

# Dealing of E-Resource Management in ISI Kolkata, IIM Calcutta, and IISER Kolkata Library: A Comparative Study

Sukanta Halder<sup>1</sup>

<sup>1</sup>Library and Information Officer

<sup>1</sup>National Institute of Pharmaceutical Education and Research Kolkata

<sup>1</sup>ORCID ID: <https://orcid.org/0000-0002-7277-8917>

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**Abstract:** In today's electronic age, academic libraries play a vital role in providing access to a wide range of e-resources to support teaching, learning, and research activities. This comparative study explores and analyzes the e-resources management practices of three selected academic/research libraries in Kolkata: Indian Institute of Management (IIM) Calcutta, Indian Institute of Statistics (ISI) Kolkata, and Indian Institute of Science Education and Research (IISER) Kolkata. The study adopts an observation-based research methodology, collecting data through library websites to assess strategies, technologies, and tools employed for managing electronic resources. The findings reveal that all three libraries have developed e-resources management activities to facilitate users and maximize resource utilization. However, variations exist in their approaches to access modes, types of electronic materials, service offerings, and collection management practices. IIM Calcutta Library and ISI Kolkata Library demonstrate more comprehensive e-resource management practices compared to IISER Kolkata Library. The study identifies key challenges and proposes recommendations for enhancing e-resources management in academic libraries, including the adoption of user-friendly downloading software, implementation of open access policies, and strengthening of consortium-based subscriptions. These findings can help library administrators improve their e-resources management practices and address evolving information needs of their academic communities.

**Keywords:** *E-Resources Management, Academic Libraries, Digital Resource Management, Electronic Resources, Library Services, Kolkata, Comparative Study.*

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## I. INTRODUCTION

In today's electronic age, academic libraries are vital in providing access to a wide range of e-resources to support teaching, learning, and research activities. Managing these e-resources has become a critical aspect of library operations, ensuring efficient organization, accessibility, and utilization of electronic materials. This study explores and compares the e-resources management practices of Kolkata's selected academic/research libraries. This city, known as the cultural capital of India, is home to several prestigious educational and research institutions and libraries. These libraries have embraced the electronic revolution and invested in e-resources, including e-books, e-journals, databases, and other electronic materials. Understanding the management strategies these libraries adopt is crucial for assessing their effectiveness in meeting the information needs of students,

faculty, and researchers. Managing e-resources is a complex and evolving task for libraries as they strive to provide seamless access to a wide range of electronic information while ensuring effective organization, preservation, and discoverability.

In this study, three national institutes have been selected: the Indian Institute of Management (IIM) Calcutta, the Indian Institute of Statistics (ISI) Kolkata, and the Indian Institute of Science Education and Research (IISER) Kolkata. The three institutes have been declared of national importance by an act of the Parliament of India, and all institutes have enriching libraries with modern facilities. There are vibrant collections of e-resources in the target institutional libraries. This study compares e-resources management practices in selected libraries in Kolkata.

### ➤ *Background of the Study*

The city (Kolkata) has a rich academic heritage, with numerous academic and research institutions and libraries catering to the educational and research needs of students, scholars, and professionals. Academic libraries support teaching, learning, and research activities in educational institutions. As technology advances, managing e-resources has become essential to library services. E-resources include electronic books, scholarly journals, databases, multimedia materials, and other online resources.

Managing e-resources effectively is a complex task that involves various aspects such as acquisition, cataloguing, access control, licensing, preservation, and user support. Different libraries may adopt different strategies and approaches to manage their e-resources, depending on their resources, infrastructure, and user requirements. A comparative study focusing on the e-resources management practices of selected libraries in Kolkata aims to examine and evaluate the strategies, challenges, and outcomes associated with managing e-resources. Such a study can provide valuable insights into the strengths and weaknesses of different libraries, allowing them to learn from each other's experiences and improve their resource management practices. By assessing resource allocation, user satisfaction, and overall performance, the study can contribute to developing best practices and recommendations for enhancing e-resources management in libraries. It can also facilitate collaboration and knowledge sharing among libraries, improving the region's library services. Overall, the background of this comparative study highlights the growing importance of e-resources management in libraries and the need to understand and improve the practices employed in Kolkata's academic and research libraries.

### ➤ *Objectives of the Study*

- To assess the strategies selected by academic libraries in Kolkata for managing e-resources.
- To analyze the electronic information resource services available in these libraries.
- To examine the policies and procedures governing these libraries' acquisition, organization, and access to e-resources.
- To explore the technologies and tools the selected libraries utilize for e-resources management.
- To identify the different tools to provide for managing e-resources and services.
- To propose best practices for enhancing e-resources management in academic libraries based on the study's findings.

### ➤ *Review of Related Literature*

A literature review introduces the problem, develops the background by providing a history of scholarly work on the subject, and ends with the study's purpose and rationale (Wysocki, 2008). It constitutes an essential part of any research work; its primary goals are to place the current study within the body of literature and give the research context. The literature review is essential to any research work in any

domain. The research area undertaken is very challenging in Library and Information Science; hence, only a few studies have been conducted earlier. The available research and non-research studies found relevant for this research work have been methodically reviewed along with their findings.

Bist (2005) provides an in-depth overview of managing electronic journals, detailing how to access e-journals, features of these journals, and issues related to their acquisition, ownership, and licensing. Devi & Devi (2005) focus on improving library electronic information services through effective management of e-resources, discussing selection, evaluation, organization, and challenges with e-resources and the advantages of consortium subscriptions. Thamaraiselvi & Kaliammal (2005) cover definitions, goals, and the importance of archiving e-journals, as well as the role of agents in their management. Jewell & Mitchell (2008) highlight technical issues in e-resource management systems (ERMS), discussing tools and techniques to support libraries in managing e-resources. Chandel & Saikia (2012) stress the need for integrated ERMS to unify access to global and local information. Jensen (2013) examines functional requirements of ERMS and discusses a home-grown solution that utilizes Google search, as well as commercial options and their pros and cons. Kumari (2015) outlines the types and importance of e-resources in libraries, including their advantages, disadvantages, management needs, copyrights, and oversight.

Chauhan (2016) describes the evolution of collection development in libraries due to technology and the challenges faced by library professionals and patrons. Prajapati (2016) touches on the time-saving nature of online libraries, technical requirements for resource management, and the services users should receive. Baskar (2017) discusses the ease and speed of accessing information due to electronic technology while also reviewing the benefits and drawbacks of various e-resources. Bhuvaneshwari and Shanmugam (2017) emphasize the essential role of e-resources in academic institutions and the key challenges in managing them. Stephen (2017) introduces the aims of e-resource management, including organizing and sharing information. Asif and Singh (2018) focus on integrating the Internet with online library services and the challenges library staff face in managing extensive online information. Wani (2018) explores the shift from traditional to modern formats in libraries due to advancements in information and communication technology.

Roy and Hussain (2019) examine e-resources management in seven university libraries in the North Eastern states, noting the increasing daily usage of these resources for research. Polade (2021) highlights the need for robust technical infrastructure for effective management of e-resources. Subaveerapandiyani et al. (2021) present research on the challenges faced by Indian library professionals in managing e-resources. Verma et al. (2021) discuss the importance and challenges of e-resources in Indian libraries, emphasizing careful management considerations. Wang et al. (2021) focus on multimedia resources and the benefits of providing these through the Internet. Padval (2022) mentions the growing embrace of electronic collections in libraries

alongside print materials. Hiremath et al. (2023) investigate the factors influencing effective e-resource management in academic libraries and challenges faced in implementing ERMS.

The libraries of IIM Calcutta, IISER Kolkata, and ISI Kolkata play a crucial role in managing digital resources, adapting to the digital era, and supporting research and education. Institutional repositories are vital for preserving and accessing digital content. These libraries utilize repositories to store and manage research outputs, such as theses and publications, ensuring their visibility and accessibility. The National Digital Library of India complements these efforts by providing a unified platform for resource access, enhancing resource sharing, and supporting research endeavours (Dutta & Panda, n.d.; Sahoo et al., 2018). The libraries employ structured policies for selecting and maintaining digital collections. They evaluate resources based on relevance, user demand, and academic needs, ensuring a well-rounded collection that supports both teaching and research. The shift from print to digital media is evident, with high demand for e-journals and online databases, reflecting the current academic preferences (Maharana et al., 2004; Kumar, 2016).

These libraries focus on enhancing user experience through various services and promotional activities. They provide user training and awareness programs to maximize resource utilization. Promotional methods include workshops, online guides, and social media campaigns to ensure that users are informed and engaged with available resources (Mondal & Maity, 2019; Kumar, 2016). Collaboration among libraries is key to effective resource management. They participate in consortia and reciprocal agreements to share resources, reducing duplication and costs. Such efforts often involve joint subscriptions and sharing of digital content, supported by advancements in technology and policies that encourage collaboration (Maharana et al., 2004; Sahoo et al., 2018).

Despite progress, challenges remain, including high costs, copyright issues, and digital divide among users. These libraries continuously seek solutions, such as negotiating licenses, offering training, and exploring open-access resources to mitigate these challenges and ensure equitable access (Mondal & Maity, 2019; Maharana et al., 2004). Technology has revolutionized library services, offered remote access, and integrated digital tools for efficient resource management. These libraries leverage technology to enhance discovery, access, and user experience, adapting to the increasing demand for digital information in a connected world (Kumar, 2016; Sahoo et al., 2018).

- *Examination of Studies and Research Specific to E-resources Management*

According to the Electronic Library Federation (DLF), an e-resources management system should facilitate "management of the information and workflows necessary to efficiently select, evaluate, acquire, maintain, and provide access to e-resources" (Jewell et al., 2004). Karen Coyle said, "E-resources management in libraries goes beyond technical

solutions; it requires a deep understanding of user needs, information architecture, and semantic web principles. Libraries should prioritize open standards and linked data approaches for long-term sustainability and flexibility" ("Metadata Matters," 2019). Dr Elaine Westbrooks, Vice Provost for University Libraries, University of North Carolina at Chapel Hill stated: "Libraries need agile e-resources management strategies to adapt to the evolving information landscape. Emphasizing collaboration with publishers and vendors and investing in user-centered discovery platforms are crucial for meeting user expectations" ("Library Journal," January 2020). Sarah Clark, Director of Electronic Library Services, University of Texas at Arlington Libraries noted: "E-resources management is becoming increasingly critical for libraries as they strive to provide seamless access to e-resources and optimize their electronic collections. Libraries must invest in robust systems and workflows to effectively manage licensing, authentication, and discoverability" ("The Changing Landscape of Academic Libraries," 2020). Marshall Breeding, Library Technology Consultant and Author observed: "Libraries face a complex environment with diverse e-resources, and effective e-resources management is essential to address these challenges. Libraries must focus on interoperability, data integration, and user-centric approaches to enhance access and usability" ("Smart Libraries Newsletter," March 2021).

- *E-Resource Management System (ERMS) Tools*

Various ERMS tools are available to support libraries in managing their electronic resources efficiently:

Commercial Tools:

- ✓ Meridian (Endeavour Information Systems)
- ✓ Verde (ExLibris)
- ✓ EBSCONET (EBSCO)
- ✓ 360 Resource Manager (ProQuest)
- ✓ BLUE cloud eRM (SirsiDynix)
- ✓ Gold Rush® (Colorado Alliance of Research Libraries)
- ✓ True Serials
- ✓ Innovative Interfaces

Open-Source Tools:

- ✓ CORAL
- ✓ CUFTS
- ✓ ERmes
- ✓ SMDB

In-house Software:

- ✓ HERMES (Johns Hopkins University Library)
- ✓ VERA (Massachusetts Institute of Technology Library)
- ✓ E-Matrix (NSCU Library)
- ✓ ERLIC (Pennsylvania State University)

- *Research Gaps*

Identifying and addressing research gaps is crucial for enhancing the effectiveness of digital resource management in libraries across Kolkata's major institutes. Addressing

these gaps will not only improve resource utilization but also foster greater user engagement and satisfaction within the academic community. This enhanced engagement can ultimately lead to a more informed and research-driven academic environment in Kolkata's institutes. Improving digital resource management practices can significantly enhance the academic experience, ensuring that users have seamless access to vital information and resources. Improving the management of digital resources is essential for libraries to adapt to the evolving needs of users in a competitive academic landscape. This adaptability is crucial for libraries to provide relevant support and services that align with the changing dynamics of academic research and user expectations. To achieve this, libraries must embrace innovative strategies and technologies that enhance user experience while ensuring efficient access to digital resources. Furthermore, collaboration among libraries can facilitate the sharing of best practices, ultimately enriching the digital resource management landscape in Kolkata's academic institutions.

#### ➤ *Statement of Research Problems*

- Identifying available e-resources in selected Kolkata libraries and analyzing acquisition and organization strategies.
- Understanding access and utilization of e-resources.
- Identifying technological infrastructure and tools for managing e-resources.
- Providing user orientation and training programs.
- Discussing challenges faced in managing e-resources.
- Outlining archiving methods and potential areas for improvement.

## II. MATERIALS AND METHODS

The present study is based on managing the 'Electronic resources,' their tools, and technologies as discussed in the various applications and software. Hence, it is observation-based research in nature. The study adopts a comparative research design, focusing on three academic libraries in Kolkata. The primary purpose of this study is to determine the status of e-resources availability in selected libraries. Therefore, the study follows the observation method. Data have been collected through the library websites. The collected data have then been analyzed to identify commonalities, differences, and emerging themes related to e-resources management practices.

#### ➤ *Study Population and Sampling*

Three national institutes were selected for this study: the Indian Institute of Management (IIM) Calcutta, the Indian Institute of Statistics (ISI) Kolkata, and the Indian Institute of Science Education and Research (IISER) Kolkata. These three institutes have been declared of national importance by an act of the Parliament of India, and all institutes have enriching libraries with modern facilities with vibrant collections of e-resources.

#### ➤ *Data Collection*

Data were collected through systematic observation of the library websites of the three target institutional libraries. The following parameters were examined:

- Mode of access to electronic resources
- Types of electronic material access
- Form of e-resources (open access vs. subscription-based)
- Library services in electronic form
- Collection management practices

#### ➤ *Data Analysis*

The collected data were analysed using comparative analysis techniques to identify commonalities, differences, and emerging themes related to e-resources management practices across the three libraries. Scoring systems were developed for quantitative comparison of various parameters.

#### ➤ *Scope and Limitations*

The scope of the present study entitled "Dealing of E-resource Management in ISI Kolkata, IIM Calcutta and IISER Kolkata Library: A Comparative Study" is to help choose appropriate e-resources and establish consistency and priorities in managing this vital part of the library collection. The study focuses specifically on three selected academic/research libraries in Kolkata. It only examines selected libraries' e-resources management practices within this geographic area (Kolkata). The study adopts a comparative research design to analyse and compare the e-resources management strategies, policies, technologies, and challenges across the target libraries in Kolkata.

Due to resources and time constraints, the study may have limitations regarding the number of libraries included in the sample. The findings represent some of the population of selected libraries in Kolkata. Despite these limitations, the results can serve as a foundation for further research and inform the development of best practices for managing e-resources in similar library contexts.

## III. RESULTS

#### ➤ *Overview of Selected Libraries*

##### • *ISI Kolkata Library*

The Indian Statistical Institute (ISI) in Kolkata is a premier research institution dedicated to studying and applying statistics, mathematics, computer science, and related disciplines. The ISI Kolkata library supports the institute's research and academic activities. The ISI Kolkata library home page is the gateway to accessing the vast resources available to students, faculty, and researchers. The home page is designed to provide users with a user-friendly interface and easy navigation to find the required information. Overall, the ISI Kolkata library home page is a central hub for accessing the Library's resources, services, and information. It facilitates efficient research and enhances the learning experience for the ISI community.

• *IIM Calcutta Library*

Indian Institute of Management Calcutta (IIM Calcutta) is one of the premier management institutes in India, renowned for its academic excellence and leadership development. The IIM Calcutta library supports the institute's research, teaching, and learning activities. The IIM Calcutta library home page is the primary online gateway for accessing the extensive resources available to students, faculty, and researchers. The home page is designed to give users easy access to various library services and resources. The IIM Calcutta library home page is a central hub for accessing essential resources and information related to the Library's services and offerings. It facilitates academic and research activities for the IIM Calcutta library users and contributes to the institute's commitment to fostering knowledge and intellectual growth.

• *IISER Kolkata Library*

The Indian Institute of Science Education and Research (IISER) Kolkata is a prestigious institution known for its focus on scientific education and research. The IISER Kolkata library supports the academic and research endeavors of the institute's faculty, students, and staff. The IISER Kolkata library home page is the online gateway to access the Library's extensive collection of resources and services.

➤ *Comparative Analysis Results*

• *Mode of Access to Electronic Resources*

Table 1 Mode of Access to Electronic Resources

SI No.	Mode of Access	ISI Kolkata Library	IIM Calcutta Library	IISER Kolkata Library
1	In-house process	✓	✓	✓
2	Through Consortium	✓	✓	✗
3	Institutional/electronic Repository	✓	✓	✓
4	External links to Electronic Resources/Bibliographic databases	✓	✓	✓

Scores: IIM Calcutta library - 4/4; ISI Kolkata library - 4/4; IISER Kolkata library - 3/4

Table 1 shows that all target libraries have in-house processes to access e-resources. As per the library websites, only the IISER Kolkata library does not have consortium access. All institutional libraries have institutional electronic repositories. It is also noted that all libraries have external links to e-resources/databases for their library users.

• *Types of Electronic Material Access*

Table 2 Types of Electronic Material Access

SI No.	Types of Electronic Material	ISI Kolkata Library	IIM Calcutta Library	IISER Kolkata Library
1	Books	✓	✓	✓
2	Journals	✓	✓	✓
3	Conference Proceedings	✓	✓	✗
4	Theses and dissertations	✓	✓	✗
5	CD/DVD	✗	✓	✗
6	Audio-Visual	✓	✓	✓
7	Newspaper	✗	✓	✗
8	Magazine	✗	✓	✗
9	Old question paper	✓	✗	✓

Scores: IIM Calcutta library - 8/9; ISI Kolkata library - 6/9; IISER Kolkata library - 4/9

Table 2 shows that institutional libraries have listed books and journals for electronic collections. However, per the library websites, the IISER Kolkata library does not contain conference proceedings, theses, dissertations, CDs/DVDs, newspapers, and magazines. Similarly, for IIM Calcutta, old question papers and ISI Kolkata library CDs/DVDs, newspapers, magazines, etc., are invisible to users.

• *Form of E-resources*

Table 3 Form of E-resources

SI No.	Access to Electronic Resources	ISI Kolkata Library	IIM Calcutta Library	IISER Kolkata Library
1	Open Access	✗	✗	✗
2	Subscription-based	✓	✓	✓
3	Converted to Electronic (Digital)	✗	✗	✗

Table 3 indicates that all the concerned libraries have opened their e-resources to the users only in subscription mode. It has yet to be shown to users that an open access policy has been provided.

• *Library Services in Electronic Form*

Table 4 Library Services in Electronic Form

SI No.	Library Services	ISI Kolkata Library	IIM Calcutta Library	IISER Kolkata Library
1	Web OPAC	✓	✓	✓
2	Electronic Reference Service	✓	✓	X
3	Referral Service	X	✓	X
4	Discovery Service	✓	✓	✓
5	Inter-library Loan	✓	✓	✓
6	Consultancy service	✓	✓	✓
7	Downloading option	X	X	X
8	Remote access	✓	✓	✓
9	Plagiarism check	✓	X	✓

Scores: IIM Calcutta library - 7/9; ISI Kolkata library - 7/9; IISER Kolkata library - 6/9

The library services provided by the institutional libraries in electronic form are presented in Table 4. As per the cited websites, all libraries offer Web OPAC, discovery service, and remote access facilities to the users. However, ISI Kolkata Library and IISER Kolkata Library do not provide referral services. The IIM Calcutta library is not devoted to a plagiarism-checking facility. The downloading option is limited to all the prescribed institutional libraries.

• *Collection Management Practices*

Table 5: Collection Management in ISI Kolkata Library, IIM Calcutta Library, and IISER Kolkata Library

Aspect	ISI Kolkata Library	IIM Calcutta Library	IISER Kolkata Library
Specialization	Strong emphasis on statistics, mathematics, and computer science	Rich collection in management studies, business, and economics	Focus on scientific and research materials
Collection Size	Extensive collection in specialized fields	Comprehensive collection in management and related fields	Significant collection in scientific disciplines
Acquisition Methods	Acquisitions through purchase, donation, and exchange	Acquisitions through purchase, donation, and subscription	Procurement via purchase and donation
Collection Development Policies	Development policies aligned with academic programs and research needs	Policies designed to support academic programs and research	Policies aligned with the academic curriculum and research areas
Weeding Practices	Regular weeding to maintain relevance and quality	Weeding to ensure currency and relevance	Periodic weeding to update collections
Special Collections	Archives, rare books, and historical documents	Specialized collections on management theories, case studies	Special collections related to research areas
Electronic Collection Management	Comprehensive management of electronic collections	Electronic collection management integrated with library services	Management of electronic resources and repositories
Resource Sharing	Participation in resource-sharing networks and consortia	Resource sharing agreements with other institutions	Collaboration for resource sharing and interlibrary loan
Subject Liaison Services	Dedicated subject librarians for specialized fields	Liaison services for management and related subjects	Subject liaisons for scientific disciplines
Access Policies	Accessible to members of ISI and registered users	Accessible to members of IIM and registered users	Accessible to members of IISER and registered users

Table 5 provides an overview of collection management practices at ISI Kolkata Library, IISER Kolkata Library, and IIM Calcutta Library. However, the specifics of each

Library's collection management policies may vary, so it is advisable to refer to their respective websites or contact them directly for more detailed information.

#### IV. DISCUSSION

The comparative analysis of e-resources management practices across the three selected academic libraries in Kolkata reveals both similarities and notable differences in their approaches to managing electronic resources. This section critically evaluates and compares the present findings with existing literature and discusses their implications for library services and academic support.

##### ➤ *E-Resources Management Strategies*

All three libraries have developed comprehensive e-resources management activities to facilitate users and maximize resource utilization. This finding aligns with the observations of Bhuvanewari and Shanmugam (2017), who emphasized the essential role of e-resources in academic institutions. The libraries provide digital services such as Reference Service, Web OPAC, Database Service, Interlibrary Loan, and discovery service. However, from the analysis point of view, IIM Calcutta Library and ISI Kolkata Library are ahead of the rest, fulfilling almost all the criteria for managing e-resources. The IIM Calcutta library enables maximum access to e-resources, which is consistent with the recommendations of Stephen (2017) regarding the aims of e-resource management, including organizing and sharing information.

##### ➤ *Technological Infrastructure and Tools*

The technological infrastructure varies across the three libraries. For institutional repositories, IIM Calcutta adopted DSpace, ISI Kolkata library uses DSpace, and IISER Kolkata believes in the ePrints repository. This diversity in platform selection reflects the findings of Jewell and Mitchell (2008), who discussed various tools and techniques to support libraries in managing e-resources. Koha powers the ISI Kolkata Library and IIM Calcutta Library's online catalogue, while the IISER Kolkata library uses VTLS. All these libraries use J-Gate discovery tools to discover e-resources, demonstrating a commitment to providing efficient resource discovery mechanisms as recommended by Chandel and Saikia (2012).

##### ➤ *Access Policies and Consortium Participation*

A significant finding is that an access policy for open access resources is absent for all selected libraries. All libraries facilitate only online subscriptions to users, as shown in Table 3. This is a notable gap, considering the growing importance of open access resources in academic libraries as discussed by Verma et al. (2021). The absence of consortium access at IISER Kolkata Library (Table 1) represents a significant disadvantage, as consortium subscriptions have been shown to provide advantages in terms of cost-effectiveness and resource sharing (Devi & Devi, 2005).

##### ➤ *Types of Electronic Materials and Services*

The analysis reveals significant variations in the types of electronic materials available across the three libraries. IIM Calcutta Library offers the most comprehensive collection (8/9 types), followed by ISI Kolkata Library (6/9), and IISER Kolkata Library (4/9). This disparity suggests that IISER Kolkata Library may need to expand its electronic collection

to better serve its user community. The absence of conference proceedings, theses, and dissertations at IISER Kolkata Library is particularly concerning, as these are crucial resources for research activities (Roy & Hussain, 2019).

##### ➤ *User Services and Support*

All libraries offer essential services such as Web OPAC, discovery service, and remote access facilities. However, notable gaps exist in referral services (absent in ISI Kolkata and IISER Kolkata libraries) and plagiarism checking (absent in IIM Calcutta). Most critically, the downloading option is limited across all three libraries, which may hinder user access and utilization of resources. This finding supports the recommendation for user-friendly software for downloading electronic/digital materials in any format (PDF, HTML, or XML), as suggested by Prajapati (2016).

##### ➤ *Collection Management Practices*

The collection management practices reflect each institution's specialized focus. ISI Kolkata Library emphasizes statistics, mathematics, and computer science; IIM Calcutta Library focuses on management studies, business, and economics; and IISER Kolkata Library concentrates on scientific and research materials. All three libraries follow structured acquisition methods, development policies aligned with academic programs, and regular weeding practices to maintain collection relevance. This approach is consistent with best practices in collection development as described by Chauhan (2016).

##### ➤ *Challenges and Opportunities*

The findings reveal several challenges faced by these libraries in managing e-resources effectively. These include:

- Limited open access policies
- Restricted downloading options
- Gaps in consortium participation (IISER Kolkata)
- Incomplete coverage of electronic material types
- Variations in service offerings

These challenges align with those identified by Hiremath et al. (2023) in their investigation of factors influencing effective e-resource management in academic libraries. However, the libraries also demonstrate significant strengths, including comprehensive institutional repositories, robust discovery services, and remote access capabilities. Technology has revolutionized library services, offered remote access, and integrated digital tools for efficient resource management, as noted by Kumar (2016) and Sahoo et al. (2018).

##### ➤ *Comparative Performance*

Based on the scoring across various parameters, IIM Calcutta Library demonstrates the most comprehensive e-resources management practices, followed closely by ISI Kolkata Library. IISER Kolkata Library, while maintaining essential services, shows room for improvement in several areas including consortium participation, electronic material diversity, and service offerings. This comparative performance assessment provides valuable insights for

library administrators and stakeholders interested in optimizing e-resources management strategies.

#### ➤ *Implications for Practice*

The findings of this study have several important implications for library practice:

- **Need for Open Access Policies:** All three libraries should develop and implement open access policies to complement their subscription-based resources, thereby expanding access to scholarly information.
- **Enhanced Downloading Capabilities:** User-friendly software for downloading electronic/digital materials in various formats should be implemented to improve user experience and resource utilization.
- **Consortium Participation:** IISER Kolkata Library should explore opportunities for consortium participation to enhance resource access and cost-effectiveness.
- **Service Standardization:** Libraries should work toward standardizing essential services such as referral services, plagiarism checking, and electronic reference services across all institutions.
- **Collection Development:** IISER Kolkata Library should prioritize expanding its electronic collection to include conference proceedings, theses, dissertations, and other essential research materials.

#### ➤ *Contribution to Knowledge*

This study contributes to the existing body of knowledge on e-resources management in academic libraries by providing a detailed comparative analysis of three prominent institutions in Kolkata. The findings can help library administrators and staff members enhance their e-resources management practices, improve user access and support, and address the challenges faced in managing e-resources effectively. Additionally, the research provides insights for policymakers and stakeholders in developing policies and strategies related to e-resources management in academic libraries.

## V. CONCLUSIONS

This comparative study has examined the e-resources management practices in three selected academic/research libraries in Kolkata: IIM Calcutta, ISI Kolkata, and IISER Kolkata. The findings reveal that all these libraries are developing e-resources management activities to facilitate users, enhance their resources' maximum usage, and encourage research and development performances.

The study demonstrates that while all three libraries have embraced electronic resources and implemented various management strategies, significant variations exist in their approaches and capabilities. IIM Calcutta Library and ISI Kolkata Library exhibit more comprehensive e-resources management practices compared to IISER Kolkata Library, with IIM Calcutta Library scoring highest across multiple parameters including types of electronic materials (8/9) and mode of access (4/4).

#### ➤ *Key Findings Include:*

- All three libraries have in-house processes for accessing e-resources and maintain institutional repositories, with IIM Calcutta and ISI Kolkata using DSpace, while IISER Kolkata uses ePrints.
- Consortium access is available only at IIM Calcutta and ISI Kolkata libraries, representing a significant gap for IISER Kolkata Library.
- All libraries provide e-resources exclusively through subscription-based models, with no open access policies currently visible to users.
- Essential services such as Web OPAC, discovery services, and remote access are universally available, but gaps exist in referral services, plagiarism checking, and downloading options.
- Collection management practices are well-aligned with each institution's specialized focus, with structured acquisition methods and regular weeding practices.

The study identifies several challenges that need to be addressed, including the absence of open access policies, limited downloading options, incomplete service offerings, and variations in electronic material types across libraries. User-friendly software for downloading electronic/digital materials in any format (PDF, HTML, or XML) is highly recommended for these libraries.

Based on the findings, the following recommendations are proposed for enhancing e-resources management in academic libraries:

- **Implement Open Access Policies:** All three libraries should develop and implement comprehensive open access policies to expand access to scholarly information and complement subscription-based resources.
- **Enhance User Interface and Downloading Capabilities:** Invest in user-friendly software that enables seamless downloading of electronic materials in multiple formats (PDF, HTML, XML).
- **Strengthen Consortium Participation:** IISER Kolkata Library should actively pursue consortium membership to benefit from shared resources, reduced costs, and enhanced access to electronic materials.
- **Standardize Essential Services:** Work toward standardizing essential services such as referral services, plagiarism checking, and electronic reference services across all institutions.
- **Expand Electronic Collections:** Particularly for IISER Kolkata Library, prioritize expanding the electronic collection to include conference proceedings, theses, dissertations, newspapers, magazines, and CD/DVD materials.
- **Invest in Training and User Support:** Develop comprehensive user orientation and training programs to maximize resource utilization and ensure users are aware of available services.
- **Adopt Advanced ERMS Tools:** Consider implementing or upgrading to advanced Electronic Resource Management

Systems (ERMS) to streamline workflows and improve efficiency.

- Foster Collaboration and Knowledge Sharing: Facilitate regular collaboration and knowledge sharing among the three libraries to learn from each other's experiences and adopt best practices.

The findings of this study can help library administrators and staff members enhance their e-resources management practices, improve user access and support, and address the challenges faced in managing e-resources effectively. Additionally, the research provides valuable insights for policymakers and stakeholders in developing policies and strategies related to e-resources management in academic libraries.

By examining their approaches, strengths, and areas for improvement, this research serves as a valuable resource for librarians, administrators, and stakeholders interested in optimizing e-resources management strategies to meet the evolving needs of their academic communities. Future research should explore user satisfaction levels, actual usage statistics of e-resources, and the impact of e-resources management practices on research productivity and academic outcomes. Longitudinal studies tracking the evolution of e-resources management practices over time would also provide valuable insights into the effectiveness of implemented strategies and interventions.

In conclusion, effective e-resources management is critical for academic libraries in the digital age. The three libraries examined in this study demonstrate commitment to providing electronic resources and services, but there remains significant room for improvement. By addressing the identified gaps and implementing the recommended best practices, these libraries can enhance their e-resources management capabilities and better serve their academic communities in supporting teaching, learning, and research activities.

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