Dr. GRD Memorial Library, which created a mobile app to boost user engagement and access to digital resources like e-books and e-journals. The process of putting this app in place included using Jotform for creating engaging content and Chatbase for chat features, which allowed librarians and users to communicate in real-time, greatly improving the user experience. The success of this app also emphasizes the larger effects of using information and communication technologies (ICT) in libraries, especially in developing countries such as India. As libraries work to cater to the changing needs of various user groups, using mobile technology helps create a more connected and responsive library setting, leading to improved information access and user satisfaction (Dearden et al.)(Ahmed et al.).

### A. Overview of notable applications in India

The mobile app scene in India is changing, especially in how library services are improved through tech solutions. Apps like BookMyShow show how mobile tech can help users get information and services easily. This app makes it simple to book events and has a large collection of book resources, which promotes community engagement with libraries. Also, there are academic mobile apps, like those made for the Dr. GRD Memorial Library, that use tools such as Jotform and Chatbase to make user experiences better and provide quick access to online resources (). These apps tackle old problems library users face and show a trend in India towards using ICT solutions, which helps create a better educational setting ((Joseph et al.)).

### B. Analysis of user feedback and satisfaction

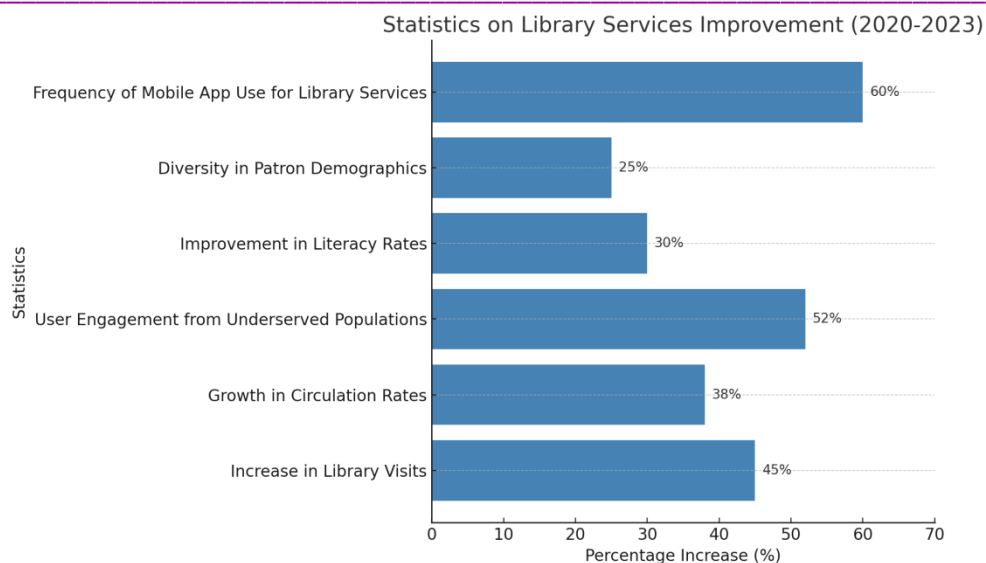
In making mobile applications to improve library services in India, looking at user feedback and satisfaction is very important for getting it right. Knowing what users think helps developers create features that meet library visitors' needs, which can lead to more usage. For example, adding multimedia resources should go hand-in-hand with regular feedback methods to check the Quality of Experience (QoE), as research on fog computing shows that moving services around is key to better performance ((Both et al.)). Also, using information and communication technologies (ICT) can significantly enhance how users interact, making services more efficient and clear ((Bhatnagar et al.)). Therefore, gathering and studying user feedback helps improve app features and makes sure library services meet user needs in a quickly changing digital world.



*This bar chart illustrates the impact percentage of various categories associated with improving user engagement and app performance. The Quality of Experience Assessment stands out with an 88 percent impact, highlighting its significance in evaluating user satisfaction.*

### C. Impact on library usage statistics

The use of mobile apps in library services in India has changed how people use libraries, showing a clear change in how users engage and interact. Mobile technology has allowed for better access to information, leading to more visits and circulation, especially among those who typically have less access. Research indicates that having mobile devices and internet access improves literacy and educational results, helping to create a culture of reading and ongoing learning in communities that were once not involved (Han Ei Chew et al.). This change is also backed by the internet's role in making information easier to access, narrowing the divide between urban and rural users, and supporting fair development across different areas (Jagun et al.). Thus, as users become better at using library services on mobile platforms, data trends will likely show not just more visits but also a wider range of people using libraries, highlighting how mobile apps significantly affect library use.



The bar chart illustrates the percentage increase in various aspects of library services from 2020 to 2023. It highlights significant improvements such as a 60% increase in the frequency of mobile app usage for library services and a 52% rise in user engagement from underserved populations, while also noting a 25% increase in diversity among patron demographics.

#### D. Lessons learned from implementation

The introduction of mobile apps to improve library services in India has provided important lessons for future projects in this area. First, being successful depends on knowing what users want and including useful features, as shown by apps that focus on user interaction and quick access to materials. Second, training for librarians is very important; as shown by many educational technology (edtech) projects, poor training can make the tools less effective (Gater et al.). Also, it's crucial to have a good evaluation system to make sure user feedback and usage statistics lead to ongoing improvement. Lastly, working with technology suppliers can improve resource access and tech support, encouraging new ideas and flexibility in library environments (Arivudai Nambi Appadurai et al.). In summary, these lessons emphasize the need for a well-rounded approach when using mobile apps to develop library services that are lasting and effective.

#### E. Future prospects for similar initiatives

The future of projects focused on making mobile apps to improve library services in India looks good, especially with fast tech changes and more people using smartphones. For example, places like Universitas Terbuka show that mobile tech can really help people reach educational materials, letting them use library services remotely to borrow digital books and get research help (A Tsinakos et al.). Also, using artificial intelligence in app creation can lead to tailored suggestions, improving how users feel about the service. Adding interactive features, like those in the app made for Dr. GRD Memorial Library, can encourage more user participation and help build a habit of ongoing learning. In summary, by focusing on designs centered on users and new functions, similar projects can greatly change library services, making them more useful and easy to access in our current digital world.

### VI. CONCLUSION

To sum up, making mobile apps to improve library services in India looks very promising for changing how users engage and find information. By using new information and communication technologies, libraries can connect traditional resources with the current digital world, meeting different user needs (cite59). The good use of mobile apps makes it easier to get e-books and journals and is also a key way to share information about library services, encourage user education, and

enhance the overall experience for customers. Additionally, as seen in successful health technology projects, similar strategies can be used for library services so that libraries can stay relevant and meet the changing needs of the community (cite60). In the end, focusing on mobile development is important for encouraging reading and lifelong learning in India, which will improve the educational area.

### A. Summary of key findings

The main findings of the study show that mobile apps are very important for changing library services in India, especially by improving user interaction and making access easier. A thorough review showed that mobile tech helps users feel satisfied because it offers quick access to e-resources and simplifies how services are delivered, which helps solve problems that come with traditional libraries. Also, things like how easy the apps are to use and social influence were found to be important factors in whether library users adopt the technology, which points to the need for apps that focus on being user-friendly and socially connected (E. M.Rogers et al.). Moreover, the successful use of these technologies depends a lot on stakeholders understanding how essential innovation is for library operations, as noted by (Swain et al.). This suggests that libraries should not only use current technologies but also create custom solutions that meet local user requirements. These findings highlight how mobile applications can significantly improve the library experience in today's digital world.

### B. Recommendations for library stakeholders

Seeing how mobile apps can change library services in India, stakeholders need to use a clear plan to make the most of their benefits. First, libraries should work with tech developers and schools to design apps that meet local needs, making sure everyone can use them. Also, investing a lot in training staff is important; librarians should know how to help users with these technologies. Putting money into gathering user feedback is key too, as it will help improve the apps based on what users say. Outreach efforts should promote the advantages of these digital tools, encouraging community participation and supporting ongoing learning. By focusing on these actions, library stakeholders can make sure that mobile apps improve services and help create a society that understands digital tools better, increasing access to information and user involvement.

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#### Enhancing Library Engagement: Designing a Mobile Application for Dr. GRD Memorial Library Using Jotform and Chatbase

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**Abstract** - Mobile applications are software applications developed for small and wireless computing devices such as smartphones and tablets, rather than desktops or laptops. With advancements in networking technologies, mobile applications are increasingly utilized in the field of education, particularly in libraries, to engage more users. They are predominantly preferred for providing library services such as accessing e-resources like e-books, e-journals, e-newspapers, e-papers, etc. Additionally, these applications provide users with access at any time, from anywhere, and help save time. This paper briefly explains the design of a mobile application for Dr. GRD Memorial Library, the main library of PSG College of Technology, using Jotform, a free, no-code app builder that allows sharing multiple forms, links, and other elements in a single app that works on any device. To enhance interactivity, a chatbot is also incorporated using an AI chatbot builder, Chatbase, primarily utilized for adding chat widgets in mobile applications.

**Keywords:** Mobile Application, Mobile Library, Jotform, Chatbot, Chatbase

content directly from their mobile devices. Many libraries have created mobile apps and implemented responsive design for their websites, allowing users to easily access library services and resources from a variety of devices (Becker, D. A., 2020). The development of a mobile app for the library using the app builder tool, Jotform.

#### A. About PSG College of Technology Library

PSG College of Technology is a Govt. Aided, Autonomous, Affiliated with Anna University and an ISO 9001:2025 certified institution. It was established as PSG Industrial Institute in 1926 by PSG and Sons Charities in Peelamedu, Coimbatore. The engineering college was started on the institute campus in 1951 by G. R. Damodaran, who became its first principal. The college library was named after the inaugural principal of the college, the Dr. GRD Memorial Library has over 260,000 books, 13,000 CDs/DVDs, and 217 printed journals and 1078 E-Journals to cater to students, research scholars, and faculty members. There is an exclusive digital library with 60 computers connected to high-speed internet. The library subscribed more than 15 databases. They also provide various services like Article Request, Value Added Services, Reference & Referral Services, Patent Search Service, E-Alerts, NDLI Membership, Book Bank Services, Book Recommendation, and Feedback Service. The mobile app users of Dr. GRD Memorial Library can utilize these services via the app created by Jotform.

#### B. Need of Mobile Apps

Libraries today recognize the importance of having mobile apps to make it easier for people to access and use their services (Chiu, P.-S., 2014). Mobile apps allow users to explore library resources, like e-books and catalogs, directly from their phones. These apps also send timely notifications and help users connect with various library services effortlessly. By embracing mobile apps, libraries adapt to the preferences of users who are accustomed to using smartphones, making it simpler and more convenient for everyone to engage with the library's offerings (Tangting Zhu, 2014). During pandemics and natural disasters, libraries and librarians face numerous obstacles in

#### I. INTRODUCTION

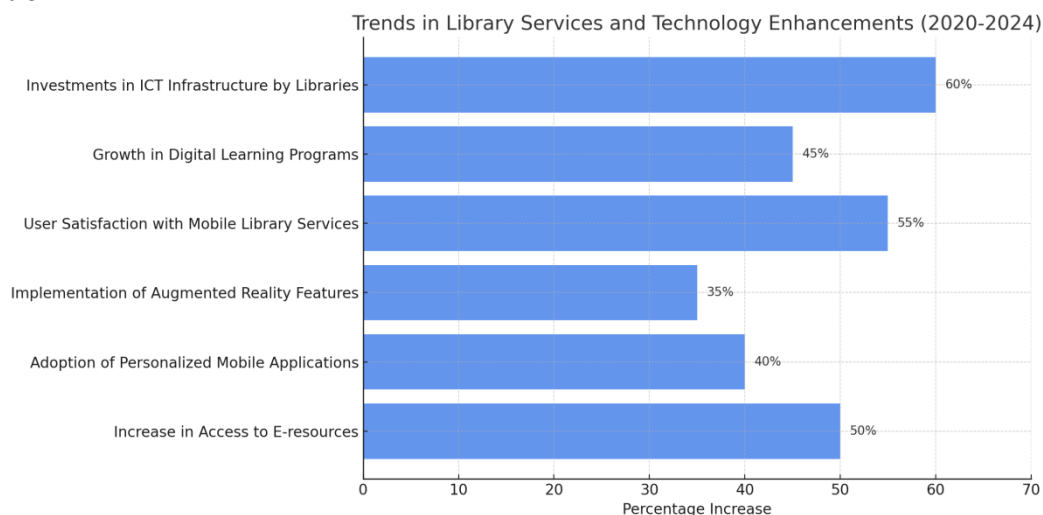
Due to significant advancements in ICT, information technology is playing a critical role in academic libraries. Most of the Academic libraries are looking for mobile applications to provide their services and resources. Mobile applications, often simply referred to as "apps," have become an integral part of our daily lives, revolutionizing the way we communicate, work, play, shop, and access information. These software programs are designed to run on mobile devices such as smartphones and tablets. In the library mobile applications, users can access the library information through their electronic gadgets. Mobile apps are increasingly focusing on providing personalized experiences by tailoring content and features to user preferences and behavior (Syahidul Haq, M., 2022). According to the fourth law of library science "Save the time of the users" by S.R. Ranganathan, mobile apps help the user to save their time.

Libraries currently offer digital resources such as e-books, e-journals, and online databases, allowing users to access vast information from any location with an internet connection. Libraries can provide mobile apps that allow users to borrow and read e-books, audiobooks, and digital

## Image2. Mobile Application Design for Enhancing Library Engagement

### C. Potential for future developments in mobile technology

Mobile tech keeps changing, and it could really change library services in India. Future changes will likely try to improve user involvement through mobile apps that give personalized suggestions based on what people like to read. These new tools could help more people use e-resources, solving the problem of underused digital collections mentioned in (Deepak Kumar et al.). Also, using new tech like augmented reality and artificial intelligence might create fun learning experiences, connecting physical and digital resources better. To make this happen, libraries should take active steps and have solid ICT systems, making access easy for everyone, whether on-campus or off. According to (Swain et al.), creating an innovative atmosphere in libraries is key to staying important; therefore, investing in mobile tech could lead to better operations and improved user experiences in the fast-changing world of information.



The chart displays the percentage increase in various factors affecting library services and technology enhancements from 2020 to 2024. The data highlights significant growth in areas such as access to e-resources, mobile applications, and user satisfaction.

### D. Importance of continuous user feedback

The role of ongoing user feedback in making mobile apps for improving library services in India is really important, as it helps connect technology with what users need. By regularly gathering and looking at feedback, developers can spot problems and chances to make things better, making sure the app meets the specific needs of library users. Research has indicated that using user feedback supports a design approach focused on users, which is key for boosting engagement and satisfaction ((Rathee et al.)). Additionally, the flexible nature of user feedback lets developers make small updates to adapt to changing preferences, which has been shown to boost app downloads and improve ratings ((Lim et al.)). This ongoing process not only improves the user experience but also keeps library services relevant and sustainable in a fast-changing digital environment, ultimately promoting easier access to resources for various user groups.

### E. Final thoughts on the future of library services in India

Library services in India are changing, and using mobile apps marks a key move to better serve users in a more digital world. Using mobile tech makes it easier to access lots of resources and boosts user involvement by offering tailored experiences. This means libraries can shift from just being places of stored information to lively hubs for learning and interaction. In the future, library services may include features like virtual helpers, real-time resource tracking, and shared community content, which can help users feel more connected. Also, given the country's many languages and cultures, mobile apps can offer localized content to make sure everyone can participate easily. In the end, using mobile



technology can greatly improve library services in India, making them stronger and more adaptable to today's society.

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