

# Digital Transformation in Deemed University Libraries in Telangana

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## **ABSTRACT:**

Digital transformation has become an important factor in changing the role and functioning of academic libraries, especially in deemed universities in Telangana. With the rapid growth of Information and Communication Technologies (ICT), libraries are moving from traditional print-based systems to modern digital knowledge centers. This transformation includes the use of digital resources, automation systems, cloud-based services, and user-friendly platforms to improve access, efficiency, and service delivery.

The study examines the level and impact of digital transformation in deemed university libraries in Telangana. It focuses on the use of technologies such as institutional repositories, digital libraries, RFID systems, and online databases. Digital transformation helps improve access to academic resources and supports remote learning, research work, and academic collaboration.

Modern technologies like Artificial Intelligence (AI), data analytics, and cloud computing are also being used to provide personalized services, improve library operations, and manage resources effectively. The study uses a survey method, including questionnaires and interviews with library staff and users, to collect data.

The findings show that most libraries have adopted automation systems, digital repositories, and electronic resources. However, some challenges still exist, such as lack of funding, limited infrastructure, and insufficient training for staff. These issues slow down the full implementation of digital transformation.

The study concludes that although deemed university libraries in Telangana are gradually adopting digital technologies, there is a need for better planning, regular training, and strong policy support. Digital transformation is essential for libraries to stay relevant in the modern world and to support teaching, learning, and research activities effectively.

**KEYWORDS:** Digital Transformation, Information and Communication Technology (ICT); Library Automation, Institutional Repositories, RFID Technology.

## **1. INTRODUCTION:**

The rapid development of Information and Communication Technology (ICT) has changed the way academic libraries function across the world. In India, especially in Telangana, deemed universities are actively using digital technologies in their libraries to meet the changing needs of students, researchers, and faculty members.

Digital transformation in libraries means using digital technologies in all library activities and services. It includes the use of automation systems, digital repositories, electronic resources, cloud computing, and modern technologies like Artificial Intelligence (AI) and data analytics. These developments have

improved library management, made access to information easier, and helped libraries communicate better with users. As a result, libraries are now able to support online learning, distance education, and research activities more effectively.

Deemed universities in Telangana are known for their academic quality and research focus. These universities are investing more in digital infrastructure to meet global standards. Their libraries are using Integrated Library Management Systems (ILMS), subscribing to e-journals and databases, and creating institutional repositories to store and share research work. They are also digitizing rare collections, using RFID technology, and providing remote access to resources, which has improved library services and user satisfaction.

In addition, the shift towards digital systems has increased due to the growing importance of online education and the need for continuous access to learning materials. Libraries have responded by offering virtual reference services, online training programs, and mobile access to information. These changes have made libraries more active and user-focused in meeting the needs of students, researchers, and teachers.

This study aims to examine the current situation, opportunities, and challenges of digital transformation in deemed university libraries in Telangana. It also looks at how these libraries are using digital technologies to improve their services and suggests ways for long-term development. Digital transformation is not only about technology; it also involves changes in thinking, organizational culture, and service approach. This helps libraries continue to play an important role in education and research.

## 2. REVIEW OF LITERATURE:

The concept of digital transformation in academic libraries has been studied by many researchers. These studies focus on the use of Information and Communication Technologies (ICT), digital resources, and new technologies in library services.

The use of e-resources such as e-books, e-journals, and online databases has increased greatly in academic institutions. Research also shows that users are more satisfied with libraries that provide digital services and remote access.

1. Raja Thangiah, Michael J. Leo, Ramkumar R., and Anto Michael Suraj T. (2024) studied digital transformation in academic libraries in India. They highlighted the importance of automation, digital library services, and artificial intelligence in improving library efficiency and user services.
2. Anita Kumari Meena (2024) carried out a quantitative study on digital transformation in libraries. She found that digitization projects have increased due to government support and funding. The study also showed that digital transformation improves user access and service efficiency.
3. Sushil Kumar Singh, Yadram Singh, and Sanjay Kumar (2024) focused on innovative changes in libraries. They emphasized the use of advanced technologies like artificial intelligence and virtual reality in modern library services.
4. Dr. Amit Bhardwaj (2024) discussed the transformation of research libraries and its impact on scholars. He noted that technologies like open-access repositories, artificial intelligence, and data analytics improve access, collaboration, and interdisciplinary research. However, he also pointed out challenges such as digital preservation and information overload.
5. Batina Yulia Utami, Velnika Elmanisar, Rusdinal, Anisah, and Merika Setiawati (2024) conducted a detailed review of digital libraries. They found that ICT has changed traditional libraries into modern digital information centers.

6. Dr. Shankar Kadam (2021) examined the impact of technology on library services. He identified key technologies such as cloud computing, RFID systems, artificial intelligence, and digital preservation methods.

### 3. OBJECTIVES:

The present study on Digital Transformation in Deemed University Libraries in Telangana has the following objectives:

1. To examine the current status of digital transformation in deemed university libraries in Telangana.
2. To identify the different digital technologies and tools used in library operations and services.
3. To analyze the availability and use of digital resources such as e-journals, e-books, and online databases.
4. To study the implementation of library automation systems and institutional repositories in these libraries.
5. To evaluate the impact of digital transformation on library services, user satisfaction, and research productivity.
6. To assess the role of emerging technologies such as Artificial Intelligence (AI), cloud computing, and data analytics in library management.

### 4. HYPOTHESIS:

The following hypotheses are proposed for the study on Digital Transformation in Deemed University Libraries in Telangana:

#### Null Hypotheses ( $H_0$ ):

1.  $H_{01}$ : There is no significant level of digital transformation in deemed university libraries in Telangana.
2.  $H_{02}$ : The adoption of digital technologies has no significant impact on the quality of library services.
3.  $H_{03}$ : There is no significant relationship between digital resources and user satisfaction in deemed university libraries.
4.  $H_{04}$ : Library automation systems do not significantly improve operational efficiency.
5.  $H_{05}$ : There is no significant difference in access to digital resources among users of deemed university libraries.
6.  $H_{06}$ : Emerging technologies such as Artificial Intelligence (AI) and cloud computing do not significantly influence library services.

#### Alternative Hypotheses ( $H_1$ ):

1.  $H_{11}$ : There is a significant level of digital transformation in deemed university libraries in Telangana.
2.  $H_{12}$ : The adoption of digital technologies significantly improves the quality of library services.
3.  $H_{13}$ : There is a significant relationship between digital resources and user satisfaction.
4.  $H_{14}$ : Library automation systems significantly improve operational efficiency.
5.  $H_{15}$ : There is a significant difference in access to digital resources among users.
6.  $H_{16}$ : Emerging technologies such as Artificial Intelligence (AI) and cloud computing significantly influence library services.

These hypotheses will be tested using appropriate statistical methods to evaluate the impact and effectiveness of digital transformation in deemed university libraries in Telangana.

## 5. RESEARCH METHODOLOGY

The research methodology for the study on Digital Transformation in Deemed University Libraries in Telangana is designed to systematically examine the level, impact, and challenges of digital transformation in selected institutions.

**Research Design:** The study follows a descriptive and analytical research design. It describes the current status of digital transformation and analyzes its impact on library services, user satisfaction, and research outcomes.

**Area of the Study:** The study is limited to deemed universities in Telangana. These institutions are known for their academic excellence and strong research facilities, making them suitable for studying digital transformation in libraries.

**Population and Sample:** The population of the study includes library professionals, faculty members, research scholars, and students from deemed universities in Telangana. A sample of selected deemed university libraries is chosen using purposive sampling. The respondents are selected through random sampling to represent different user groups.

**Data Collection Methods:** The study uses both primary and secondary data:

- **Primary Data:** Primary data is collected through structured questionnaires given to library users and staff. Interviews and informal discussions with library professionals are also conducted to gain better understanding.
- **Secondary Data:** Secondary data is collected from books, journals, conference papers, institutional reports, websites, and previous research studies related to digital transformation in libraries.

## 6. DATA ANALYSIS AND INTERPRETATION:

The data analysis for this study on Digital Transformation in Deemed University Libraries in Telangana is based on responses collected from library professionals, faculty members, research scholars, and students. The analysis focuses on the availability, usage, impact, and challenges of digital transformation in selected libraries.

### a) Demographic Profile of Respondents:

The respondents include:

S.NO	RESPONDENTS	PERCENTAGE
1	Library Professionals	15%
2	Faculty Members	25%
3	Research Scholars	30%
4	Students	30%

### Analysis:

Most responses come from active users such as research scholars and students. This ensures that the data is reliable and relevant.

### b) Availability of Digital Infrastructure:

S.NO	Digital Facility	Available (%)	Not Available (%)
1	Library Automation System	90%	10%
2	E-Journals & Databases	95%	5%
3	Institutional Repository	70%	30%

4	RFID Technology	60%	40%
5	Digital Library Portal	85%	15%

**Analysis:**

Most libraries have basic digital facilities like automation systems and e-resources. However, advanced technologies such as RFID and institutional repositories are not fully developed in all institutions.

**c) Usage of Digital Resources:**

S.NO	Resource Type	High Usage (%)	Moderate (%)	Low (%)
1	E-Journals	60%	30%	10%
2	E-Books	50%	35%	15%
3	Online Databases	65%	25%	10%
4	Institutional Repositories	40%	30%	30%

**Analysis:**

E-journals and online databases are used the most, especially by faculty and research scholars. Institutional repositories are used less due to lack of awareness and training.

**d) Purpose of Using Digital Library Services:**

S.NO	Using Digital Library Services	Percentage
1	Research Work	45%
2	Academic Learning	30%
3	Assignment Preparation	15%
4	General Knowledge	10%

**Analysis:**

Most users access digital resources for research and academic purposes. This shows the importance of digital libraries in higher education and research.

**e) User Satisfaction Level:**

S.NO	Satisfaction level	Percentage
1	Highly Satisfied	40%
2	Satisfied	35%
3	Neutral	15%
4	Dissatisfied	10%

**Analysis:**

About 75% of users are satisfied with digital library services. However, there is still a need to improve support services and infrastructure.

**f) Impact of Digital Transformation:**

S.NO	Digital Transformation	Percentage
1	Improved Access to Information	85%
2	Time Saving in Information Retrieval	80%
3	Enhanced Research Productivity	75%
4	Better Resource Sharing	70%

**Analysis:**

Digital transformation has improved access to information, saved time, and increased research productivity.

**g) Challenges Faced:**

S.NO	Challenge	Percentage
1	Lack of Technical Skills	35%
2	Poor Internet Connectivity	30%
3	Budget Constraints	20%
4	Lack of Awareness	15%

**Analysis:**

The main challenges are lack of technical skills and poor infrastructure. These issues affect the proper use of digital technologies.

**7. STATISTICAL ANALYSIS:**

- **Chi-Square Test:** Shows a significant relationship between the use of digital resources and user satisfaction.
- **Correlation Analysis:** Indicates a positive relationship between digital transformation and research productivity.
- **Mean Score Analysis:** Shows that most respondents agree on the importance of digital library services.

**8. SUGGESTIONS AND RECOMMENDATIONS:**

Based on the findings of the study on Digital Transformation in Deemed University Libraries in Telangana, the following suggestions and recommendations are given to improve the effectiveness, sustainability, and user satisfaction of digital library services:

**a) Strengthening Digital Infrastructure:**

Deemed university libraries should invest in strong digital infrastructure. This includes high-speed internet, modern servers, cloud-based systems, and updated hardware. These improvements will help provide smooth and easy access to digital resources.

**b) Development of Institutional Repositories:**

Libraries should develop and strengthen institutional repositories to:

- Preserve research work and academic publications
- Promote open access to information
- Improve research visibility at national and international levels.

**c) Continuous Training and Skill Development:**

- Libraries should conduct regular training programs, workshops, and seminars for: Library staff, to improve their technical skills
- Users, to enhance digital literacy and better use of e-resources.

**d) Enhancing User Awareness Programs:**

Libraries should organize orientation programs, webinars, and awareness activities to inform users about:  
Available digital resources

How to access these resources

The benefits of using digital library services

**9. CONCLUSION:**

The study shows that most deemed university libraries in Telangana have made good progress in adopting digital tools and platforms. The use of institutional repositories, e-resources, Online Public Access Catalogs (OPAC), and remote access services has improved user satisfaction and made it easier to find information. In addition, the use of open-source software and digital library management systems has helped libraries adopt digital services in a cost-effective way.

However, the process of digital transformation still faces some challenges. Problems such as lack of funding, limited technical skills, inadequate infrastructure, and resistance to change slow down the progress. There is also a strong need for continuous training and skill development for library professionals.

In conclusion, digital transformation is not just an option but a necessity for deemed university libraries to remain relevant in the modern information environment. By adopting new technologies and encouraging continuous improvement, libraries can meet the changing needs of users and contribute to better education and research development.

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