



MANAGEMENT ASPECTS OF ELECTRONIC DATABASES FOR ACADEMIC LIBRARIES

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Abstract:

The rapid advancement of Information and Communication Technology (ICT) has transformed the functioning of academic libraries worldwide. Electronic databases have emerged as indispensable information resources that support teaching, learning, research, and innovation. Unlike traditional print collections, electronic databases require systematic planning, acquisition, licensing, technical support, user training, and continuous evaluation to ensure their effective utilization. The management of electronic databases encompasses a wide range of activities, including collection development, subscription management, access control, authentication, copyright compliance, budget allocation, infrastructure development, usage analysis, and preservation. Academic libraries must adopt strategic approaches to maximize the return on investment while ensuring seamless access to quality scholarly information. This theoretical paper examines the concept, characteristics, components, and management aspects of electronic databases in academic libraries. It discusses key management functions, challenges, best practices, and emerging trends in electronic database management. The study concludes that effective management of electronic databases requires competent library professionals, institutional support, adequate funding, robust ICT infrastructure, and user-centric policies to enhance information access and academic excellence.

Keywords: *Electronic databases, Academic libraries, Electronic resource management, Collection development, Licensing, Digital libraries, Information management.*

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Introduction

The emergence of digital technologies has significantly changed the landscape of academic libraries. Libraries have shifted from managing predominantly printed collections to providing access to extensive electronic information resources. Electronic databases have become one of the most valuable resources in higher education because they provide access to scholarly journals, books, conference proceedings, dissertations, standards, patents, statistical data, and multimedia content. Academic libraries play a vital role in facilitating access to these resources for students, researchers, and

faculty members. However, managing electronic databases is considerably more complex than managing printed collections. Libraries must address issues related to licensing, subscription renewal, authentication, budgeting, vendor negotiations, usage monitoring, technical support, and legal compliance. The increasing availability of commercial databases, open-access resources, and consortia-based subscriptions has expanded the responsibilities of library professionals. Efficient management ensures optimum utilization of electronic databases while improving the quality of library services. Therefore, understanding the management aspects of electronic



databases is essential for academic librarians and institutional administrators.

2. Concept of Electronic Databases

An electronic database is an organized collection of digital information that can be searched, retrieved, and accessed electronically through computers or internet-enabled devices. These databases provide structured information stored in electronic form and are designed to facilitate efficient retrieval using search interfaces.

Electronic databases may include bibliographic records, abstracts, full-text articles, electronic books, dissertations, images, statistical data, audio, video, and research datasets.

According to the American Library Association (ALA), electronic databases are searchable collections of digital information made available through online services, institutional subscriptions, or local networks.

3. Types of Electronic Databases

Academic libraries subscribe to various categories of electronic databases depending on the educational and research needs of their users.

3.1 Bibliographic Databases

These databases provide citations and abstracts of scholarly publications.

Examples include:

- Scopus
- Web of Science
- ERIC
- MEDLINE

3.2 Full-Text Databases

These databases provide complete articles, books, reports, and conference proceedings.

Examples include:

- ScienceDirect
- JSTOR
- SpringerLink

- Wiley Online Library

3.3 Citation Databases

Citation databases allow users to identify citation relationships among research publications.

Examples:

- Scopus
- Web of Science
- Google Scholar

3.4 Subject-Specific Databases

These databases focus on specific academic disciplines such as medicine, engineering, agriculture, management, or law.

3.5 Statistical Databases

Provide numerical and research data for academic analysis.

3.6 Multimedia Databases

Contain images, videos, audio recordings, animations, and interactive learning materials.

3.7 Open Access Databases

Freely available scholarly databases.

Examples include:

- Directory of Open Access Journals (DOAJ)
- PubMed Central
- arXiv

4. Importance of Electronic Databases in Academic Libraries

Electronic databases have become central to academic information services because they:

- Support teaching and curriculum development.
- Facilitate quality research.
- Improve scholarly communication.
- Provide access to current literature.
- Encourage interdisciplinary research.
- Enhance institutional research productivity.
- Support accreditation requirements.
- Promote digital learning environments.
- Improve information literacy.



- Enable remote access to scholarly resources.

5. Management Aspects of Electronic Databases

Effective management involves planning, organizing, implementing, monitoring, and evaluating all activities related to electronic databases.

1. Planning

Planning is the first stage of electronic database management. Academic libraries should identify users' information needs before selecting databases. Planning involves:

- Assessing academic programmes
- Identifying research priorities
- Studying user requirements
- Preparing annual acquisition plans
- Forecasting future information needs

Strategic planning ensures that investments align with institutional goals.

2. Collection Development

Collection development refers to selecting electronic databases based on institutional requirements. Selection criteria include:

- Relevance to curriculum
- Research requirements
- Cost-effectiveness
- Publisher reputation
- Coverage
- Currency
- User demand
- Availability of archival access
- Ease of use
- Compatibility with library systems

Libraries should formulate written electronic resource collection development policies.

3. Budget Management

Electronic databases require continuous financial planning. Budget allocation includes:

- Subscription charges
- Platform fees

- Annual renewals
- Technical infrastructure
- Training programmes
- Authentication systems
- Digital preservation

Libraries increasingly depend on government funding and library consortia to reduce subscription costs.

4. Licensing and Legal Management

Unlike printed books, electronic databases are governed by licensing agreements. Libraries should carefully review:

- Number of authorized users
- Simultaneous access
- Inter-library loan permissions
- Download restrictions
- Archival rights
- Copyright compliance
- Fair use provisions
- Remote access permissions

Understanding licensing agreements protects both libraries and publishers.

5. Vendor Management

Libraries interact regularly with publishers and database vendors. Vendor management includes:

- Price negotiation
- Trial access
- Technical support
- Renewal discussions
- Performance evaluation
- Complaint resolution

Maintaining good vendor relationships improves service quality.

6. Acquisition Management

Electronic databases may be acquired through:

- Direct subscription
- Library consortia
- Institutional membership
- Open access initiatives



- Perpetual purchase
 - Demand-driven acquisition
- Consortium-based purchasing significantly reduces costs.

7. Authentication and Access Management

Secure authentication ensures that only authorized users access subscribed resources. Common authentication methods include:

- IP authentication
- Username and password
- EZproxy
- VPN access
- Shibboleth
- OpenAthens

Proper authentication improves accessibility while maintaining security.

8. Technical Infrastructure Management

Electronic databases require reliable ICT infrastructure. Essential components include:

- High-speed internet
- Servers
- Wi-Fi connectivity
- Computer laboratories
- Backup systems
- Power supply
- Cloud services

Technical support teams should monitor system performance continuously.

9. User Education and Information Literacy

Electronic databases cannot be fully utilized without user training. Libraries should organize:

- Orientation programmes
- Hands-on workshops
- Database demonstrations
- Online tutorials
- Webinars
- Research support sessions

Information literacy enhances users' search skills and ethical use of information.

10. Usage Analysis and Evaluation

Regular evaluation helps determine database effectiveness. Evaluation criteria include:

- Number of searches
- Full-text downloads
- Cost per use
- User satisfaction
- Citation impact
- Faculty feedback
- Research productivity

COUNTER-compliant statistics help libraries make evidence-based decisions.

11. Preservation and Archiving

Libraries should preserve digital content for future access. Methods include:

- LOCKSS
- CLOCKSS
- Portico
- Institutional repositories
- Cloud backup

Digital preservation ensures long-term accessibility.

Challenges in Managing Electronic Databases

Academic libraries encounter several management challenges.

Financial Challenges

- Increasing subscription costs
- Currency fluctuations
- Budget limitations

Technical Challenges

- Poor internet connectivity
- Authentication failures
- Server downtime
- Software incompatibility

Human Resource Challenges

- Shortage of trained professionals
- Limited ICT skills
- Resistance to technological change



Legal Challenges

- Copyright restrictions
- Licensing complexities
- Unauthorized downloading
- Plagiarism

User-Related Challenges

- Lack of awareness
- Poor search skills
- Information overload
- Preference for general search engines

Organizational Challenges

- Lack of electronic resource policies
- Insufficient administrative support
- Weak collaboration among departments

Best Practices for Effective Management

Academic libraries should adopt the following best practices:

- Develop a comprehensive electronic resource management policy.
- Conduct periodic user-needs assessments.
- Subscribe through national and regional consortia.
- Train librarians regularly in digital resource management.
- Provide remote access using secure authentication systems.
- Maintain updated library websites.
- Promote open-access resources.
- Analyze usage statistics annually.
- Conduct user satisfaction surveys.
- Negotiate favorable licensing agreements.
- Implement Electronic Resource Management Systems.
- Ensure adequate ICT infrastructure.
- Strengthen institutional repositories.
- Organize regular information literacy programmes.

Emerging Trends

Electronic database management continues to evolve due to technological advancements. Future developments include:

- Artificial Intelligence-assisted searching
- Machine learning-based recommendations
- Cloud-hosted library management systems
- Big data analytics
- Research data management services
- Linked Open Data
- Blockchain for digital rights management
- Integrated discovery services
- Mobile library applications
- Open science platforms
- AI-powered virtual reference services

These innovations will improve access, efficiency, and user experience.

Conclusion:

Electronic databases have become indispensable components of academic libraries and are fundamental to higher education, research, and knowledge dissemination. Their effective management extends far beyond acquisition and requires comprehensive planning, collection development, licensing, budgeting, technical infrastructure, authentication, user education, promotion, evaluation, and long-term preservation. Library professionals must continuously adapt to changing technologies, evolving user expectations, and emerging scholarly communication models. Institutional support, adequate funding, skilled human resources, and evidence-based decision-making are critical for successful electronic database management. Furthermore, participation in library consortia, adoption of Electronic Resource Management Systems, and promotion of open-access initiatives can significantly enhance the cost-effectiveness and accessibility of electronic resources. As academic libraries continue to evolve into digital knowledge centres, sound management practices will remain essential to ensuring equitable, sustainable, and efficient access to scholarly information, thereby supporting excellence in teaching, learning, research, and innovation.



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