

# **Managing Electronic Resources in Academic Libraries: Key Observations and Reflections**

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## **ABSTRACT**

Academic libraries are increasingly investing in electronic resources to facilitate digital access to information for their users. The primary objective of this article is to conduct a detailed analysis of how e-resources are managed in academic library environments. It examines the various categories of e-resources, their sources, and how they are made available and accessible to users. The study also offers practical recommendations to address the challenges faced in e-resource management. Furthermore, it aims to highlight the different tools and technologies that support the effective administration of electronic resources in academic libraries.

### **Design/Methodology/Approach:**

This paper outlines the concept of Electronic Resource Management (ERM) and highlights its role within academic libraries. It investigates the difficulties academic libraries encounter due to the swift increase in both the quantity and diversity of digital resources. The study is grounded in a thorough review of relevant literature, complemented by real-world observations and experiences from library practices.

### **Findings:**

The use of specialized software tools are crucial for the efficient organization and administration of electronic resources in libraries. Establishing strong partnerships between libraries and resource providers can support the creation of systems that adapt to the fast-changing expectations and needs of users

### **Value:**

Efficient handling of electronic resources are essential in the modern academic environment, where digital content forms a significant part of library services. The insights presented in this paper aim to support librarians in identifying and resolving common issues related to the management of e-resources.

**KEYWORDS:** Digital Resources, E-resource Administration, Electronic Resource Handling, University Libraries.

## **1. INTRODUCTION**

The rapid advancement of Information and Communication Technology (ICT) has significantly impacted many areas of everyday life, including the realm of library services. This transformation has introduced new concepts such as electronic libraries, digital libraries, and virtual libraries. Electronic resources provide numerous advantages over traditional printed materials and are primarily accessed through internet-based platforms. Recent years have seen

notable progress in the field of electronic publishing, with publishers addressing issues like production costs, evolving readership demographics, changing user preferences, intellectual property rights, and long-term digital preservation. Researchers now demand seamless access to full-text documents, prompting universities and other higher education institutions to subscribe to electronic resources to effectively meet the expectations and needs of their users.

## **2. STATEMENT OF THE PROBLEM**

In the current era of information technology, academic libraries and information centers are concentrating on delivering information through electronic resources. These institutions offer a variety of e-resources in formats that are easy to access and use, such as electronic books, online journals, digital databases, electronic theses and dissertations, digital images, streaming videos, audio materials, audiobooks, and internet-based resources. The growth of ICT poses significant challenges for library staff to manage these digital resources in an efficient and systematic way. To adapt to this evolving technological landscape, library professionals need to acquire advanced technical competencies for effective e-resource management. This necessity has led to the development and adoption of Electronic Resource Management (ERM) systems.

## **3. OBJECTIVES**

Academic libraries are procuring electronic resources to provide users with uninterrupted, 24/7 access to digital documents. The key goals of this study include:

- Conducting an in-depth analysis of how electronic resources are managed in academic library environments.
- Examining the categories and origins of e-resources, along with their availability and ease of access for academic users.
- Identifying the difficulties libraries encounter in administering electronic resources.
- Suggesting practical solutions to address the challenges faced in e-resource management within academic libraries.
- Tracking the development and implementation of various Electronic Resource Management (ERM) systems in academic institutions.

## **4. ACADEMIC LIBRARY**

An academic library is a library connected to an educational institution, serving as a vital part of the organization. Its primary role is to support the academic community, including students, researchers, teaching staff, and administrative personnel. The library's collection reflects the academic programs offered by the institution and typically includes textbooks, reference works, scholarly journals, theses, dissertations, project documents, maps, atlases, and magazines in print form. In addition to physical materials, academic libraries provide access to electronic journals, e-books, and online databases to assist students and researchers. Both conventional and digital resources contribute to creating a learning environment tailored to users' information needs. The strength and quality of an academic library's holdings are often seen as a reflection of the institution's prestige and academic standing.

## **5. ELECTRONIC RESOURCES AND THEIR SIGNIFICANCE**

### **5.1 Digital Information Resources**

E-resources are digital materials where information is stored electronically and can be accessed through computer systems and internet networks. These resources cover a broad spectrum of formats and distribution methods, including Online Public Access Catalogs (OPACs), CD-ROMs, electronic databases, digital journals, electronic books, web-based content, email publications, hyperlinks, and online publishing platforms. The content may consist of text, numerical figures, graphics, or a mix of these elements. Today, electronic resources are highly valued because they offer the most up-to-date information and can be accessed conveniently from any location at any time, overcoming physical and geographical barriers.

### **5.2 Types of Online Resources**

Academic libraries provide a wide range of digital resources and services, such as:

- Digital books
- Online journals
- Electronic theses and dissertations (ETDs)
- Web-accessible databases
- Digital newspapers
- Online magazines
- Electronic records of conference proceedings
- Digital reports
- Electronic maps
- Digital photographs and images
- Digitized manuscripts
- Audio content in electronic format
- Digital visual materials
- Geographic Information System (GIS) datasets
- Virtual exhibitions
- Subject-specific electronic guides
- Digital newsletters
- Online Public Access Catalogs (OPACs)
- CD-ROM collections
- Email discussion lists and bulletin boards
- Various internet-based resources

### **5.3 Benefits of Digital Resources**

Electronic resources provide a variety of benefits to libraries, users, content creators, publishers, and archivists. Some of the primary advantages include:

- Reduced expenses in publishing and distribution compared to printed materials.

- Time savings through instant and straightforward access, removing delays associated with processing, printing, binding, and mailing.
- Elimination of costs related to printing, binding, and postage.
- Easy replication and sharing of content.
- Support for multiple users to access the same resource at the same time.
- Continuous availability, allowing users to connect 24 hours a day, seven days a week.
- Access from any location, providing flexibility and convenience.
- Conservation of physical library space by reducing the need for storage.
- Incorporation of diverse media formats, such as images, audio, and video, enriching content presentation.
- Interactive capabilities that enhance user engagement.
- The ability to update data regularly, ensuring information remains current.
- Protection and preservation of fragile or rare original materials.
- Improved accessibility for people with disabilities.
- supports environmentally friendly practices by minimizing the use of paper.
- Offers direct links to additional related resources, enhancing the ease of information discovery.

### **5.4 Disadvantages of Electronic Resources**

Academic libraries face several significant obstacles in acquiring and providing access to electronic resources. Some of the major drawbacks include:

- The upfront costs for e-resources are often very high.
- Accessing these resources frequently requires specialized and costly equipment.
- Compatibility issues between different hardware and software platforms can create barriers.
- Publishers often use varied systems, resulting in a lack of standardization and interoperability.
- Many users do not possess the necessary IT skills to effectively use electronic resources.
- Technological limitations restrict the ability to tailor resources fully to individual user requirements.
- Inconsistent standards for retrieving information from different publishers make usage difficult.
- Users generally need prior technical knowledge to access and navigate electronic documents.
- Concerns about copyright infringement and legal restrictions complicate resource management.

### **5.5 Need of electronic resources in libraries**

In today's digital landscape, electronic resources have become essential in libraries for providing timely and accurate information. Compared to printed materials, e-resources are increasingly preferred due to several key benefits:

- i. They allow numerous users to access content simultaneously without limitations.
- ii. Electronic resources can be explored easily using various online search engines.
- iii. Sharing and exchanging knowledge is more convenient and efficient through digital means than with physical copies.
- iv. E-resources deliver information swiftly and effectively to a wide audience.

- v. The process of disseminating research has become quicker and more efficient via electronic platforms.
- vi. Vast amounts of data can be stored digitally, minimizing the need for physical storage space.

### **5.6 Sources of Digital Resources**

- i. Freely accessible open-source electronic materials
- ii. Electronic content provided by commercial publishers and vendors
- iii. E-resources developed internally by the library or organization

## **6. MANAGEMENT OF DIGITAL RESOURCES**

According to Wikipedia, Electronic Resource Management (ERM) involves the strategies and procedures used by librarians and library staff to oversee the entire process related to electronic information resources. This process includes selection, procurement, licensing, access control, maintenance, usage monitoring, assessment, retention, and eventual removal of digital resources from the library's collection. Librarians play a central role in managing these electronic materials effectively. The following factors are critical for successful management of e-resources:

**i. Discovery** – Librarians are responsible for actively seeking out new electronic resources and also incorporate suggestions from faculty for subject-specific e-resources. Following these recommendations, they gather detailed information about the electronic materials, including bibliographic details of e-journals, subscription durations, and available journal bundles.

**ii. Trial** – Librarians arrange for temporary access to potential electronic resources under consideration. They encourage users to test these resources and collect their feedback, which helps in making an informed purchasing decision. If the resource proves useful, the librarian proceeds to subscribe to it for the library.

**iii. Selection** – Following the completion of the trial and evaluation process, the librarian makes the final choice to acquire the selected electronic resource.

**iv. Acquisition** – Once the decision to subscribe is made, the librarian reviews the license agreements, copyright conditions, and availability details. When subscribing to electronic journal packages, it is important to confirm the total number of journals included and the length of the subscription.

**v. Access** – Guaranteeing easy and reliable access to electronic resources is essential. Librarians ensure that the resources are user-friendly and readily accessible to library patrons.

**vi. Decision** – Since subscriptions are typically time-limited, librarians must assess the usage statistics before the subscription expires. Based on this evaluation, they decide whether to renew the subscription or let it lapse.

## **7 LIFE CYCLE OF E-RESOURCES MANAGEMENT**

The life cycle of an electronic resource involves multiple phases. Electronic Resource Management (ERM) encompasses five key areas: (1) acquisition management, (2) access management, (3) administrative management, (4) support management, and (5) evaluation and monitoring.

1. **Acquisition Management** – Handling the selection, purchase, and licensing of e-resources.
2. **Access Management** – Ensuring users have seamless and secure entry to digital resources.
3. **Administrative Management** – Overseeing policies, agreements, and coordination with vendors.
4. **Support Management** – Providing technical help and training for users and staff.
5. **Evaluation and Monitoring** – Assessing usage, performance, and impact to guide decisions.

## **7.1 Acquisition Management**

The acquisition of electronic resources is a vital step that encompasses budget planning, resource selection, and providing trial access to prospective e-resources. Various important considerations need to be addressed during this phase:

### **A. Budget:**

The first phase in acquiring electronic resources involves determining the financial allocation, which establishes how much money can be spent on these resources.

### **B. Selection:**

The selection process can include:

- Expert recommendations
- User suggestions
- Inputs from discussion forums
- Information gathered from peer library websites
- Publisher catalogs
- Advice from colleagues
- Demonstrations arranged by publishers or vendors
- Evidence-based purchasing methods
- Patron-driven acquisition approaches

### **C. Evaluation of Electronic Resources:**

Key factors for evaluating e-resources are:

- Content relevance and comprehensiveness
- Frequency and quality of updates
- Overall quality and credibility
- Authoritativeness of the source
- Accessibility and ease of use
- Availability of technical support
- Terms and conditions of licensing agreements
- Cost and value for money

### **D. Price Negotiation:**

Important considerations during price discussions include:

- Nature of the product (e.g., full-text database or aggregator)
- Access type (perpetual, annual, or multi-year subscription)
- Subscription format (digital-only or combined print and digital)
- Number of authorized users

### **E. Trial Use:**

During trial periods, focus on:

- Consistency and reliability of the content
- Functional features and user experience

#### **F. Licensing Agreements:**

Critical elements of licensing contracts involve:

- Allowing simultaneous access for multiple users from different geographic areas
- Perpetual access rights, permitting use after contract termination
- Institutional archiving rights for uploading content to the institution's repository
- User rights to view, download, and print content
- Availability of usage statistics for monitoring
- Responsibility of the library to prevent unauthorized access
- Technical requirements and compatibility
- Financial terms, payment schedules, termination clauses, and indemnity provisions
- Dispute resolution within the institution's jurisdiction

#### **G. Procurement and Payment of Electronic Resources:**

After carefully reviewing all the prior factors, the next step is to place the purchase order and complete the payment following the conditions specified in the contract.

### **7.2 Access Management**

The following factors should be taken into account when managing access:

- Providing access based on IP addresses or authenticated usernames
- Enabling users to access resources from off-campus locations
- Supporting open access materials
- Utilizing the library's web portal for centralized resource access
- Offering discovery services to facilitate comprehensive searches
- Employing federated search systems to search across multiple databases at once
- Using link resolvers to connect users directly to full-text content
- Organizing resources by subject-specific indexes
- Allowing users to browse curated resource lists
- Integrating e-resources with the Online Public Access Catalog (OPAC)
- Developing and maintaining an alphabetical (A-Z) listing of resources for easy navigation

### **7.3 Administration Management:**

Administrative management involves managing the following key areas:

- Implementing access controls and restrictions
- Defining and overseeing user privileges
- Administering licensing conditions and agreements
- Managing user credentials such as IDs and passwords
- Keeping an updated list of resource holdings
- Organizing and cataloging electronic resources
- Monitoring and maintaining functional URLs
- Overseeing administrative module data and settings

#### **7.4 Support Services Management:**

Essential support activities to maintain include:

- Providing accessible contact information for user assistance
- Recording and tracking issue reports
- Performing problem diagnosis and resolution

#### **7.5 Evaluation and Monitoring Management**

This involves:

- Monitoring usage metrics using standards such as COUNTER, SUSHI, and CORE
- Performing cost-effectiveness analysis
- Evaluating the distinctiveness and value of electronic resources
- Analyzing system downtime and addressing related issues
- Gathering feedback from users to improve services

### **8. ELECTRONIC RESOURCE MANAGEMENT SYSTEMS(ERMS)**

#### **8.1 Definition**

An Electronic Resource Management System (ERMS) refers to a framework or platform used by libraries to efficiently manage the selection, evaluation, acquisition, upkeep, and user access of digital resources. It ensures that all processes align with licensing conditions and institutional policies.

#### **8.2 Features of Electronic Resource Management**

*Revised Features of Electronic Resource Management (ERM) Systems*

- Assist in overseeing the purchase and administration of subscribed electronic content
- May operate independently or be linked to other library automation modules
- Provide a user-facing interface, either embedded in the library catalog (OPAC) or as a separate portal
- Highlight user rights for digital materials, including use in digital course packs, reserves, and interlibrary loan services
- Track e-resources from initial order placement through licensing, activation, and usage monitoring
- Store details of service providers, subscription platforms, and consortium arrangements
- Include up-to-date contact records for all associated vendors and content providers
- Simplify technical issue handling by removing the need for manual logging
- Offer tailored email alert features for updates, renewals, and notifications
- Capture and generate reports on resource usage through standard-compliant statistics tools
- Enforce user access controls based on licensing agreements or institutional policies
- Enable automated alerts and content update notifications for users and administrators
- Compile an alphabetical directory (A–Z listing) of all subscribed e-resources
- Monitor and manage budgets and track expenditures linked to digital resources
- Support lending operations when necessary
- Provide tools for evaluating cost-effectiveness, such as usage-to-cost analysis



- Integrate link resolvers to help users locate full-text access across databases
- Maintain a schedule for renewal deadlines and automate reminder alerts
- Allow inter-institutional sharing of digital collections
- Coordinate administrative tasks and processes through workflow automation

### 8.3 Benefits of ERMS

Advantages of Electronic Resource Management Systems (ERMS)

Benefit	Description
1.Time Efficiency	Automates tasks, reducing staff workload and speeding up workflows.
2.Eliminates Duplication	Prevents repeated processes and resource overlaps.
3.Quick Access for Users	Helps users retrieve resources easily and faster.
4.No Package Redundancy	Avoids duplication of content across different resource packages.
5.Handles Large E-6. Collections	Effectively manages complex and expanding electronic collections.
7.Usage-Based Decision 8. Making	Provides usage analytics to support smart subscription and renewal decisions.
9.Simplified Management	Easy setup and maintenance of electronic resources.
10.Optimized Budget 11. Utilization	Ensures cost-effective investment in resources.
12.Supports Library 13.Consortia	Enhances collaboration and resource sharing among libraries.

## 9. ELECTRONIC RESOURCE MANAGEMENT TOOLS

### A. Commercial Electronic Resource Management Systems (ERMS):

The following ERMS solutions are offered by various commercial vendors:

- **360 Resource Manager** by ProQuest  
([https://knowledge.exlibrisgroup.com/360\\_Services/360\\_Resource\\_Manager](https://knowledge.exlibrisgroup.com/360_Services/360_Resource_Manager))
- **Alma** by ExLibris (<https://knowledge.exlibrisgroup.com/Alma>)
- **BLUEcloud ERM** by SirsiDynix (<https://www.sirsidynix.com/bluecloud-erm/>)
- **EBSCONET ERM Essentials** by EBSCO (<http://www.ebsco.com/>)
- **E-Resource Central** by SIRSI Corporation (<https://www.sirsidynix.com/eresource-central/>)
- **Gold Rush®** by Colorado Alliance of Research Libraries (<https://coalliance.org/software/gold-rush>)
- **Innovative ERM** by Innovative Interface (<https://www.iii.com/>)
- **Knimbus** (<https://www.knimbus.com/>)
- **LSe-RMS** by LIBSYS  
(<https://www.libsys.co.in/products/library-solutions/electronic-resource-management-system>)
- **Meridian** by Endeavour Information Systems (<https://www.endeavour-is.com/>)
- **Research Monitor** by Priory Solution (<https://www.trgscreen.com/>)
- **SemperTool Digital Library Suite** (<https://www.sempertool.dk/>)
- **Sierra Library Service Platform** by Innovative Interface (<https://www.iii.com/products/sierra-ils/>)

- **TDNet ERM** by TDNet Inc (<https://tdnet.io/>)
- **Verde** by ExLibris (<https://knowledge.exlibrisgroup.com/Verde>)
- **Web-Share License Manager** by OCLC (<https://www.oclc.org/en/license-manager.html>)

### **B. Open Source Electronic Resource Management Systems:**

There are several ERMS options available as open source software, including:

- **CORAL** — an open-source ERMS platform (<http://coral-erm.org/>)
- **CUFTS ERM** — developed by Simon Fraser University (<http://www.lib.sfu.ca/about/initiatives/researcher>)
- **ERmes** — a free ERMS tool (<http://murphylibrary.uwlax.edu/erm/>)
- **SMDB** — part of the SemperTool digital library suite (<http://www.sempertool.dk/>)

### **C. Custom-Built In-House ERMS Solutions:**

Some libraries choose to create their own ERMS tailored specifically to their requirements. Notable examples include:

- **E-Matrix**, developed at North Carolina State University Library (<https://www.lib.ncsu.edu/projects/e-matrix-ncsu-libraries-0>)
- **ERLIC**, designed by Pennsylvania State University (<https://digital.libraries.psu.edu/digital/>)
- **HERMES**, a system from Johns Hopkins University Library (<https://jscholarship.library.jhu.edu/handle/1774.2/32801>)
- **VERA**, created by MIT Library (<https://libraries.mit.edu/>)

## **10. INFRASTRUCTURE NEEDED FOR MANAGING ELECTRONIC RESOURCES IN LIBRARIES**

The essential infrastructure needed for electronic resource management in academic libraries includes:

- Robust servers and efficient computer terminals
- Fast and stable internet access
- Engaging and easily navigable websites
- Competent and well-trained library staff

## **11. CHALLENGES IN MANAGING ELECTRONIC RESOURCES**

When adopting Electronic Resource Management Systems (ERMS), librarians frequently face a range of obstacles.

Key challenges include:

- The complicated and ongoing management process of electronic resources
- Electronic materials existing in diverse formats and types
- The constantly changing characteristics of digital content
- The inability of traditional Integrated Library Systems (ILS) and Library Services Platforms (LSP) to fully support e-resource management
- Managing resources at both consortium and individual library levels

- Limited financial resources
- A lack of adequately trained staff
- Deficiencies in necessary infrastructure
- Difficulties in adhering to metadata standards

## **RECOMMENDATIONS**

Raising awareness about electronic resource collections is vital to ensure users know what is available. To promote these collections effectively, libraries should actively engage with publishers to gain their support. Communication can be enhanced through social networks, blogs, messaging apps like WhatsApp, email campaigns, internal networks, and meetings within departments. Additionally, check publishers' websites for useful promotional resources such as online and in-person training sessions, printable posters, and other marketing tools.

## **CONCLUSION**

The landscape of publishing is rapidly evolving toward digital platforms, leading academic libraries to expand their collections of electronic resources to meet user demands. These digital materials now form a crucial part of the library's offerings. Librarians face considerable challenges in selecting, acquiring, accessing, and managing these electronic assets. To address these challenges, it is important to implement an electronic resource management system that complements existing library technologies. By adopting an ERMS, libraries can better organize and maintain resources such as e-books, e-journals, and online databases. Upgrading infrastructure—including fast internet connectivity, campus-wide Wi-Fi, and multiple network access points—is essential to facilitate seamless resource use. Furthermore, providing targeted training for library staff is key to effective e-resource management. Allocating sufficient budgetary resources is necessary to support these improvements and ensure successful implementation.

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