

# Recent Trends in Library Management

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**Abstract:** *The emergence of Information and Communication Technology (ICT) has brought about substantial transformations to the operations and service offerings of libraries. Digital technologies and the internet have made it possible for libraries to digitize their holdings and make them accessible online. With a focus on strategic planning, operational guidelines, and practices, recent trends in library management offers thorough discussion of the problems, approaches, theories, and difficulties related to the application of recent technologies in libraries. In this paper, we provide an overview of the latest developments in information technology and application in library management.*

**Keywords:** E - Resource Management, Artificial Intelligence, Big Data, RFID, Cloud Computing

## 1. Introduction

Over decades, libraries have played a crucial role in civilizations by acting as stores of knowledge and as places for access to resources and information. The emergence of Information and Communication Technology (ICT) has brought about substantial transformations to the operations and service offerings of libraries. Information digitization is one of the biggest effects of ICT on libraries. Digital technologies and the internet have made it possible for libraries to digitize their holdings and make them accessible online. This has made it possible for people to access content at any time and from any location in the world, increasing access to knowledge and resources. Furthermore, digital collections are easily searchable and arranged, which facilitates users in finding the information they require. Furthermore, digital collections are easily searchable and arranged, which facilitates users in finding the information they require. CT has also changed how libraries offer their patrons services. Online catalogs, e - book lending, and online reference services are just a few of the services that libraries currently provide. These services enable customers to access library materials from their homes or places of business, giving them more flexibility and convenience.

### 1) Electronic Resource Management

The procedures and software programs used by libraries to maintain track of crucial data regarding electronic information resources, particularly web - based resources like electronic books, databases, and journals, are known as electronic resource management, or ERP. Early in the new millennium, it became evident that integrated library systems and traditional library catalogs were not built to handle metadata for materials as mutable as many internet items. This led to the development of ERM. With a focus on strategic planning, operational guidelines, and practices, Electronic Resource Management in Libraries: Research and Practice offers thorough discussion of the problems, approaches, theories, and difficulties related to the provision of electronic resources in libraries.

The following are some of the essential components of ERM in libraries:

- **Selection and Acquisition:** The first step in implementing ERM is to choose and acquire electronic

resources that support the goals and missions of the library. Subject matter, quality, price, and accessibility are a few examples of selection criteria.

- **Contract Management and Licensing:** Libraries are responsible for overseeing and negotiating contracts and licensing with publishers and vendors for electronic resources. The terms and conditions of use, such as access, usage, and copyright, are specified in licenses and contracts.
- **Access Control:** Access control guarantees easy and safe access for users to digital resources. It includes establishing and maintaining remote access, monitoring authentication systems, and resolving access issues.
- **Cataloging and Metadata Management:** These processes entail describing electronic resources with metadata entries and enabling discovery via the library catalog and other tools.
- **Usage Statistics and Evaluation:** These data offer valuable perspectives on how people utilize electronic resources. It supports libraries in making well - informed choices about future acquisitions, cancellations, and renewals.
- **Licenses and contracts** must be renewed or canceled by libraries in accordance with usage, cost, and applicability to the goals and mission of the institution.
- **Technological Support:** In order to preserve the functionality of the electronic resources and address any potential technological problems, technical support is required.

Since electronic resources are becoming more and more important, ERM plays a crucial role in modern libraries. ERM that is effective makes ensuring that electronic resources are discoverable, accessible, and aligned with the goals of the library.

### 2) RFID

Radio frequency can be used to track and connect with an object, such as a library book. This technique is comparable in idea for a mobile phone. The word "RFID" refers to a broad category of technologies that automatically identify persons or objects using radio waves. While there are various ways to identify anything, the most popular one involves keeping a person's or objects unique serial number, along with maybe additional data, on a microchip that is

fastened to an antenna; the combination of the chip and the antenna is known as an RFID transponder or an RFID tag.

### 3) Cloud Computing

A cloud - based networking environment is referred to as cloud computing. This type of computing technology makes it easier to share resources and services across the internet as opposed to storing them locally on servers, nodes, or personal devices. 'Cloud' refers to the collection of servers, networks, connections, applications, and resources. Stated differently, internet - based computing refers to the practice of networking a sizable number of dispersed servers together to facilitate the sharing of data processing duties, centralized data storage, and online access to computer services or resources.

The following are some of the ways libraries can use cloud computing:

- **Storage and Backup:** Cloud computing offers dependable and safe storage and backup options for libraries. Cloud - based storage platforms such as Dropbox and Google Drive can be used by libraries to store data, digital collections, and archival items.
- **Library Management Systems:** Using a web - based interface, libraries can manage their collections, circulation, cataloging, and acquisitions with cloud - based library management systems like Alma and World Share Management Services. Compared to conventional systems, cloud - based library management systems provide libraries more accessibility, scalability, and flexibility.
- **Cloud computing has the potential to be utilized for digital preservation,** which includes born - digital items and digitized collections. Preservica and Rosetta, two cloud - based digital preservation platforms, provide libraries dependable and safe long - term preservation options.
- **Virtual Reference and Collaborative applications:** Chabot's, video conferencing, and collaborative applications like Google Docs and Drop box are just a few of the virtual reference and collaborative tools that cloud computing offers libraries. With the aid of these tools, libraries may enhance user engagement, collaborate among staff members more easily, and offer remote reference services.
- **Data Analysis and Visualization:** Libraries may analyze and visualize data pertaining to their collections, usage, and users with the help of cloud - based technologies like Tableau and Google Analytics. This gives libraries information that can guide decisions and enhance offerings.

Libraries can gain a lot from cloud computing, including cost savings, flexibility, scalability, and accessibility. Cloud computing can be used by libraries for data analysis and visualization, digital preservation, storage, library administration systems, virtual reference and collaboration tools, and other purposes.

### 4) Internet of Things

IoT enables the collection and exchange of data between devices, which can be used to automate processes, improve efficiency, and enhance user experiences. IoT has many

applications in various industries, including healthcare, agriculture, transportation, and manufacturing. In libraries, IoT technology can be used to improve the user experience, enhance collections management, and streamline operations.

#### a) Application of IoT in Libraries

- IoT sensors can be utilized to monitor and adjust lighting and climate control systems in libraries, thereby optimizing energy use and enhancing user experience.
- IoT sensors can enhance library asset tracking, allowing librarians to efficiently manage collections and enhance user access to materials.
- IoT sensors enable environmental monitoring in library storage areas, ensuring collection preservation and reducing damage risk from environmental factors like temperature and humidity.
- IoT sensors enable library users to track their behavior, providing valuable insights into their needs and preferences, thereby enhancing library services and adjusting collections accordingly.
- IoT technology can streamline library check - in and check - out processes, enhancing efficiency and convenience for users to borrow and return materials.
- IoT technology can be utilized to create interactive displays and exhibits in libraries, enhancing user experience and promoting engagement with library materials and services.

### 5) Big Data Visualization

Big data is represented visually in visualization, as the term implies. The purpose of the illustration determines the visualization approach that is used. It could be as straightforward as pie charts, line charts, and histograms, or as intricate as scatter plots, heat maps, tree maps, and so on. Depending on the use case, 3 - Dimensional graphs can also be used for big data visualization. It enables you to take thoughts and obtain understanding. The usefulness of data sets is greatly improved when they are presented as charts and graphs. Even proficient SQL query writers would rather make observations in a visual style rather than a tabular one.

#### a) Tools for Big Data Visualization

In the era of big data, there are a lot of tools on the market for data visualization. Data scientists utilize languages like R and Python in addition to these technologies for advanced analysis tasks and charting. Big data visualization solutions can also incorporate these features for use with huge data sets. Rather of being limited to visualization tools, several products fall under the category of big data analytics visualization tools. The following are the few important tools for Big Data Visualization;

- **Tableau:** One popular visualization tool is Tableau. Tableau Desktop has the capability to gather information from many on - premises and cloud - based data sources. Users don't need to put in a lot of effort to get started. It is designed for experts in other fields as well as those in data. Drag - and - drop capability, interactive dashboards and charting, and simultaneous connections to various data sources are supported. For those with little experience with database management systems, natural language queries are a huge benefit. Having an interactive dashboard is quite helpful when conveying a tale, for example, to stakeholders. It provides assistance

with data preparation, analysis, and report creation, which can be shared with colleagues to facilitate improved decision - making. Tableau offers both on - premises and cloud models. It also features a mobile app for viewing and analysis.

- **Microsoft Power BI:** One effective tool for massive data visualization is Power BI. Microsoft Power Platform and other products provide extensive support for it. Because of its growing ecosystem, AI capabilities, and plenty of data source connectors, Microsoft is a well - known visualization tool in the market. It can also be used to stream data and generate a real - time graphic or dashboard.
- **Looker:** Google's product Looker is redefining analytics and big data visualization. LookML is the name of their proprietary data modeling language. It offers a SQL database abstraction on top of it. It improves reusability and maintainability. However, it requires a time and effort investment up front. It is not as well - liked in the business because of its challenging learning curve. Looker can be thought of as a very versatile access control and permission management engine for SQL Query Builder. When compared to other well - known visualization tools, it is lacking in features related to data visualization.
- **Sisense:** Another incredibly popular large data visualization tool is Sisense. It enables customization to meet the needs of the client. It processes data in parallel, thus reducing the amount of resources needed. It features a drag - and - drop dashboard creation and analytics workflow configuration interface. As fresh data is absorbed into the system, the reports can be updated instantly. It features a helpful mobile app that you may use to view dashboards and data. Reports can be integrated into other programs like Zendesk or Sales force thanks to Sisense's embedded analytics feature.

## 6) Artificial Intelligence

One of the latest developments in computer trends and library applications is artificial intelligence (AI). It entails teaching computers to perform tasks that would be considered intelligent if performed by humans. The development of computer systems or computers that can think, act, and even surpass human intellect is the ultimate goal of artificial intelligence in libraries, and this has obvious ramifications for librarianship. Artificial intelligence is being used in libraries more and more. Among these are virtual reality for immersive learning, book reading and shelf reading robots, and expert systems for reference services. Artificial intelligence may seem to distance librarians from their patrons, but instead of replacing jobs, it will most likely enable libraries to accomplish more.

## 7) Mobile - Based Library Services

Libraries have modified their services and housekeeping procedures in the era of information and communication technology in order to grant access to their collections. Information distribution systems like cell phones, landlines, cellular networks, and the internet are of great relevance to libraries. Because their target audience is made up of demanding and dynamic researchers, lecturers, undergraduates, and postgraduate students, academic

libraries have had difficulty meeting the needs of their patrons. Without having to visit the library, university instructors, researchers, and students may now find what they need thanks to the Internet and the World Wide Web (www).

## 8) Academic Integrity and Plagiarism

Academics who are responsible for student evaluation and standard assurance are currently concerned about plagiarism in particular as well as academic integrity in general. This issue has received a lot of attention in the literature on higher education, and specialized journals and conferences (like the "International Journal of Educational Integrity" and "Plagiary" and the "Australasian and Pacific Educational Integrity and the UK Plagiarism conferences") have shown how relevant it is across a variety of disciplines. Health care practitioners are expected to be morally upright, truthful, and accountable, and there is broad agreement on the need of modeling and encouraging ethical behavior, including academic integrity early in professional programs like dentistry.

## 2. Conclusion

It is important that modern trends and technologies be used to library services. Technology innovation makes it possible to achieve (improve) interaction with the user community. Due to the utilization of modern technology in libraries, users can now access a vast array of digital resources and library services and actively participate in learning activities. The influence of technology adoption made library staff more conscious of the necessity to develop their abilities in order to reap the benefits that go along with it. Academic libraries have the problem of developing appealing information services and distributing digital content in a way that is both appropriate and customized for the needs of the user community. Libraries face both opportunities and challenges as a result of the technological revolution.

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