

## ADOPTION OF EMERGING TECHNOLOGIES IN ACADEMIC LIBRARIES: A CASE STUDY OF BEHALA COLLEGE LIBRARY

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**Abstract:** - *In today's world, technology is integrated into every sector, and libraries and information centers are no exception. The application of technology in libraries is increasingly visible, especially in streamlining various housekeeping tasks, making library operations more efficient. This paper presents a case study of Behala College Library (Kolkata, West Bengal), highlighting the technologies implemented in the library. It examines how these technologies have enhanced library management and improved services for users.*

**Keyword:** Technology, RFID Book drop Box, Antitheft gate, self-issue, self-return

### 1. Introduction:

The application of technology in the field of Library and Information Science (LIS) is not a recent development; rather, it has a long history of evolution. The journey began as early as the 1940s in Western countries, where technological advancements began to shape the library scenery. Over the time, by 1960s, the application of such technologies gradually spread to developing countries, marking the start of a global transformation in library operations. The speedy growth and frequent inventions in technology have raised the emergence of new and updated tools that have redefined numerous sectors, among them Library and Information Science

being no exception. As a result, libraries have seen a paradigm shift in operations, moving from manual system to automated systems. The widespread integration of Information Technology (IT) had a thoughtful impact in changing not only the roles and responsibilities of LIS professionals but also altering how information is stored, retrieved, and shared.

The introduction of digital technologies has enabled libraries to expand their services, offering users access to vast collections of e-resources such as e-books, e- journals etc. Additionally, the adoption of automation software has improved the efficiency of library housekeeping tasks, such as cataloging, circulation, and inventory management, reducing manual errors as well as

efforts too and administrative workload. These technological advancements have also made it easier for users to access information remotely, through WEBOPAC, mobile OPAC, and cloud-based platforms.

Moreover, the role of libraries has evolved from being just a storehouse of books, records to becoming dynamic hubs for digital information, learning, and collaboration. With the explosion of cloud computing and web-based services, libraries have begun offering virtual services, including online reference assistance, remote borrowing, and digitized archives, thus breaking down geographical barriers and ensuring broader access to information. The user experience has also been greatly enhanced with more intuitive and user-friendly interfaces, providing seamless interaction with library resources. Ultimately, the integration of technology in LIS has not only increasing the satisfaction of the library users by minimizing the gap between users expectation and satisfaction but also greatly helped to improved their ability to meet the growing demands and expectations of users in an increasingly digital world.

## **2. Application of Information Technologies in Academic Libraries:**

The integration of various technologies in academic libraries has significantly transformed their operations, making library housekeeping tasks easier, faster, and more efficient. Technologies such as library automation software,

use of RFID, barcodes, mobile apps, and a range of hardware devices have streamlined library management processes. Automation software, for example, helps manage cataloging, circulation, etc. with greater accuracy and efficiency, reducing the manual workload of library staff. The use of RFID and barcode technologies allows for quick and accurate tracking of library materials, enabling faster checkouts and returns, as well as efficient stocktaking.

In addition to software, hardware devices like barcode readers, scanners, book drop boxes, anti-theft gates, RFID readers, and printers play a crucial role in supporting these technological advancements. Barcode readers and scanners speed up the check-in and check-out processes, while book drop boxes provide convenient, automated ways for users to return materials outside library hours. Anti-theft gates and RFID readers enhance security by preventing unauthorized removal of books and ensuring the safety of library resources. Printers and other peripherals assist in document management, printing, and other administrative tasks, further improving the operational efficiency of the library.

Furthermore, the use of mobile apps has enhanced user experience by providing access to library services on-the-go, including catalog searches, book renewals, and notifications about due dates or new arrivals. This integration of technology not only supports the library's day-to-day functions but also ensures that users have a seamless and

modern experience, making academic libraries more accessible, user-friendly, and responsive to the needs of today's digital-savvy community.

### **3. Integration of Information Technologies in Behala College Library:**

#### **3A. About Behala College:**

Behala College, established in 1963, is a Grants-in-Aid State Government-sponsored institution affiliated with the University of Calcutta. It was founded under the Refugee Rehabilitation Scheme of the Government of India and received recognition under Section 2(f) of the UGC in 1982. Over the years, the college has strengthened its position as a leading academic institution in the southern part of Kolkata. Committed to inclusive education, the college serves a diverse student body from various social and financial backgrounds.

The college has been re-accredited with an 'A' grade in the second cycle of assessment by NAAC. Originally founded as an undergraduate institution, it now offers postgraduate courses in four subjects, with affiliation from the University of Calcutta. In addition, Behala College serves as a study center for Netaji Subhas Open University and Rabindra Bharati University, providing both undergraduate and postgraduate programs through distance education.

#### **3B. About Behala College Library:**

Behala College, established in 1963, is an academic institution in Kolkata that primarily offers undergraduate courses, with the addition of postgraduate programs. It is affiliated with the University of Calcutta.

The College Library provides open-access to the users and houses a collection of approximately 27,000 books. These books are classified by using the DDC23 classification system and cataloged according to the AACR2 cataloging code. The Library is partially automated, with Koha, a library automation software, used to create and maintain the library resource as well as users database. Additionally, all library books are RFID-tagged, facilitating easy tracking and management. To further streamline the borrowing process, the library provides a Drop Box for users to return books conveniently.

The library also celebrates Library Day annually on December 20th, honoring the best library users with awards. Furthermore, the library operates a Book Bank to assist students who are economically backward but meritorious and regular to the library.

In addition to the Central Library, each department has its own seminar library, developed to provide easy access to essential resources. These seminar libraries are managed and controlled by the respective departments, ensuring that students and faculty can get easy access of

knowledge resources under central library tracking system.

### 3c. Technologies used by Behala College Library:

Use of various technologies in Library helped both the users and the library staff too.

#### 3C1. Users' perspective:

- **Automation Software (Koha):** Koha, a free and open-source library automation software, is used to create and manage the library holding database, user database, and generate various reports. This software helps the user to search the library resources easily.
- **Barcode Technology:** Barcoded enabled student ID cards are used for circulation, checking user profiles and fine calculation. Thus students can use the college as their library card only.
- **SMS Gateway:** An SMS alert system notifies users about overdue book reminders. This ensures users are always informed and can manage their library activities effectively and can avoid paying fine.
- **RFID (Radio Frequency Identification):** RFID technology uses radio waves to read and capture information stored on tags attached to each library books. Behala College Library uses RFID tags on all its books, integrated with the Koha database via RFID readers. This system facilitates

self-issue and self-return of books, including through a convenient drop box, improving the user experience and streamlining library operations.

- **Mobile App:** Behala College has developed a user-friendly, free Android mobile app that allows users to access the library's catalog, course syllabus, previous year questions, newspaper, news channels etc. anytime, anywhere. It also provides the option to reserve books or add them to the cart for future borrowing.
- **Wi-Fi:** The entire college campus is equipped with Wi-Fi, providing students and staff with easy and continuous internet access, which supports the use of online library resources and enhances learning and research activities.
- **Photocopy Service:** The library offers photocopy services, allowing users to make copies of important documents, study materials, or reference materials for their academic needs.

These technologies have collectively enhanced the ability of the library to provide efficient, user-friendly services while simplifying library operations for staff and offering greater convenience for users.

### 3C2. Librarian/ Library Staff Members Perspective:

- **Antitheft Gate:** The RFID-enabled antitheft gate is a crucial component of the library security system. It ensures that books cannot be taken out of the library without proper check-out. If a user attempts to take a book without checking it out, an alarm is triggered, alerting library staff to potential theft.
- **Self-Issue:** The self-issue system allows users to check out books independently using a barcode reader and their barcode-enabled student cum library card. This feature saves time for both users and library staff, making the borrowing process more efficient and reducing wait times.
- **Self-Return:** With the RFID-enabled book drop box, users can return books without the need for library staff or library hours.
- **Easy Report Generation:** The Koha library automation software allows for the easy generation of various reports, such as getting the name of the most circulated books, least circulated books, never-issued books, and users with overdue materials. These reports can be generated with just a few clicks, helping the library staff manage library more effectively and keep track of library activities.

These technologies work together to streamline library operations, enhance user convenience, and improve the overall management of library resources.

### 3D. Application of Hardware in Behala College Library:

The smooth functioning of technologies in any modern library necessitates the use of appropriate hardware. In today's world, it is nearly impossible to operate or maintain any organization, including academic libraries, without essential devices such as computers, laptops, printers, photocopy machines, scanners, and more. These hardware components are fundamental to any library operations, enabling efficient work processes and seamless service delivery.

In addition to the commonly used hardware, Behala College Library has integrated several other devices to ensure smooth and efficient operations. By using a combination of essential and specialized hardware, the library can effectively manage its resources, provide quick services to users, and maintain a secure and organized system for both staff and students.

- **Dropbox:** Behala College Library provides a RFID enabled book drop box outside the library for users to return books at their convenience.
- **Antitheft Gate:** The RFID-enabled antitheft gate serves as a critical security measure for the library. It ensures that no

book can be taken out of the library without proper checkout.

- **RFID Reader:** The RFID reader is an essential tool in the library automated system. It reads the information stored on RFID tags attached to books, enabling quick checkouts, returns, and inventory management. This technology simplifies tracking and enhances security.
- **Barcode Scanner:** The barcode scanner is used to facilitate the checkout and return process. With barcode-enabled library cards, this device helps quickly process transactions, saving time for both users and library staff and improving operational efficiency.

These hardware tools work together to streamline library operations, enhance user convenience, and maintain the security and efficiency of the library's services.

#### **4. Future Library Development Plans of Behala College Library**

As Behala College Library continues to develop in response to the growing demands of user expectations, several key initiatives are being planned further enhancement of its services and infrastructure. The future planning for the library focuses on the following areas:

1. **Fully Automation of Library Housekeeping Operations:** As the library has already adopted partial automation, the goal is to start fully automated library functions by using Koha. This will include automating acquisitions and serial control. It will give a seamless and efficient experience for both library staff and users.
2. **Expansion of Digital Resources and Setting up a Systematic Digital Library:** The library plans to further expand its digital collections by acquiring standard digital library software like dspace along with more e-books, online journals, and databases. Additionally, efforts will be made to digitize existing physical resources, making them accessible remotely to students and faculty.
3. **Enhanced User Experience with Mobile Integration:** The development of mobile applications will be continued and enhanced, enabling users to access library services such as catalog browsing, book reservations, and resource downloads anytime, anywhere. Future plans include integrating more interactive features such as virtual library tours and online consultation with library staff.
4. **Upgrading RFID and Self-Service Systems:** The library aims to upgrade its RFID and self-service systems to offer more efficient self-checkout and return

processes along with addition of stock verification. This may include the introduction of more advanced self-service kiosks and integration with mobile apps for a more user-friendly experience.

#### 5. **Introduction of Virtual Reference Services:**

As part of the ongoing digital transformation, the library plans to introduce virtual reference services, where users can access online support and guidance from library staff through chat, video calls, or emails, further enhancing accessibility.

#### 6. **Expansion of Seminar Libraries:**

The college plans to expand the seminar libraries in each department, providing more specialized resources for better academic support.

#### 7. **Sustainable Infrastructure Development:**

As part of the future growth, the library plans to adopt eco-friendly and sustainable technologies, such as energy-efficient lighting, paperless processes, and green building initiatives, to promote environmental sustainability.

By implementing these future plans, Behala College Library aims to continue fostering an advanced, accessible, and user-centered library environment that meets the evolving needs of its academic community.

### **Conclusion:**

Behala College Library has made significant steps in using technology to enhance its services, making library operations more efficient and user-friendly for both staff and students. By adopting the automation software i.e Koha, RFID technology as Book drop box and antitheft gate, barcode systems for library card and virtual attendance, and mobile apps for easy library access, the library has modernized its processes, improved resource management, and provided convenient access to information. The use of innovative tools like self-issue/self-return systems and SMS alerts has further enriched the user expectation, while ensuring security and efficiency of library system.

Looking ahead, the library's future plans to fully automate services, expand digital resources and introduce virtual reference services, setting up a digital library etc staying at the forefront of technological advancements. These initiatives, along with plans to upgrade infrastructure and increase sustainability, will continue to position Behala College Library as a vital hub for academic support and information access.

By continuously evolving and embracing emerging technologies, the library will not only meet the current needs of its users but also adapt to future educational demands, contributing to the overall growth of the academic community.

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