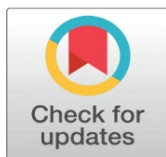
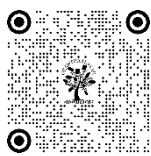


# HOW TO IMPACT WITH ELECTRONIC RESOURCES IN ACADEMIC LIBRARIES

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## ABSTRACT

The utilization of electronic resources (e-resources) has become fundamental to the functioning of academic libraries worldwide. This paper explores the impact of e-resources on academic libraries, focusing on how they enhance research efficiency, accessibility, and knowledge dissemination. The shift from traditional print media to digital platforms has revolutionized information management, access, and retrieval. While e-resources offer significant benefits—such as broader access to global information, real-time updates, and cost-effectiveness—they also present challenges, including issues of digital literacy, infrastructure, and resource overload. This study reviews the advantages and limitations of e-resources in academic libraries and evaluates current trends in e-resource management. Furthermore, it discusses the historical evolution of e-resources in academia and projects future developments in integrating advanced technologies such as artificial intelligence (AI) and machine learning into resource management systems.

**Keywords:** Electronic Resources (E-Resources), Academic Libraries, Information Retrieval, Digital Literacy, Open Access, Knowledge Dissemination, Library Management, Artificial Intelligence in Libraries

## 1. INTRODUCTION

The advent of digital technologies has profoundly changed how information is accessed, stored, and disseminated in academic libraries. E-resources—such as e-books, e-journals, databases, and institutional repositories—have replaced or supplemented traditional print media, transforming academic libraries into digital knowledge hubs. These resources enable students, researchers, and academics to access a vast array of information at any time, from anywhere, revolutionizing the way research and learning are conducted. However, the transition to e-resources has introduced new challenges, including the need for digital literacy among users, reliable internet infrastructure, and careful curation to prevent information overload.

In academic institutions, e-resources have become indispensable in supporting research, teaching, and learning activities. They facilitate faster and more efficient research, enhance collaboration through global connectivity, and make available an unprecedented amount of information. This paper provides a comprehensive analysis of how e-resources impact academic libraries, examining their strengths, weaknesses, current trends, and the future scope of their integration into academic systems. The rapid evolution of digital technologies has revolutionized information access, storage, and dissemination, transforming traditional academic libraries into dynamic digital knowledge centers. In this

era of the knowledge economy, the transition from print to electronic resources (e-resources) has been both a disruptive and transformative force in academic institutions worldwide. E-resources encompass a broad array of materials, including e-books, e-journals, electronic databases, multimedia resources, and institutional repositories, that are accessible digitally over the internet or through local networks. These resources offer substantial benefits to researchers, students, and academics, enabling them to access an unprecedented wealth of information across disciplines, geographical boundaries, and time zones.

This digital shift has reshaped the very nature of libraries, making them central to supporting research, education, and knowledge creation. Once known primarily for housing physical books and journals, libraries now serve as gateways to vast amounts of electronic data, much of it available instantly. The digital landscape has enabled academic libraries to provide broader access to knowledge resources, improving the ability of researchers to engage with the latest findings and information relevant to their fields. The increased emphasis on interdisciplinary research and collaboration across the globe has further fueled the demand for open access to e-resources.

Electronic resources have become indispensable for academic institutions due to their advantages over traditional print media. They offer flexibility, accessibility, and up-to-date information, which is crucial in an increasingly interconnected world. With 24/7 availability, students and researchers can access information from any part of the globe at any time, overcoming geographical and temporal barriers. E-resources also provide institutions with the ability to offer a wider range of materials without the space constraints of physical libraries, allowing academic libraries to accommodate the growing needs of students, faculty, and researchers.

Academic libraries have undergone significant changes since the 1990s, driven by the adoption of online databases, digital journals, and e-books. The arrival of the internet allowed libraries to expand their offerings beyond the limitations of physical collections, enabling them to become hubs of both physical and digital learning resources. The introduction of open access models in the early 2000s further expanded the reach of knowledge, facilitating unrestricted access to peer-reviewed scholarly content for the global research community. Initiatives like the Directory of Open Access Journals (DOAJ), institutional repositories, and international collaborations have brought academic libraries to the forefront of promoting research without paywalls.

The academic landscape is now more information-rich than ever before, but the proliferation of e-resources also brings challenges. Academic libraries must invest in the necessary infrastructure to manage these resources, including subscription fees for databases, software for digital collections, and training programs for staff and users. Moreover, the complexity of managing vast volumes of e-resources demands continuous efforts in curating, organizing, and updating collections to ensure their relevance and accessibility.

Another critical issue facing academic libraries is the "digital divide"—the gap between those who have access to modern information and communication technologies (ICT) and those who do not. In developing regions or underfunded institutions, the lack of adequate technological infrastructure can significantly hamper access to e-resources. Therefore, while e-resources are an essential tool for enhancing research and learning, they are also dependent on the availability of reliable internet connections, updated hardware and software, and user proficiency in digital literacy.

One of the key transformations brought by e-resources is the shift from ownership to access. Libraries traditionally owned physical collections, but now they often subscribe to databases and e-journals, which means they are paying for access rather than acquiring the material itself. This change in the model of resource acquisition has economic implications, as libraries must negotiate licenses, manage subscriptions, and ensure long-term access to resources. With the rise of big data and digital libraries, ensuring the preservation and longevity of digital resources has become a critical task.

In addition, the adoption of e-resources has prompted academic libraries to explore new roles. They are no longer just repositories of information but are also taking on roles as content curators, digital literacy trainers, and technological innovators. The demand for digital skills among librarians has increased, as they must be adept at navigating electronic databases, managing digital subscriptions, and helping users efficiently retrieve information from an overwhelming volume of data. Moreover, libraries are increasingly required to assist researchers in managing their data, from organizing and storing it to ensuring compliance with funders' mandates for open access and data sharing.

The rise of artificial intelligence (AI) and machine learning is set to further impact academic libraries' management of e-resources. AI-powered tools can help with personalized recommendations, intelligent search algorithms, and the automated curation of vast collections, making it easier for users to find the most relevant information. AI will also play a pivotal role in automating administrative tasks, improving user experience, and optimizing the use of resources.

As e-resources continue to develop, academic libraries will need to balance the opportunities they present with the challenges of cost, management, and user accessibility. The future of e-resources lies in their integration with cutting-edge technologies such as cloud computing, AI, and big data analytics, which will enhance the retrieval, storage, and dissemination of information. At the same time, efforts must be made to ensure that the benefits of e-resources are accessible to all, addressing issues of equity and access.

In conclusion, the impact of e-resources in academic libraries cannot be overstated. They have transformed how academic institutions store, access, and use information, providing unprecedented opportunities for research, learning, and collaboration. However, to fully realize the potential of e-resources, academic libraries must continue to innovate, address challenges related to infrastructure and digital literacy, and ensure that these resources remain accessible to a diverse range of users. The future of e-resources is promising, and their continued evolution will undoubtedly shape the future of academic libraries and the broader research landscape.

## 2. DEFINITIONS

- **Electronic Resources (e-resources):** Digital materials, including e-books, e-journals, online databases, and institutional repositories, which are accessible electronically via the internet or local networks.
- **Academic Libraries:** Libraries that are part of educational institutions such as universities and colleges, which provide resources and services to support the academic and research needs of students, faculty, and staff.
- **Information Retrieval:** The process of obtaining relevant information from a large repository, such as an electronic database, based on user queries.

## NEED

The demand for e-resources in academic libraries has risen due to the increased accessibility, cost-efficiency, and vast amounts of data they provide. They are crucial in enhancing academic output, supporting research, and providing students and staff with up-to-date and relevant resources. Additionally, they allow for the integration of multimedia content, enabling more dynamic and interactive learning experiences.

## AIMS

The primary aim of this study is to examine the impact of electronic resources on the performance and efficiency of academic libraries, with a focus on how they shape information access, retrieval, and knowledge sharing.

## OBJECTIVES

1. To analyze the role of e-resources in enhancing the research capabilities of academic institutions.
2. To identify the strengths and weaknesses of electronic resources in academic libraries.
3. To assess current trends in the management of e-resources.
4. To evaluate the future scope of e-resource integration with advanced technologies such as AI.

## HYPOTHESIS

The integration of e-resources significantly enhances the operational efficiency of academic libraries, improving access to information, promoting research output, and offering flexible learning resources. However, their success is dependent on adequate digital infrastructure, proper training, and effective management.

## STRONG POINTS

1. **Accessibility:** E-resources provide 24/7 access to a wide range of materials globally.
2. **Efficiency:** Users can quickly search and retrieve information through keyword searches and indexed databases.
3. **Cost-Effective:** Digital resources eliminate the need for physical space and reduce the costs associated with print materials.
4. **Up-to-Date:** E-resources are regularly updated, ensuring users have access to the latest research and developments.
5. **Collaboration:** E-resources facilitate collaborative research by enabling remote access to shared databases.

## WEAK POINTS

1. **Digital Divide:** Limited access to technology in some regions hinders the widespread use of e-resources.
2. **User Literacy:** A lack of digital literacy among users can limit the effectiveness of e-resources.
3. **Maintenance Costs:** Continuous investment is required to maintain digital infrastructure and subscriptions to databases.
4. **Overload of Information:** The vast quantity of digital resources can overwhelm users, leading to difficulties in identifying the most relevant material.
5. **Data Privacy:** Security concerns arise regarding the storage and sharing of sensitive information in digital platforms.

## CURRENT TRENDS

1. **Open Access:** The move toward open access resources is growing, allowing free and unrestricted access to scholarly publications.
2. **Integration of AI:** AI-powered systems are increasingly being used to assist in managing e-resources, offering personalized recommendations, and enhancing search capabilities.
3. **Mobile Access:** More libraries are developing mobile-friendly platforms to allow access to e-resources from smartphones and tablets.
4. **Collaboration with Publishers:** Libraries are partnering with publishers to provide seamless access to subscription-based content.

## 3. HISTORY

The development of e-resources in academic libraries can be traced back to the rise of digital technologies in the 1990s. As the internet expanded, libraries began digitizing collections and subscribing to electronic journals and databases. By the early 2000s, e-resources had become an essential component of academic libraries, with most universities offering access to large digital repositories. The open access movement, which gained momentum in the 2000s, further transformed the landscape, making research more accessible to a global audience.

The history of electronic resources (e-resources) in academic libraries is deeply intertwined with the development of digital technology and the internet, marking a significant shift in how knowledge is stored, accessed, and disseminated. From the humble beginnings of digital databases to the proliferation of e-books, e-journals, and massive digital repositories, e-resources have undergone substantial evolution, shaping modern academic libraries into vibrant, accessible hubs of information.

### 1. PRE-DIGITAL ERA: FOUNDATION OF ACADEMIC LIBRARIES

The concept of academic libraries dates back centuries, with the establishment of institutional libraries in universities in Europe, Asia, and the Middle East. These libraries were predominantly collections of manuscripts, books, and printed materials, offering valuable resources for research and education. The rise of the printing press in the 15th century revolutionized academic libraries by expanding the availability of printed books and scholarly materials, making it easier to acquire, store, and preserve knowledge.

However, despite these advancements, access to academic resources remained geographically and physically restricted. Libraries required vast spaces to store physical collections, and access was limited to those who could visit in person. The need for broader access to scholarly materials became more pronounced as academic research and publishing flourished throughout the 19th and early 20th centuries.

### 2. EMERGENCE OF EARLY ELECTRONIC RESOURCES (1960s–1980s)

The dawn of the digital age in the 1960s marked the first steps toward electronic resource development. Academic libraries began experimenting with automation, using computers to catalog and manage their collections. This period saw the birth of early digital databases and catalogs, which laid the groundwork for modern e-resources.

One of the earliest electronic systems to be developed was the Online Public Access Catalog (OPAC), which replaced traditional card catalogs and allowed users to search library collections using computers. In the 1970s, libraries began collaborating with commercial vendors to develop specialized online databases, which provided access to scientific and scholarly publications. One of the pioneers of this movement was Dialog, launched in 1967, which was among the first to offer online database searching for academic institutions and researchers.

By the late 1970s and early 1980s, organizations such as OCLC (Online Computer Library Center) and Research Libraries Information Network (RLIN) started facilitating shared cataloging systems that connected academic libraries globally. This sharing of bibliographic records paved the way for the exchange of information across institutions, bringing the first signs of networked access to scholarly resources.

### 3. RISE OF E-JOURNALS AND ONLINE DATABASES (1990s)

The 1990s were a transformative period in the history of e-resources, thanks largely to the expansion of the internet. During this decade, academic libraries increasingly turned to digital technologies, leading to the widespread availability of online databases and the introduction of electronic journals (e-journals).

One of the critical developments in this era was the shift from print journals to their electronic counterparts. Journals like "Nature" and "Science" became early adopters of the digital format, providing online access to their articles. This marked the beginning of the digital publishing revolution. Publishers and academic institutions collaborated to create

platforms like JSTOR (1995), Project MUSE (1995), and ScienceDirect (1997), which enabled widespread access to scholarly journals in electronic format. These platforms not only improved access to scholarly publications but also allowed for keyword searching, immediate downloads, and citation linking—features that print media could not offer. The proliferation of e-journals also led to the rise of subscription-based models for academic libraries. Libraries began subscribing to bundled packages of e-journals and online databases, enabling them to offer access to thousands of academic publications, often in a more cost-effective manner compared to acquiring individual print issues.

#### **4. OPEN ACCESS MOVEMENT AND INSTITUTIONAL REPOSITORIES (2000s)**

The early 2000s saw the emergence of the open access (OA) movement, which aimed to democratize access to scholarly research by making academic publications freely available to the public. This movement challenged the traditional paywall model of academic publishing, arguing that publicly funded research should be accessible to everyone, not just to those who could afford expensive journal subscriptions.

The Budapest Open Access Initiative (2002) and the Berlin Declaration on Open Access (2003) were among the earliest milestones in the global push for OA publishing. These initiatives encouraged scholars to publish their work in open access journals or institutional repositories, making it freely available to the global research community.

The establishment of institutional repositories allowed universities and academic libraries to archive and disseminate the scholarly output of their faculty and students. Repositories like DSpace (launched in 2002 by MIT) and EPrints (developed in 2000 at the University of Southampton) became widely adopted by universities worldwide. These repositories enabled researchers to self-archive their work, providing a platform for the open sharing of theses, dissertations, working papers, and peer-reviewed articles.

#### **5. DIGITAL LIBRARIES AND THE ERA OF BIG DATA (2010s)**

By the 2010s, academic libraries had fully embraced digital technologies, with many transitioning to primarily digital collections. The emergence of "digital libraries" such as the Digital Public Library of America (DPLA, launched in 2013) and Europeana (launched in 2008) offered vast, interconnected repositories of digital resources. These initiatives aimed to digitize cultural heritage and academic resources from libraries, museums, and archives, making them freely accessible to the global public.

Simultaneously, the rise of big data further transformed academic libraries. Researchers increasingly relied on vast datasets for analysis, leading to the development of data management services within libraries. Libraries began offering support for managing, storing, and sharing research data, including compliance with data-sharing mandates from funding agencies.

Academic libraries also started experimenting with artificial intelligence (AI) and machine learning to improve information retrieval and management. AI-powered tools helped libraries provide more personalized search experiences, manage large-scale digital collections, and curate resources tailored to individual research needs.

#### **6. POST-2020: PANDEMIC AND THE DIGITAL-FIRST PARADIGM**

The COVID-19 pandemic accelerated the shift to digital resources in academic libraries. With campuses closed and physical libraries inaccessible, academic institutions were forced to rely almost entirely on e-resources to continue supporting research and learning. Libraries expanded their e-resource collections and implemented remote access tools to ensure students and faculty could continue their academic work from home.

This period also witnessed a growing emphasis on the need for universal digital access. Academic libraries enhanced their digital literacy programs, offering training on using e-resources and navigating online databases. The pandemic highlighted both the potential and the challenges of a digital-first library system, with many institutions acknowledging the need for long-term investments in digital infrastructure. The history of electronic resources in academic libraries reflects the broader evolution of digital technology and the increasing globalization of knowledge. From the early days of computer-based cataloging to the widespread availability of open access materials, e-resources have profoundly transformed how academic libraries function, breaking down barriers to information access and facilitating greater collaboration across disciplines and borders. As e-resources continue to evolve, driven by advancements in AI, machine learning, and data analytics, academic libraries will remain at the forefront of knowledge dissemination in an increasingly digital world.

#### **4. FUTURE SCOPE**

The future of e-resources in academic libraries is bright, with several potential advancements on the horizon:

1. **AI and Machine Learning:** AI-powered retrieval systems will offer more personalized and accurate search results, adapting to users' preferences and needs.
2. **Blockchain for Open Access:** Blockchain technology could offer new ways of verifying the authenticity of scholarly publications and ensuring fair use in open access platforms.
3. **Enhanced User Interfaces:** Future developments in user interface design will make accessing e-resources even more intuitive and efficient.
4. **Collaborative Digital Repositories:** Global collaboration between academic institutions could lead to the development of massive, interconnected digital repositories for scholarly work.

E-resources have fundamentally transformed the way academic libraries operate, providing greater access to information, enhancing research capabilities, and fostering a more collaborative global academic community. However, the benefits of e-resources are accompanied by challenges such as the need for digital literacy, robust infrastructure, and effective management. As technology continues to advance, the integration of AI, blockchain, and improved user interfaces will further enhance the efficiency and effectiveness of e-resources in academic libraries. Academic institutions must continue to adapt to these changes to ensure that e-resources can be utilized to their full potential.

## 5. CONCLUSION

The integration of electronic resources (e-resources) in academic libraries has marked a transformative era for the dissemination of knowledge, research, and education. The transition from traditional print-based libraries to digital platforms has vastly expanded access to information, making academic libraries more dynamic, accessible, and user-centric. E-resources provide students, faculty, and researchers with real-time access to vast databases of scholarly content, breaking down geographical and temporal barriers and fostering global academic collaboration. The evolution from early electronic databases to sophisticated AI-powered tools has revolutionized the way information is managed and utilized in academic institutions.

Despite the significant benefits, challenges such as digital divide issues, economic barriers to subscription-based databases, and the need for continuous technological adaptation persist. The shift toward digital-first academic libraries underscores the need for investments in digital infrastructure, training, and the adoption of open-access models to democratize knowledge and make scholarly resources more accessible. As e-resources continue to evolve, academic libraries must ensure equitable access while embracing new technologies to enhance the user experience.

## 6. SUGGESTIONS AND RECOMMENDATIONS

1. **Investment in Digital Infrastructure:** Academic institutions must prioritize investments in the necessary technological infrastructure to support the widespread use of e-resources. This includes high-speed internet, digital repository systems, and robust access platforms that enable seamless use of online resources.
2. **Expanding Digital Literacy Programs:** Libraries should offer comprehensive digital literacy programs that equip users with the skills needed to efficiently navigate and utilize e-resources. These programs should cover the effective use of databases, search engines, citation tools, and other digital platforms.
3. **Promoting Open Access Initiatives:** Institutions should actively support the open-access movement by encouraging researchers to publish in open-access journals and by developing institutional repositories. This ensures that publicly funded research is accessible to everyone, irrespective of their location or financial situation.
4. **Addressing the Digital Divide:** Efforts should be made to bridge the digital divide in underfunded or rural academic institutions. This can include partnerships with governments, NGOs, and technology providers to provide infrastructure and resources that enable access to digital materials.
5. **Collaboration with Publishers:** Libraries should negotiate with publishers to develop flexible and affordable subscription models for e-resources. Collaborative consortia can be created to share the costs of expensive databases, making them more accessible to smaller institutions.
6. **Data Management Services:** Libraries should offer services for research data management, helping researchers organize, store, and share their data. This can be done by developing institutional data repositories and offering workshops on data management best practices.
7. **Adopting AI and Machine Learning:** Academic libraries should explore the use of AI and machine learning to enhance user experience and information retrieval. AI-driven tools can provide personalized recommendations, automate administrative tasks, and improve the curation of vast e-resource collections.

## 8. FUTURE RESEARCH SCOPE

1. **Impact of AI on E-Resource Management:** Further research is needed on the role of artificial intelligence and machine learning in managing e-resources. How AI can optimize search algorithms, recommend content, and automate the curation of resources is a promising area for future study.
2. **Assessing Digital Literacy Programs:** Evaluating the effectiveness of digital literacy programs in academic libraries is essential. Research should focus on how these programs improve students' and researchers' ability to access and use e-resources and what additional skills or tools can be introduced to enhance learning.
3. **Sustainability of Subscription Models:** Research is required to assess the sustainability and cost-effectiveness of current subscription-based models for e-resources. Exploring alternative models like pay-per-use, consortium subscriptions, or decentralized blockchain-based databases could revolutionize how academic libraries manage e-resource access.
4. **Open Access and Knowledge Dissemination:** Future studies should investigate the long-term impact of open-access initiatives on academic publishing, research dissemination, and global knowledge equity. The relationship between open-access mandates and the quality of research output should also be explored.
5. **Ethical Implications of Digital Resources:** As digital resources grow in complexity and volume, ethical considerations surrounding access, data privacy, and the use of AI tools in libraries need to be explored. This research could provide valuable guidelines for libraries to balance user privacy with technological advancement.
6. **Bridging the Digital Divide:** Studies should investigate strategies to overcome the digital divide in academic institutions, especially in developing regions. Research could focus on identifying best practices for low-cost technological solutions and the role of policy in supporting digital inclusivity.
7. **User Behavior and E-Resource Utilization:** Understanding how different academic communities (students, researchers, faculty) use e-resources can inform libraries on how to better design their digital offerings. Studies could explore user preferences, behavior patterns, and barriers to efficient e-resource utilization. The future of e-resources in academic libraries is promising but will require continued innovation, research, and collaboration across academic, technological, and policy-making spheres to ensure that their potential is fully realized for the benefit of all academic communities.

## CONFLICT OF INTERESTS

None

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None

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