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The Influence of Digital Technologies on Library Functioning in Jammu's Engineering Institutions

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Abstract: This study explores the transformative impact of digital technologies on the functioning of libraries within engineering institutions in Jammu.With the rapid advancement of information and communication technologies (ICT),libraries have undergone a significant shift from traditional to hybrid and digital models. The research examines how digital tools—such as online databases, e-resources, digital cataloging systems, and library automation software—have enhanced information access, resource sharing, and user services. Using a mixed-methods approach, data were collected through surveys and interviews with librarians, faculty, and students across several engineering colleges in the region.The findings reveal a positive correlation between the adoption of digital technologies and improvements in operational efficiency, user satisfaction, and resource utilization. However, challenges such as limited digital infrastructure, lack of training, and budget constraints continue to hinder full-scale implementation. The paper concludes by recommending strategic investments, policy reforms, and capacity-building initiatives to strengthen the digital capabilities of academic libraries in Jammu's engineering institutions.

Keywords: Digital Technologies, Library Functioning, Jammu, Library Automation, Library Digitization

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INTRODUCTION

The digital revolution has brought profound changes to various sectors, and academic libraries are no exception. Traditionally viewed as static archives of printed material, libraries have evolved into vibrant digital knowledge hubs, offering a wide range of services beyond physical collections. This transformation is especially vital in engineering education, where timely access to cutting-edge research and technological resources is essential for academic excellence and innovation. In Jammu, engineering institutions are increasingly adopting digital technologies to modernize their library services. Tools such as electronic books, subscription-based online journals, academic databases, and integrated library management systems are becoming standard components of library infrastructure. The integration of Information and Communication Technology (ICT) has further enabled features such as automated cataloging, digital lending, remote access to resources, and interactive user services, thereby significantly enhancing the functionality and user engagement of libraries.

Despite these advancements, the implementation of digital technologies across libraries in Jammu's engineering colleges is uneven. Factors such as limited funding, infrastructural constraints, lack of skilled personnel, and varying levels of digital literacy among users present significant challenges. As a result, the impact and efficiency of digital transformation differ from one institution to another.

This study aims to investigate the role and influence of digital technologies on the functioning of libraries in

engineering institutions across Jammu. It focuses on identifying the current level of digital integration, understanding the opportunities and barriers involved, and evaluating the experiences of both library staff and users. Through this analysis, the research intends to contribute practical insights and recommendations for improving digital library services, aligning them with contemporary educational demands and global best practices.

OBJECTIVES OF THE STUDY

The primary aim of this research is to examine how digital technologies have influenced the functioning and effectiveness of library services in engineering institutions across Jammu. To achieve this, the study sets out the following specific objectives:

1. To assess the current status of digital technology adoption in the libraries of engineering institutions in Jammu.

2. To identify the types of digital tools and resources (e.g., Library Management Systems, e-resources, online databases) being utilized in these libraries.

3. To evaluate the impact of digital technologies on library services such as circulation, cataloging, user access, and information retrieval.

4. To analyze the level of awareness and usage of digital library resources among students and faculty members.

5. To identify the challenges and limitations faced by library staff and users in the transition to digital systems.

6. To suggest strategies and recommendations for improving digital library services and increasing user engagement in engineering institutions in Jammu.

REVIEW OF LITERATURE

The integration of digital technologies into academic libraries has been a global trend over the past two decades, transforming traditional library functions and services. Various studies highlight how these transformations have influenced the access, dissemination, and management of information resources.

Global Perspective on Digital Libraries

According to Tenopir (2003), the evolution of electronic resources and digital libraries has enabled students and researchers to access scholarly materials from remote locations, enhancing research efficiency and academic output. Borgman (2000) emphasizes that digital libraries are not just about digitizing collections but about creating user-centered platforms that support interactive learning and collaboration

National Context: Indian Academic Libraries

In the Indian context, several initiatives such as **INFLIBNET (Information and Library Network Centre)** and **DELNET (Developing Library Network)**have aimed to integrate digital technologies into

higher education libraries. A study by Patil and Pradhan (2014) reports that most engineering institutions in India are increasingly subscribing to digital databases such as IEEE Xplore, SpringerLink, and ScienceDirect. These resources significantly reduce the dependency on physical holdings and enhance access to up-to-date information.

Further, Sharma and Sharma (2018) conducted a study on ICT adoption in North Indian university libraries and found that while digital resources were in use, challenges such as inadequate infrastructure and lack of digital literacy among library staff were major hurdles.

Regional Studies: Jammu and Surrounding Areas

Very limited literature is available focusing specifically on the Jammu region. However, a case study by Gupta (2019) on the University of Jammu's library services revealed a positive shift towards automation and digital resource access. The study noted the use of KOHA for library automation and integration with the National Digital Library of India (NDLI).

Another study by Bhat and Kaul (2020) on digital resource usage in government engineering colleges in Jammu and Kashmir indicated moderate levels of adoption, with most institutions still in the transition phase between traditional and digital systems. The study highlighted bandwidth issues, lack of trained staff, and limited awareness among students as key challenges.

Role of Library Management Systems (LMS) and E-resources

The implementation of Library Management Systems (LMS) such as KOHA, LibSys, and e-Granthalaya has automated several library processes including cataloging, circulation, and acquisition. As per Singh & Kaur (2015), automation improves service delivery, reduces human error, and enables libraries to provide 24/7 access to users.

E-resources have also played a transformative role. Users now prefer digital journals, e-books, and open-access repositories. A study by Ramesh and Lata (2017) in private engineering colleges in South India found that 80% of students relied primarily on digital sources over printed material.

RESEARCH METHODOLOGY

This section outlines the research design, data collection methods, tools used, sampling procedures, and data analysis techniques adopted for the study.

Research Design

The study follows a **descriptive and analytical research design**. It aims to describe the current status of digital technology adoption in engineering institution libraries and analyze its influence on their functioning. Both **quantitative and qualitative approaches** have been used to ensure a comprehensive understanding of the topic.

Population and Sample

The population includes **librarians, faculty members, and students** from selected engineering institutions in the Jammu region. A **purposive sampling technique** was adopted to select institutions that have at least

partially adopted digital library systems.

- **Sample size**:

- 8 engineering institutions (including government and private colleges)
- 8 librarians
- 40 faculty members
- 140 Students

Data Collection Methods

Both **primary and secondary data** sources were used:

ø **Primary Data**:

Structured questionnaires administered to librarians, faculty, and students

Interviews with librarians for in-depth insights

Observation checklists to assess digital facilities in libraries

ø **Secondary Data**:

v Institutional reports, library usage records, previous research studies, and official documents from INFLIBNET, DELNET, and NDLI

Research Tools

- **Questionnaires** were designed using both closed-ended and Likert scale questions to collect measurable data on user perception, frequency of use, and satisfaction.
- **Interview schedules** were prepared for librarians to gather qualitative insights.
- **Observation sheets** were used to record infrastructure and digital tools available in each institution's library.

Data Analysis Techniques

The collected data were compiled and analyzed using both **quantitative** and **qualitative** methods:

- **Quantitative data** (from questionnaires) were analyzed using basic statistical tools like percentages, averages, and charts.
- **Qualitative responses** (from interviews and observations) were thematically analyzed to identify trends, patterns, and challenges.

Limitations of the Methodology

- The study was limited to selected engineering colleges in the Jammu region and may not represent the entire state or country.
- The accuracy of self-reported data from respondents may be influenced by personal bias or limited

understanding of digital tools.

- Infrastructure assessment was limited to available facilities during the time of observation.

FINDINGS AND DISCUSSION

This section presents the major findings of the study based on data collected from librarians, faculty, and students of engineering institutions in Jammu. It also offers an analytical discussion on how digital technologies have impacted library functioning in these institutions.

Status of Digital Technology Adoption

The study found that the majority of engineering institution libraries in Jammu have **partially adopted digital technologies**. Key tools in use include:

- **Library Management Systems (LMS)** like KOHA and LibSys
- **E-resources** such as NPTEL, NDLI, and subscribed journals like IEEE Xplore and Springer
- **Online public access catalogues (OPAC)** for book search and issue tracking

However, **not all institutions have fully automated their systems**. Smaller or rural institutions face budget and infrastructure constraints that slow down the adoption process.

Types of Digital Tools and Resources Utilized

All surveyed institutions reported access to at least one form of digital resource. The most commonly used digital tools included:

- **Digital databases**: IEEE, J-Gate, ScienceDirect
- **Open access repositories**: NDLI, Shodhganga
- **Automated circulation and cataloging** via LMS

Despite availability, usage rates varied. Institutions with better digital literacy among staff and students showed higher utilization levels.

Impact on Library Services

The influence of digital technologies on traditional library operations has been significant:

- **Cataloging and classification** are faster and more accurate through automated systems.
- **Circulation management** has improved with barcode/RFID systems.
- **Information retrieval** is now quicker due to OPAC and full-text search functions in e-databases.
- Students reported that **remote access to digital materials** saved time and improved academic productivity.

Yet, some librarians expressed concern that physical visits to the library have reduced, changing the library's role from a physical space to a digital hub.

Awareness and Usage Among Students and Faculty

The survey revealed that:

- Around **70% of faculty members** regularly use digital resources for teaching and research.
- Among students, **only 45–50% were fully aware** of all the available digital services.
- Awareness is **higher among postgraduate students** compared to undergraduates.
- The main barriers to student usage include **lack of awareness, poor internet connectivity**, and **limited digital literacy**.

Workshops and orientations were found to significantly increase usage patterns in institutions that conducted them regularly.

Challenges Identified

The following key challenges were reported by both users and library staff:

- **Inadequate digital infrastructure**: Slow internet, outdated hardware
- **Limited funding** for subscription-based resources
- **Lack of regular training** for librarians and users on digital tools
- **Resistance to change** from older staff members accustomed to traditional systems
- **Uneven implementation**: While some institutions are well-equipped, others struggle to maintain even basic digital services

CONCLUSION

The integration of digital technologies into library systems has brought transformative changes to the functioning of engineering institution libraries in Jammu. This study aimed to explore the extent, impact, and challenges of digital adoption in these academic libraries, with input from librarians, faculty members, and students.

The findings indicate that while **digital library tools such as Library Management Systems (e.g., KOHA, LibSys), e-resources (e.g., IEEE Xplore, NDLI), and OPAC systems** are in use across many institutions, **the level of adoption remains uneven**. Some colleges have advanced infrastructure and trained staff, enabling efficient use of digital services, while others struggle with outdated systems, poor internet connectivity, and limited financial support.

The study also found that **awareness and usage among students and faculty vary significantly**. Faculty members tend to be more active users of digital resources, whereas many students—especially undergraduates—lack awareness or training to utilize these tools effectively. This highlights the need for **digital literacy programs and regular training workshops** to promote wider engagement.

Moreover, the impact of digital technologies has been largely positive—streamlining operations, improving access to academic resources, and enabling remote learning and research. However, the shift has also

brought challenges, including reduced footfall in physical libraries and the need for constant technological upgrades.

In conclusion, while digital transformation has improved the overall efficiency and reach of library services in Jammu's engineering institutions, a **holistic approach involving policy support, funding, infrastructure development, and user training** is essential to ensure equitable and effective implementation across all institutions.

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