

Smart and Personalized Library Services in Academic Health Institutions: A Case Study of Central Library AIIMS Bhopal

Mona Kumari¹; Muthyamaina Sampath Kumar²

Librarian Grade III, Central Library, AIIMS Bhopal¹; Librarian Grade III, AIIMS Bhopal, Madhya Pradesh, India²

mona.librarian@aiimsbhopal.edu.in; sampath.librarian@aiimsbhopal.edu.in

ABSTRACT

Today's academic health libraries are increasingly becoming smart and user-centered knowledge ecosystems due to the integration of adaptive technologies and smart library infrastructures. Personalization has been recognized as a way forward in meeting the varied needs for academic and clinical information. In this case study, we will look at how the smart and personalized technologies were integrated into AIIMS Bhopal Central Library, focusing on RFID-based circulation, self-circulation system, national consortium-based access to digital resources, NML ERMED and ONOS, remote access via Infed and KNIMBUS, provision of research support with plagiarism detecting software and linking institutional repositories with Shodhganga and Shodhgangotri. The provision of research support services include IRINS, Grammarly. In this regard, a structured framework can be developed based on artificial intelligence and analytics to ensure customized information pathways to boost research productivity. From the above analysis, it is evident that there are several advantages associated with integrating smart and automated library infrastructures with digital knowledge ecosystems. The paper highlights future trends based on artificial intelligence and analytics

KEYWORDS: Academic Health Libraries, Personalization Information Services, RFID, NML ERMED, ONOS, Remote Access, Research Support Tools, AIIMS Bhopal, Adaptive Technologies.

1. INTRODUCTION

For the contemporary academic health library, there is the need to cater to the growing challenges of information intricacies, the diversity of the clientele served, and technological developments. For the medical sector, the provision of up-to-date information affects both academic performance and decisions made by professionals in the clinical practice arena. Individualized information services involve offering personalized information depending on the specific requirements of the end-users.

The Dr. A. P. J. Abdul Kalam Library (Central Library), located at the All India Institute of Medical Sciences (AIIMS) Bhopal, commenced operations in 2012 and gradually incorporated intelligent technologies and digitized resources, emerging as an evolving prototype of a smart academic health library. The technologies adopted at the

Smart and Personalized Library Services in Academic Health Institutions: A Case Study of Central Library AIIMS Bhopal

institute included RFID-based circulation, self-service kiosks, automated issuance/return mechanisms of books, subscription to national level e-resources consortiums, and digital resource remote access services

2. OBJECTIVE OF THE STUDY

The primary objectives of this study are:

- To examine the existing infrastructure and information resources available at AIIMS Bhopal Central Library.
- To study the role of digital technologies in supporting personalized information services.
- To study the impact of RFID-based automation and self-service systems on library operations.
- To explore the role of national e-resource consortia in enhancing access to scholarly information.
- To identify potential opportunities for implementing advanced personalized services in academic health libraries.
- To examine how these technological infrastructures support the development of smart and personalized library services in an academic health institution.

3. METHODOLOGY

The research methodology employed in this study is the case study approach to investigate the application of intelligence and personalized library services at AIIMS Bhopal Central Library. The data collection method used in this research study includes:

- Review of library infrastructure and services.
- Appraisal of current digital sources and library automation.
- Document analysis and service review.
- Collection of data from the library website.

The case study approach provides a means to comprehend the relationship between technology and personalized information services in an academic health library environment.

4. PERSONALIZED INFORMATION SERVICE AT CENTRAL LIBRARY, AIIMS BHOPAL

4.1 Institutional Profile and Resource Strength:

AIIMS Bhopal Central Library serves undergraduate, postgraduate, doctoral, nursing, and faculty communities. At Present the library consists of:

- More than 13,000 print books in medical and allied health sciences
- More than 409 e books in medical sciences and Nursing
- More than 3800 journals in medical sciences
- Seating Capacity of 450 users
- An ever-growing collection of reference and text books
- Access to extensive e-book and e-journal
- RFID-enabled circulation system
- Self check-in and check-out kiosks

- Automated book drop machines
- Research support tools
- Institutional repository
- Remote access software
- Document Delivery Service

The hybrid collection model (print + digital) ensures conventional academic assistance as well as current research assistance.

5. DIGITAL RESOURCE ACCESS AND NATIONAL CONSORTIA SUPPORT

5.1 NML ERMED Consortium Access

Central Library of AIIMS Bhopal has access to electronic resources by National Medical Library's ERMED Consortium (NML ERMED). It provide access to 215 e-books from the MedOne Database (Thieme) and 194 e-books from Access Medicine (McGraw-Hill).

Users can access a wide range of learning resources through these databases, including review questions, audio and video materials, e-books, and study tools like flashcards, infographics, and interactive modules. The platform also offers drug monographs, case reports, and self-assessment modules to enhance medical education and clinical learning.

5.2 Access through ONOS (One Nation One Subscription)

One Nation One Subscription starting its operation from 1st January 2025. It is an initiative of Government of India to provide nationwide access to scholarly journals and research databases for students, researchers, and faculty across India. Central Library AIIMS Bhopal providing almost 3864 Medical e- journals by ONOS from 19 publishers out of 35 publishers available in ONOS, this enhances:

- Availability of multidisciplinary research materials
- Cost-effective acquisition of global databases
- Equitable access to academic resources
- Electronic Journals

Such national-level collaborations reduce financial burdens and promote research equity.

5.2.1 List of Medical Publishers access through ONOS:

1. American Chemical Society
2. American Society For Microbiology
3. Annual Reviews
4. Bentham Science
5. British Medical Journal (BMJ)
6. Cambridge University Press (CUP)
7. Cold Spring Harbor Laboratory Press
8. Elsevier (Science Direct)
9. Indianjournals.Com
10. Lippincott & Wolter Kluwers

11. Oxford University Press (OUP)
12. Project Muse
13. Sage
14. Springer Nature
15. Taylor & Francis
16. Thieme
17. Wiley
18. World Scientific
19. Miscellaneous

5.3 Subscription-Based Clinical and Research Databases:

AIIMS Bhopal Central Library subscribes to leading clinical and nursing databases, including:

- **UpToDate** – A widely used clinical decision support tool that provides evidence-based medical recommendations.
- **CINAHL** (Cumulative Index to Nursing and Allied Health Literature) – A major database for nursing and allied health research.

These subscriptions directly support clinical decision-making, nursing education, and research development.

5.4 Providing Open Education Resources

The Central Library enhances access to Open Educational Resources (OER) to support teaching, learning, and research. Users are guided to freely available academic resources.

5.4.1 Free Books

- Freebooks4doctors: The unrestricted access to many medical textbooks online free and in full-text
- National Digital Library of India (NDL): Biggest digital library of India with more 64+ lakhs e-Books, 6+ lakhs e-Thesis & many other e-resources like 1350+ audio books/ audio lectures.
- Internet Archive: Internet Archive is a non-profit library offering millions of free books, movies, software, music, websites, and more
- Project Gutenberg: library of over 75,000 hand-curated collection of free eBooks
- Directory of Open Access Books: 33708 Academic peer-reviewed books from 407 publishers
- Open Knowledge Repository: 31,429 publications in 11 collections, 573 sub-collections by the World Bank

5.4.2 Free Learning Resources

Shodhganga: A reservoir of Indian University Thesis and dissertation. Central Library contains 11 PhD thesis in various subjects like Biochemistry, Microbiology, dentistry and Community Medicine.

- Shodhgangotri: A repository of Synopsis and helps researchers know about ongoing research topics and avoid duplication of research, AIIMS Bhopal Central Library contain 78 PG Dissertation in various department like pharmacology, Neurosurgery, Forensic Medicine etc.
- Swayam: The best teaching learning interactive resources From Class 9 through postgraduate studies, SWAYAM offers access to a wide range of educational resources available to anyone, anywhere, at any

time. It provides more than 1,000 courses organized into four quadrants: (1) video lectures, (2) specially prepared reading materials that can be downloaded or printed, (3) self-assessment tests, including quizzes, and (4) an online discussion forum for clearing doubts.

SWAYAM offers online short courses in health and medical sciences, including human genetics, immunology, bioinformatics, and hospital management, but does not provide full medical degrees.

Through SWAYAM, which hosts a variety of Massive Open Online Courses (MOOCs), users can enroll in courses offered under initiatives like National Programme on Technology Enhanced Learning (NPTEL). This platform enables students, faculty, and researchers to enhance their academic knowledge and professional skills through high-quality digital learning resources.

- **e-PG Pathshala:** e-PG Pathshala is an initiative of the MHRD providing postgraduate e-learning resources, including video lectures, e-books, and self-assessment tools across disciplines, including medical sciences.
- **PubMed Central (PMC):** PubMed Central (PMC) is a free digital repository that provides access to full-text biomedical and life sciences articles, maintained by the U.S. National Institutes of Health.
- **Open Access Thesis & Dissertations:** Graduate theses and dissertations published over 1100 colleges, universities, and research institutions. OATD currently indexes 5,218,230 theses and dissertations.

6. REMOTE ACCESS AND DIGITAL ACCESSIBILITY

Recognizing the need for flexible access, especially for clinicians and researchers with demanding schedules, the library provides remote access through authenticated platforms such as:

- **Infed Remote Access Software:** INFLIBNET Remote Access (INFED) allows students and researchers to access subscription-based e-resources remotely, supporting off-campus learning and research from anywhere, at any time.
- **KNIMBUS Remote Access System:** Knimbus is a cloud-based research platform that offers institutions with centralized access to e-books, journals, and research tools, promoting collaboration and efficient resource management.

The following systems provide access to subscribed e-resources beyond campus boundaries by authorized users:

- 24/7 accessibility
- Continuity of research work
- Enhanced convenience and productivity
- It Requires institutional registration for authentication
- It Supports research and learning without physical library presence.

Remote access is essential in personalizing the user experience by making information available anytime and anywhere.

7. RESEARCH SUPPORT AND ACADEMIC WRITING ASSISTANCE SERVICES

- AIIMS Bhopal Central Library is committed to assisting researchers and scholars to make their publications better. The institution avails to its members advanced research support software and academic writing assistance tools that can improve the quality and originality of scholarly works.
- The Central Library, AIIMS Bhopal avails to its members iThenticate, one of the world-renowned anti-plagiarism software for verifying originality in scholarly publications.

- In addition to iThenticate, the Central Library AIIMS Bhopal also avails DrillBit. DrillBit is one of the well-known plagiarism detectors used for screening thesis, dissertation, and academic assignments.
- In order to facilitate members in improving the quality of their manuscripts, the library has subscribed to Grammarly for Education, an advanced writing assistance program. Grammarly assists writers in enhancing their writings through grammar suggestions.
- IRINS is a platform developed by INFLIBNET that enables academic and research organizations, as well as faculty members and scientists, to collect, curate, and showcase their scholarly communication activities. It also provides an opportunity to create a scholarly network. The platform integrates with academic identities such as ORCID ID, Scopus ID, and Google Scholar ID to gather scholarly publications from various sources.

By providing access to such research support tools, the Central Library plays a crucial role in enhancing scholarly communication and strengthening the overall research productivity of the institution.

8. RFID TECHNOLOGY AND SMART CIRCULATION SYSTEMS

8.1 RFID Infrastructure

The use of Radio Frequency Identification (RFID) technology enables the automation of processes that facilitate identifying, tracking, and managing library resources. It uses RFID tags and reader technology to identify items without line-of-sight contact between the item and the reader. (Kanekar & Azeza)

Central Library AIIMS Bhopal has been using RFID technology to bring about change in its Circulation and Inventory management system. All books have been embedded with RFID tags. RFID improves efficiency and reduces manual processing.

AIIMS Bhopal Central Library RFID System:

- **Library Item Tagging:** All library books or Library Card have a built-in RFID Tag which carries a unique identification number.
- **User Interaction:** On checkout or return of a book by a user, the RFID reader will capture the tag information without any human intervention.
- **Lending Services:** Real-time recording of borrowings and returning or renewing a library item in the library management software.
- **Inventory and Stock Taking:** Staff members can use the RFID handheld scanner to search for the book or do stock taking with much ease without manually scanning barcodes.
- **Security Services:** Use of RFID security gateways at the exit of the library which detect unauthorized items in the hand of the borrower, hence preventing theft.
- **Data Integration with Library Software:** All the RFID data is integrated with the library management software, therefore providing automatic data analysis, reports, and alerts.
- **Automated Attendance System:** RFID enabled Automatic Attendance System can help to record the attendance of users through scanning RFID tags attached to user ID cards.

8.2 Self Check-In and Self Check-Out Kiosks

Self-service kiosks empower users to independently borrow and return books. Benefits include:

- Reduced waiting time

- Enhanced user autonomy
- Faster circulation process
- Improved staff efficiency

This self-service model aligns with user-centered service philosophy.

8.3 Automated Book Drop Machines

Automated book drop facilities allow users to return books conveniently, even outside peak hours. The system:

- Automatically scans RFID tags
- Updates user records instantly
- Secures returned materials

This feature particularly benefits postgraduate residents and faculty with irregular schedules.

9. PERSONALIZATION THROUGH INTEGRATED INFRASTRUCTURE

The integration of print resources, digital databases, RFID systems, and remote access platforms creates a strong foundation for personalization.

Potential Adaptive Applications:

- Subject-specific dashboards for different departments
- Data-driven acquisition based on borrowing analytics
- Specialty-based email alerts
- Research trend analysis using usage data
- Personalized reading recommendations

Data generated from RFID circulation system together with analysis of e-resources can be used to determine areas of high demand.

10. BENEFITS TO THE ACADEMIC COMMUNITY

The combined effect of RFID technology, national consortium, subscribed clinical databases, and remote access leads to the following:

- Improved access speed
- Increased research output
- Enhanced evidence-based clinical practice
- Better utilization of subscribed resources
- Greater user satisfaction

The intelligent hybrid model benefits both the educational and research goals of the institute.

11. OTHER SERVICES OF AIIMS BHOPAL CENTRAL LIBRARY

- Document Delivery Service through DELNET: The Central Library provides Document Delivery Services (DDS) through Developing Library Network (DELNET). This allows the user to request research papers and academic papers which are not available in the local collection. The requested items are sent electronically through email.

- The Central Library of AIIMS Bhopal offers various services to cater to the needs of its members for their academic and research purposes. It provides 10 document delivery and reference services through email. It also supplies daily newspaper clipping to keep its members abreast of the latest happenings.
- Circulation: Every day the library handles more than 50 circulations. The Central Library of AIIMS Bhopal maintains proper borrowing facilities for all its users. Two books for 15 days for students, Junior Residents, Senior Residents, and project employees and four books for 30 days for regular faculty and staff members can be borrowed. In order to manage proper circulation and encourage prompt return of the material, a fine of ₹5 per day is levied on overdue material.
- Publications of the Institute: It also features institutional publications like Future Health that publishes peer-reviewed scientific and clinical research papers in the area of medical and health sciences. In addition to this, the library also keeps a collection of past year question papers related to undergraduate and postgraduate courses in nursing and allied health sciences.
- User Orientation/Awareness Programs: User orientation and awareness programs are conducted by the Central Library of AIIMS Bhopal from time to time. Such programs acquaint users with all kinds of library resources whether in tangible or intangible form. Users include students, faculties, and other staff members. The program aims at making them aware of library services.
- Budget: With an annual budget of approximately ₹3.50 crores, the Central Library of AIIMS Bhopal maintains an array of print as well as electronic resources. This budget also helps in developing a highly sophisticated digital system as well as offering innovative library services.
- Infrastructures: To cater to the different needs of various scholars, the Central Library at AIIMS Bhopal has allocated different rooms for students pursuing undergraduate courses, postgraduate courses, and research scholars, as well as for faculty members. There is also a discussion room available for group studies.

12. CHALLENGES AND CONSIDERATIONS

While the technological integration is significant, challenges include:

- Sustainability of budget allocation for the subscription
- Continuous system maintenance
- Staff training in analytics and AI tools
- Ensuring data privacy and cyber security

Addressing these challenges requires institutional support and strategic planning.

13. FUTURE DIRECTIONS

With its existing infrastructure, AIIMS Bhopal Central Library can explore:

- AI-based research recommendation engines
- Predictive acquisition based on circulation analytics
- Mobile application-based personalized alerts
- virtual research assistants powered by AI
- AI-driven discovery systems
- Chatbot-based reference services

- Personalized research dashboards
- Machine learning based on collection development

The library is ideally suited for evolving as an adaptive academic health information center.

CONCLUSION

The Central Library of AIIMS Bhopal is an example of a smart academic health library under development with the use of technologies like RFID, self-service, automated book drop machines, more than 12,000 printed books, nationally coordinated e-resources (NML ERMED and ONOS), subscribed databases like UpToDate and CINAHL, and remote access through Infed and KINMBUS.

By effectively utilizing the above-listed technologies and resources, the library can adopt adaptive personalized techniques in order to improve its performance, user engagement, and productivity. This is indicative of the future direction that smart academic health libraries in India will take.

REFERENCES

- [1] "Central Library," All India Institute of Medical Sciences Bhopal. [Online]. Available: <https://aiimsbhopal.edu.in/index.php/central-library>. [Accessed: Mar. 12, 2026].
 - [2] "National Medical Library's Electronic Resources in Medicine (NML-ERMED) Consortium." [Online]. Available: <https://www.irmed.in/default.aspx>. [Accessed: Mar. 12, 2026].
 - [3] "One Nation One Subscription (ONOS)." [Online]. Available: <https://www.onos.gov.in/>. [Accessed: Mar. 12, 2026].
 - [4] "Information and Library Network (INFLIBNET) Centre." [Online]. Available: <https://www.inflibnet.ac.in/>. [Accessed: Mar. 12, 2026].
 - [5] V. B. Kanekar and S. E. Azeeza, "RFID and its application in libraries," *International Journal of Library and Information Studies*, vol. 8, no. 1, pp. 137–140, 2018.
-