

AVAILABILITY AND ACCESSIBILITY OF ELECTRONIC INFORMATION RESOURCES OF UNIVERSITY LIBRARIES IN TELANGANA

Annam Krishnaiah

Librarian

Dr. Burgula Ramakrishn Rao Govt. Degree College

Jadcherla. 509301

Mahabubnagar District.

Abstract

The transformation of academic libraries from traditional print-based repositories to dynamic digital information centres has fundamentally altered how knowledge is accessed and disseminated in higher education. This article examines the availability and accessibility of electronic information resources in university libraries across Telangana State, India. Drawing on comprehensive research conducted across multiple institutions, the study reveals that university libraries have made significant progress in providing e-resources, with the majority adopting structured collection development policies and leveraging consortia membership to expand access. The University of Hyderabad leads in e-book and e-journal collections, while the integration of technologies such as KOHA, SOUL, and DSpace has enhanced resource discovery and management. However, significant challenges persist, including inadequate and irregular budgets, technical problems, insufficient training for library staff and users, and varying levels of ICT infrastructure. The study identifies that although 83% of libraries have e-resource development policies and 85.71% of respondents acknowledge the positive impact of ICT applications, barriers such as limited bandwidth, lack of digital literacy, and licensing complexities continue to impede optimal accessibility. The future of academic libraries in Telangana depends on addressing these challenges through enhanced budget allocation, staff development, infrastructure investment, and strategic collaborations to ensure equitable access to electronic information resources for all academic communities.

Keywords: *Electronic Resources, University Libraries, Telangana, E-Resources Accessibility, Digital Libraries, ICT Applications, Collection Management*

1. Introduction

University libraries serve as the intellectual backbone of academic institutions, playing an indispensable role in supporting teaching, learning, and research. In the contemporary information environment, these libraries have evolved from repositories of printed materials into dynamic, technology-enabled information centres offering diverse resources in multiple formats. Electronic resources, also known as online information resources, have become an essential part of university library collections in the 21st century. The term encompasses a range of materials, including bibliographic databases, electronic reference books, search engines for full-text books, digital data collections, e-books, e-journals, databases, CDs/DVDs, e-conference proceedings, e-reports, e-maps, e-photographs, e-manuscripts, e-theses, e-newspapers, and internet websites.

The history of electronic resources in academic libraries traces back to the mid-1960s with the introduction of machine-readable catalogues, which acted as directive tools for accessing information resources. This evolved into the use of Online Public Access Catalogs (OPACs) and bibliographic databases, which were further enhanced by the adoption of CD-ROM databases in the 1980s. The advent of new technologies in information publication via the Internet and the World Wide Web necessitated the

development of web-based information collections by libraries, dramatically changing the generation, publication, and dissemination of electronic information .

The state of Telangana, established as the 29th State of India in 2014, has witnessed significant developments in its higher education landscape. University libraries in the region have been progressively shifting from traditional collection management to embracing digital technologies, e-resources, and automated systems. This article presents a comprehensive examination of the availability and accessibility of electronic information resources in university libraries across Telangana. The study draws on empirical research conducted across multiple institutions, including Osmania University, University of Hyderabad, Jawaharlal Nehru Technological University Hyderabad, Maulana Azad National Urdu University, and Professor Jayashankar Telangana State Agricultural University.

2. Historical Background of the Study

The development of electronic information resources in Telangana's university libraries is rooted in the broader evolution of academic librarianship in India. Prior to the formation of Telangana State in 2014, the region was part of the composite state of Andhra Pradesh. Academic libraries in this region historically followed traditional models of collection development, with an emphasis on acquiring, organizing, and preserving print materials.

The concept of libraries has rapidly evolved due to the impact of information communication technologies. Libraries have transitioned from a primarily print-based environment to an electronic one, now hosting both printed and digital collections . Electronic publishing has largely supplanted print publications, offering an alternative medium that provides faster and lower-cost dissemination of information than traditional paper-based methods . This transformation gave rise to consortia that enable libraries to provide electronic access to professional literature, including research journals, abstracts, review publications, and databases across various disciplines such as science, technology, social sciences, and humanities .

In Telangana, the adoption of digital technologies in university libraries has been gradual and uneven. Some institutions demonstrate robust systems and policies for managing e-resources efficiently, while others struggle with issues such as inadequate funding, limited technical support, and lack of training for library staff . The implementation of library automation software, including open-source solutions like Koha and commercial systems like SOUL (Software for University Libraries), has been a significant development in the modernization of these libraries.

The Knowledge Management Centre (KMC) of Professor Jayashankar Telangana Agricultural University exemplifies the modernization of academic libraries in the state. Established as a dedicated three-storey building encompassing 4,645 square meters, the KMC seamlessly incorporates state-of-the-art technology including RFID-enabled services, automation, digitization, remote access, and campus-wide high-speed Wi-Fi alongside its extensive print and digital collections .

3. Need of the Study

The need for studying the availability and accessibility of electronic information resources in university libraries of Telangana arises from several critical considerations:

First , the rapid proliferation of digital information has fundamentally transformed how academic communities access and use information. Understanding the current state of e-resource availability is essential for ensuring that university libraries meet the evolving needs of their users. The integration of e-resources demands re-evaluating resource allocation, budgeting, and staffing .

Second , research on the management of e-resources in Telangana's university libraries reveals significant variation in management practices influenced by financial, technical, and human resource

factors . A systematic study of these variations can help identify best practices and areas requiring intervention.

Third , the successful implementation and utilization of digital libraries is largely dependent on robust technological infrastructure. Studies highlight that the effectiveness of digital libraries relies on reliable internet access, adequate hardware, and the technical expertise required to manage digital resources . In Telangana, universities such as Osmania University benefit from a strong technological foundation for their digital libraries, while many smaller colleges face challenges due to inadequate internet connectivity and outdated systems .

Fourth , several barriers hinder the successful implementation and utilization of digital libraries, including lack of funding, insufficient digital literacy, and limited training programs for both staff and users . Faculty members in Telangana's colleges often struggle to navigate digital resources due to inadequate training, which limits the impact of these libraries on teaching and research . Similarly, faculty and students in rural areas are less likely to use digital resources due to both infrastructural challenges and digital illiteracy .

Fifth , the potential of digital libraries to enhance academic and research outcomes is widely recognized, yet there is considerable variation in resource availability across regions . In Telangana, urban institutions typically offer well-established digital libraries, while rural colleges face challenges in accessing these resources .

Finally , the need for this study is underscored by the observation that libraries are responding to shifts in institutional priorities and adapting to advances in technology, yet financial challenges remain the top constraint on libraries' ability to make desired changes.

4. Objectives

The objectives of this study are as follows:

1. To assess the availability of electronic information resources, including e-books, e-journals, databases, and other digital materials, in selected university libraries of Telangana.
2. To examine the accessibility of e-resources for various user groups, including students, faculty, and researchers.
3. To evaluate the technological infrastructure available for accessing e-resources, including internet connectivity, computer terminals, and library automation systems.
4. To investigate the e-resource development collection policies and acquisition methods followed by university libraries.
5. To identify the barriers and challenges affecting the availability and accessibility of electronic information resources.
6. To analyze the impact of ICT applications on e-resource management and accessibility.
7. To propose strategic recommendations for improving the availability and accessibility of electronic information resources in university libraries of Telangana.

5. Availability of Electronic Information Resources

5.1 Types of E-Resources Available

University libraries in Telangana provide access to a diverse range of electronic information resources. The array of e-resources extends to e-books, e-journals, databases, CDs/DVDs, e-conference proceedings, e-reports, e-maps, e-photographs, e-manuscripts, e-theses, e-newspapers, and internet websites . Online access to databases allows users to retrieve relevant and up-to-date information swiftly .

The Knowledge Management Centre of Professor Jayashankar Telangana Agricultural University provides access to an extensive list of e-resources, including CAB Online Abstracts, CERA/J-Gate,

Statistical Databases (Indiastat.com), CMIE Databases, AGRWATCH, DELNET, AgriCat, KrishiKosh (institutional repository), and eBooks from CRC Books, Elsevier, and CABI . Similarly, the Library & Information Sciences of PVNR Telangana Veterinary University provides access to CeRA-ICAR Consortium for e-Resources in Agriculture, statistical databases, AGRICAT, and KRISHIKOSH .

5.2 Distribution of Collections Across Institutions

Research on university libraries in Telangana reveals considerable variation in collection sizes across different institutions. The University of Hyderabad has the highest collection of e-books and electronic journals, while Osmania University has the lowest collection of e-books but the highest collection of electronic reports and digital documents . JNTUH has the highest collection of CD-ROM databases, and MANUU has the highest collection of institutional repositories .

Kakatiya University's Central Library exemplifies the breadth of e-resource collections, providing access to databases including Economic & Political Weekly, The Institute for Studies in Industrial Development, J-Gate Plus, JSTOR, NotNull, South Asian Archives, Springer-Link, Wiley-Blackwell, World Library, Capitaline, and The Times of India Historical Newspapers . The library also provides access to e-books from Cambridge University Press, Oxford University Press, Sage, Elsevier, J-Store, and i-Scholar .

5.3 E-Resource Development Policies

A large majority, 83% of respondents indicated that their libraries have e-resource development collection policies, reflecting a structured approach toward the enhancement of digital libraries . Chi-square test results confirm that a significant majority of university libraries in Telangana have adopted e-resource development policies, indicating institutional commitment to digital resource management .

Telangana University provides in-house and remote access to e-resources, with services including user orientation and assistance in searching databases . The university library also provides INFLIBNET/IUC facilities to enhance access to scholarly resources .

5.4 Library Automation and Discovery Tools

The implementation of library automation software has been a significant development in improving the availability and discoverability of electronic resources. The majority of libraries have initiated automation of their libraries using standard library automation software. Koha is widely used as an open-source Integrated Library Management System, while some institutions use SOUL .

The Online Public Access Catalogue (OPAC) and Web OPAC offer uninterrupted remote access to the library catalogue, allowing users to connect from any location and at any time . This is particularly important for students and researchers who may not be physically present on campus. The Web OPAC provides information regarding library holdings and the format of materials, indicates the status of books, and links to the full text of digital documents wherever available .

6. Accessibility of Electronic Information Resources

6.1 Physical and Remote Access

Accessibility of e-resources encompasses both physical access within the library premises and remote access from off-campus locations. University libraries in Telangana have made significant strides in providing both types of access. The Knowledge Management Centre of PJTSAU provides uninterrupted remote access to the library catalogue, allowing users to connect from any location and at any time .

Telangana University provides in-house and remote access to e-resources, supported by user orientation and assistance in searching databases . The Library & Information Sciences of PVNRTVU provides access to a huge database collection of subscribed online resources through campus network and remote

login facility . The Web-OPAC facilitates users to search and explore the availability of holdings from any place of their convenience 24x7 .

6.2 ICT Infrastructure

The successful access to e-resources depends on robust technological infrastructure. All of the colleges use library automation software, and all of the libraries have computers for their staff . However, only some institutions provide computers to faculty members and computer terminals for students to search the internet, use OPAC or WEBOPAC . Each college library has an Internet connection, and several universities offer free Wi-Fi to library visitors .

The Knowledge Management Centre of PJTSAU demonstrates a high level of ICT infrastructure, with campus-wide high-speed Wi-Fi, RFID-enabled services, and an e-Resource Centre . The digital infrastructure includes specialized facilities such as a Digital Library, Research Carrels, Competitive Examination Cell, and Self-Check System .

6.3 User Services for E-Resource Access

A significant majority, 95.24% of respondents reported that their libraries provide e-resource services . All respondents indicated that their libraries provide e-resource services, which is a positive indicator of institutional commitment to digital resource provision . The majority of university libraries (93.33%) are providing comprehensive services including Circulation Service, Bibliographic service, Interlibrary Loan, CD-ROM search service, Reference Service, Referral Service, Current Awareness Service (CAS), SDI service, Newspaper Clipping Service, Reprographic Service, E-Resources service, Internet Service, and OPAC/WebOPAC service .

6.4 Institutional Repositories

Institutional repositories serve as important platforms for accessing research output. MANUU has the highest collection of institutional repositories . KrishiKosh serves as the institutional repository for agricultural research, providing open access to theses and research publications . Digital Library software such as DSpace is used to develop these repositories .

7. Challenges in Availability and Accessibility

7.1 Financial Challenges

Inadequate and irregular budgets are identified as the most significant challenge affecting the availability and accessibility of e-resources. The study on the management of e-resources found that 59.04% of respondents identified budget constraints as a major problem . The budget allocation for libraries and resources in universities in Telangana is not uniform and varies significantly among institutions .

For Osmania University, no budget was allocated for e-resources, while for JNTUH, the budget allocated for books was only Rs. 2,00,000 in coming years, with no budget allocated for books for the remaining three years . The University of Hyderabad had the highest budget allocations, with Rs. 5.02 crore allotted for coming years, increasing to Rs. 9.81 crore for upcoming years.

Half of the respondents indicated that operational costs exceed year by year, creating ongoing financial pressure on library budgets . ICT also takes a major share of the budget allocation, with 50% of respondents agreeing that ICT takes a major share from the budget .

7.2 Technical Challenges

Technical problems are the most prevalent barrier to e-resource collection management, with 73.33% of respondents indicating technical issues . Specific technical challenges include server downtime, network connectivity issues, software bugs, format compatibility problems, preservation issues, and time consumption in cataloguing . Limited accessibility to physical locations and changes in access models (subscription, pay-per-use, open access) also pose significant challenges .

In the context of individual institutions, a study at JB Institute of Engineering and Technology in Hyderabad found that low internet speed was a major constraint for users accessing web resources .

7.3 Training and Digital Literacy Challenges

Lack of training was identified as a major problem by 67.61% of respondents . This shortage of trained library professionals who can effectively manage e-resources represents a significant barrier to library effectiveness. The lack of digital literacy among both library staff and users limits the utilization of available e-resources.

The study on the status of digital library resources in Telangana's colleges and universities identified that the main barriers to effective use are inadequate technological infrastructure, lack of digital literacy, and insufficient funding . Digital libraries are underutilized due to limited awareness and training among students and faculty members .

7.4 Licensing and Copyright Challenges

Licensing and copyright complexities are significant barriers to e-resource management, with 46.66% of respondents identifying these as prevalent challenges . The management of digital resources requires navigating complex legal and contractual frameworks, which many libraries lack the capacity to handle effectively.

7.5 Infrastructure and Connectivity Challenges

Lack of proper ICT infrastructure affects the accessibility of e-resources. Students and faculty in rural areas are less likely to use digital resources due to both infrastructural challenges and digital illiteracy . The study found that there is a significant difference in the usage of digital library resources between urban and rural institutions . Some institutions still lack Wi-Fi-enabled campuses, affecting students' ability to access digital resources from their own devices.

7.6 Staffing Challenges

A high percentage of librarians reported suffering from inadequate manpower to effectively maintain their libraries . This staffing shortage is compounded by a lack of expertise in handling technology and lack of proper ICT infrastructure . The shortage of trained library professionals who can effectively manage both print and digital collections represents a significant barrier to library effectiveness.

8. Impact of ICT Applications on E-Resource Management

A large majority of respondents (85.71%) indicated that ICT applications have a greater impact on e-resource management . This is a positive sign, indicating the transformative potential of technology in enhancing the availability and accessibility of e-resources. ICT applications impact collection management in several ways:

1. Changes in collection development: The majority of respondents acknowledged changes in collection development patterns toward e-resources .
2. Enhanced efficiency through automation: A majority of respondents agreed that automation has enhanced efficiency in library operations .
3. Enhanced preservation through digital storage: Half of the respondents strongly agreed that digital storage enhances preservation .
4. Improved discovery and increased access: The majority of respondents agreed that ICT improves discovery and increases access to information .
5. Operational costs: 66.67% of respondents agreed that operational costs are exceeding year by year, highlighting the ongoing financial implications of ICT adoption .

However, the impact of ICT also brings challenges. Annual maintenance costs, higher salaries for trained staff, and the major share of budget consumed by ICT products all affect collection development and resource allocation .

9. Future of Academic Libraries

9.1 Digital Transformation

The future of academic libraries in Telangana lies in embracing digital transformation. This process is powered by disruptive digital technologies, insights, and processes, with the key focus being on transforming for the digital age by influencing customer experience, innovation, and efficiency. Libraries should act as a platform for digital transformation, adapting their services and resources to meet changing user needs and expectations. The future of digital libraries in Telangana hinges on addressing gaps in infrastructure, user education, and digital content provision .

9.2 Enhanced Infrastructure Investment

Significant investment in ICT infrastructure is essential for the future development of academic libraries. This includes reliable internet connectivity, modern computer systems, and the adoption of the latest library automation and digital library software. Establishing regional digital library networks and collaborating with global content providers could help bridge the resource gap between urban and rural institutions .

9.3 Staff Development

The transition to digital libraries requires investment in staff development. The success of digital libraries depends on their content and the skill and ability of library professionals. Enhancing digital literacy skills among librarians and users is critical for improving the management of e-resources . A greater emphasis on mobile access and online training programs for students and faculty could significantly enhance the usage of digital resources across the state .

9.4 Collaboration and Consortia

Enhanced collaboration through consortia will be essential for improving access to e-resources. The study found that most libraries provide e-resources through consortia membership, and this trend is likely to continue. Collaboration with publishers, other institutions, and technology providers will help libraries reduce costs and expand their resource offerings. The One Nation One Subscription (ONOS) initiative represents a significant development in this direction .

9.5 Blended Services

The future will see a continued blending of physical and virtual services. Libraries will need to maintain and enhance their physical collections while simultaneously expanding and improving their digital offerings. This includes developing institutional repositories, providing access to e-books and e-journals, and offering virtual reference services .

9.6 Data-Driven Decision Making

The future of academic libraries will be shaped by data-driven decision making, using library management systems and analytics to understand user behavior, assess collection development needs, and optimize resource allocation.

10. Conclusion

The study of availability and accessibility of electronic information resources in university libraries of Telangana reveals an academic library sector in transition, moving from traditional print-based collections to hybrid models integrating digital resources alongside conventional materials. University libraries have

made significant progress in providing e-resources, with the majority adopting structured collection development policies and leveraging consortia membership to expand access.

The University of Hyderabad leads in e-book and e-journal collections, while institutions like PJTSAU and PVNRTVU demonstrate robust e-resource provision through platforms such as CAB Abstracts, CeRA, J-Gate, and KrishiKosh. The integration of technologies such as KOHA, SOUL, and DSpace has enhanced resource discovery and management. However, significant challenges persist, including inadequate and irregular budgets, technical problems, insufficient training for library staff and users, and varying levels of ICT infrastructure. The study identified that although 83% of libraries have e-resource development policies and 85.71% of respondents acknowledge the positive impact of ICT applications, barriers such as limited bandwidth, lack of digital literacy, and licensing complexities continue to impede optimal accessibility.

The future of academic libraries in Telangana depends on addressing these challenges through enhanced budget allocation, staff development, infrastructure investment, and strategic collaborations. By investing in understanding and improving the availability and accessibility of e-resources, university libraries can ensure they remain relevant and continue to fulfill their role as the intellectual heart of their academic institutions. The findings of this study provide valuable insights for policymakers, library administrators, and academic institutions seeking to optimize their e-resource management strategies to better support their academic communities.

References

1. Bhatia, R., & Sharma, P. (2017). Barriers to digital library adoption in Indian higher education. *Journal of Library and Information Science*, 42 (3), 45-62.
2. Tandel, Sanjaykumar Dahyabhai (2017) "Use Of E-Resources and Services in University Libraries of Gujarat State An Analytical Study" 3(6), 91-94.
3. Khare, Shashi, Kant., Thapa, Neelam & Sahoo, K. C. (2007). Internet as a source of information: A survey of Ph.D., scholars. *Annals of Library and Information Studies*. 54(4): 201–206.
4. Gessesse, K. (2000). Collection development and management in the twenty-first century with special reference to academic libraries: An overview. *Library Management*, 21, 365-372.
5. Bhatt, R.K. and Madhusudhan, M. (2004) *University Libraries in India and e-journal: The role of consortiabased subscription of e-journal for effective use of financial resources*, CALIBER FEB 11-13, 2004, New Delhi
6. Ali, N. (2005). The use of electronic resources at IIT Delhi Library: a study of search behaviours. *The Electronic Library*, 23(6), 691-700.
7. Barik, N. (2013). Assessing the effectiveness and usage of library resources and services of Einstein Academy of Technology and Management, Bhubaneswar: A faculty oriented study. *International Journal of Information Dissemination and Technology*, 3 (3), 171-175.