

# Digital Resource Utilization and User Satisfaction in Health Science College Libraries of Mohali

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## Abstract:

The rapid digital transformation of academic libraries has significantly reshaped information access, retrieval, and utilization patterns, particularly in health science education where timely and evidence-based information is critical. This study examines the extent of digital resource utilization and the level of user satisfaction among students, faculty, and researchers in health science college libraries of Mohali, Punjab. Using a descriptive and analytical research design, the study evaluates types of digital resources accessed, frequency of use, perceived usefulness, ease of access, infrastructural support, and overall satisfaction. The findings reveal a growing dependence on electronic journals, online databases, and institutional digital repositories, alongside persistent challenges related to awareness, training, and technical infrastructure. The study highlights the need for strategic digital library planning, user education, and policy-level interventions to enhance effective utilization and satisfaction.

**Keywords:** Digital libraries, health science education, electronic resources, user satisfaction, academic libraries, Mohali

## Introduction

The exponential growth of digital technologies has fundamentally transformed the landscape of academic libraries, redefining how information is acquired, stored, disseminated, and utilized. Libraries, particularly those attached to health science institutions, are no longer confined to physical collections and traditional service models. Instead, they function as dynamic digital knowledge hubs that support teaching, learning, clinical practice, and research through seamless access to electronic information resources. This transformation is especially significant in the health sciences, where the demand for current, reliable, and evidence-based information is continuous and time-sensitive.

Health science education is inherently knowledge-intensive and research-driven. Students, faculty members, clinicians, and researchers rely heavily on updated medical literature, clinical guidelines, drug databases, case studies, and peer-reviewed research to support academic learning and professional practice. Digital resources—such as e-journals, e-books, online medical databases, and institutional repositories—have become indispensable tools in this context. Their advantages, including real-time updates, remote accessibility, advanced search functionalities, and multimedia integration, have significantly enhanced the quality and efficiency of information use in health science colleges.

In India, the push towards digitalization in higher education has been further accelerated by national initiatives promoting e-learning, digital libraries, and open-access knowledge platforms. Accreditation bodies and regulatory councils governing medical, dental, nursing, and allied health institutions increasingly emphasize the availability and effective use of digital library resources as a key quality indicator. Consequently, health science college libraries have invested substantially in electronic subscriptions, library automation systems, and ICT infrastructure. However, the success of these investments depends not merely on availability but on actual utilization and user satisfaction.

Mohali has emerged as a prominent educational and healthcare centre in the state of Punjab, hosting a growing number of health science colleges and training institutions. These institutions cater to a diverse user population comprising undergraduate and postgraduate students, faculty members, research scholars, and healthcare professionals. While digital library facilities have expanded considerably in these colleges, variations exist in terms of resource awareness, usage patterns, technological infrastructure, and user support services. Understanding how users interact with digital resources and how satisfied they are with existing services is therefore critical for informed library planning and policy formulation.

User satisfaction is widely recognized as a key indicator of library service effectiveness. It reflects the extent to which digital resources meet user expectations in terms of accessibility, relevance, ease of use, and reliability. Factors such as internet connectivity, authentication mechanisms, user training, interface design, and librarian assistance significantly influence satisfaction levels. In the absence of adequate support and user-centric services, even well-resourced digital libraries may fail to achieve their intended impact.

Against this backdrop, the present study seeks to explore digital resource utilization and user satisfaction in health science college libraries of Mohali. By examining usage patterns, user perceptions, and prevailing challenges, the study aims to provide empirical insights that can help librarians, academic administrators, and policymakers strengthen digital library

Digital resources constitute the backbone of contemporary health science libraries, reflecting a paradigm shift from print-dominated collections to technology-enabled, networked information systems. In essence, digital resources refer to scholarly, educational, and clinical information sources that are created, stored, accessed, and disseminated in electronic form through computers, mobile devices, and internet-based platforms. In health science libraries, these resources are not merely supplementary; rather, they are integral to academic instruction, clinical training, evidence-based practice, and biomedical research.

Health science libraries cater to disciplines such as medicine, dentistry, nursing, pharmacy, physiotherapy, public health, and allied health sciences, each of which requires access to highly specialized, current, and peer-reviewed information services. The findings are expected to contribute to the broader discourse on digital library management in health science education and support evidence-based decision-making for improving academic information services.

## **1. Concept of Digital Resources in Health Science Libraries**

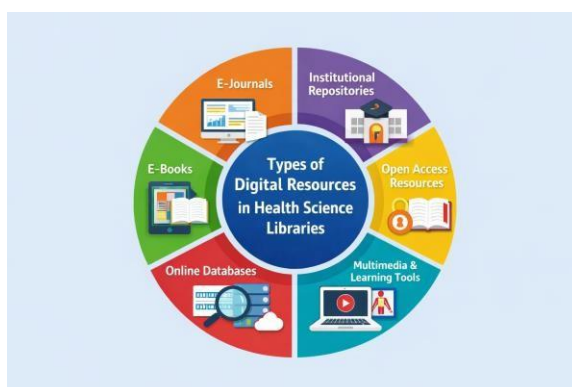
Digital resources fulfil these requirements by offering rapid updates, comprehensive coverage, and

advanced retrieval mechanisms that are not feasible with traditional print collections.

## 1.1 Types of Digital Resources in Health Science Libraries.

Digital resources in health science libraries typically encompass a wide range of formats, including:

- **Electronic Journals (E-journals):** E-journals form the most critical component of digital collections in health science libraries. They provide access to current research articles, systematic reviews, clinical trials, and case reports. Due to the fast-evolving nature of medical knowledge, e-journals are preferred over print journals for their immediacy, archival access, and advanced search capabilities.
- **Electronic Books (E-books):** E-books include textbooks, reference works, handbooks, and clinical manuals in electronic format. They are widely used by students for coursework and exam preparation and by faculty for teaching and reference. Features such as keyword search, annotations, and multi-user access enhance their usability.
- **Online Databases:** Health science libraries subscribe to specialized bibliographic and full-text databases covering biomedical, pharmaceutical, nursing, and clinical literature. These databases support systematic literature reviews, research projects, and evidence-based clinical decision-making.
- **Institutional Repositories:** Institutional repositories serve as digital archives for theses, dissertations, faculty publications, conference papers, and
- Institutional research outputs. They enhance visibility, accessibility, and long-term preservation of scholarly work.
- **Open Access Resources:** Open access journals, repositories, and educational platforms play a growing role in supplementing subscribed resources. They promote equitable access to scientific knowledge, particularly in resource-constrained academic environments.
- **Multimedia and Learning Resources:** These include video lectures, clinical demonstrations, anatomy simulations, virtual labs, and medical imaging databases, which are particularly valuable for skill-based and clinical learning.



*The image illustrates the key types of digital resources in health science libraries using a circular infographic, showing their integrated role in academic and clinical information support. It highlights e-journals, e-books, online databases, institutional repositories, open access resources, and multimedia learning tools as core components of modern digital library services.*

## 2. Literature Review

The transformation of academic libraries into digitally driven knowledge centres has been widely discussed in library and information science literature. Early studies emphasize that digital resources have become central to information-seeking behaviour in medical and health science education due to their

immediacy, accuracy, and relevance to clinical practice (Borgman *et al.*, 2015). The growing reliance on electronic information is particularly evident in health sciences, where access to updated research directly influences learning outcomes and evidence-based decision-making (Tenopir *et al.*, 2017).

Numerous international studies have examined the utilization patterns of digital resources in medical and health science libraries. Research conducted in academic medical institutions indicates that electronic journals are the most frequently accessed digital resources, followed by specialized online databases, owing to their comprehensive coverage and currency (Tenopir *et al.*, 2016). Similarly, Jamali *et al.* (2014) found that faculty members and research scholars demonstrate significantly higher use of e-journals compared to undergraduate students, primarily due to research and publication requirements.

User satisfaction has been a recurring theme in digital library research. Studies applying service quality and technology acceptance models reveal that satisfaction is influenced by factors such as ease of access, system reliability, content relevance, and user support services (Davis *et al.*, 1989; DeLone & McLean, 2003). In the context of health science libraries, Ameen and Gorman (2009) observed that effective librarian mediation and training programs significantly enhance users' confidence and satisfaction with digital resources.

Indian studies conducted in medical and health science institutions report similar trends but also highlight region-specific challenges. Bhatt and Rana (2011) observed that while awareness of e-resources among postgraduate students and faculty is relatively high, undergraduate students often lack adequate exposure and training. Thanuskodi (2012) reported that infrastructural limitations, including insufficient bandwidth and limited access points, negatively affect optimal utilization of digital resources in Indian academic libraries.

Further research by Kumar and Kumar (2018) revealed that although most health science colleges in India subscribe to multiple digital databases, a significant proportion of users remain unaware of the full range of available resources. This awareness gap leads to underutilization and lower satisfaction levels. Studies focusing on institutional repositories indicate that despite their potential for preserving and disseminating local research output, repositories remain underused due to lack of policy mandates and limited faculty participation (Xia *et al.*, 2012).

Comparative studies prior to 2024 also point out that user satisfaction is not solely dependent on resource availability, but on the effectiveness of digital library services as a whole. Islam and Habiba (2015) emphasized that continuous user education, regular evaluation of digital services, and integration of user feedback mechanisms are essential for improving satisfaction in academic libraries.

Despite the substantial body of literature on digital resource utilization and user satisfaction, most studies focus on large universities or national-level institutions. City-specific studies addressing health science college libraries in emerging educational hubs remain limited. Moreover, there is a lack of disaggregated analysis comparing students, faculty, and researchers within the same institutional ecosystem. This gap in the literature underscores the relevance of the present study, which seeks to examine digital resource utilization and user satisfaction in health science college libraries of Mohali.

Table: Summary of Key Studies on Digital Resource Utilization and User Satisfaction

| S. No. | Author(s) & Year             | Study Context / Location     | Focus of the Study                                 | Methodology                    | Key Findings                                                                    | Relevance to Present Study                                  |
|--------|------------------------------|------------------------------|----------------------------------------------------|--------------------------------|---------------------------------------------------------------------------------|-------------------------------------------------------------|
| 1      | Borgman <i>et al.</i> (2015) | Academic libraries (global)  | Digital information use in scholarly communication | Conceptual & review study      | Digital resources are central to research workflows and knowledge dissemination | Establishes theoretical foundation for digital resource use |
| 2      | Tenopir <i>et al.</i> (2016) | Medical & academic libraries | E-journal usage patterns                           | Survey & usage statistics      | E-journals are the most frequently accessed digital resources                   | Supports focus on e-journal utilization                     |
| 3      | Tenopir <i>et al.</i> (2017) | Health science institutions  | Information-seeking behavior                       | Longitudinal survey            | Faculty and researchers rely heavily on electronic literature                   | Validates user-group-based analysis                         |
| 4      | Jamali <i>et al.</i> (2014)  | University libraries         | User preferences for resources                     | Questionnaire e-based study    | Research scholars show higher digital resource usage than undergraduates        | Justifies comparative user analysis                         |
| 5      | Davis <i>et al.</i> (1989)   | Technology adoption studies  | Technology Acceptance Model (TAM)                  | Model development & validation | Perceived usefulness and ease of use determine adoption                         | Provides theoretical basis for satisfaction analysis        |
| 6      | DeLone &                     | Information                  | IS success and                                     | Model                          | System quality and service                                                      | Guides satisfaction                                         |

| S. No. | Author(s) & Year         | Study Context / Location            | Focus of the Study                         | Methodology            | Key Findings                                             | Relevance to Present Study                |
|--------|--------------------------|-------------------------------------|--------------------------------------------|------------------------|----------------------------------------------------------|-------------------------------------------|
|        | McLean (2003)            | systems research                    | user satisfaction                          | revision study         | quality affect satisfaction                              | indicators                                |
| 7      | Ameen & Gorman (2009)    | Developing countries' libraries     | Role of librarians in digital environments | Qualitative interviews | Training and librarian support improve user satisfaction | Highlights librarian facilitation role    |
| 8      | Bhatt & Rana (2011)      | Indian medical colleges             | Awareness of e-resources                   | Survey method          | Undergraduates lack awareness compared to faculty        | Reflects Indian health science context    |
| 9      | Thanuskodi (2012)        | Indian academic libraries           | E-resource usage challenges                | Questionnaire survey   | Infrastructure and bandwidth affect usage                | Supports infrastructure-related variables |
| 10     | Xia <i>et al.</i> (2012) | Institutional repositories (global) | Repository use and faculty participation   | Mixed-method study     | Low participation due to policy and awareness gaps       | Explains underutilization of repositories |
| 11     | Islam & Habiba (2015)    | Academic libraries                  | User satisfaction with digital services    | Survey-based study     | Training and feedback mechanisms enhance satisfaction    | Reinforces need for user-centric services |
| 12     | Kumar & Kumar (2018)     | Indian health science libraries     | Utilization of subscribed databases        | Empirical survey       | Significant underutilization due to lack of awareness    | Aligns with present study objectives      |

**3. Digital Resource Utilization Patterns** Digital resource utilization patterns reflect how effectively users engage with electronic information services offered by health science college libraries. Understanding these patterns is crucial for assessing the relevance, adequacy, and impact of digital library collections on academic learning, research, and clinical training. In health science institutions, utilization is influenced by academic level, discipline, research requirements, digital literacy, and availability of infrastructural support. The present section examines utilization patterns across multiple dimensions, highlighting frequency, purpose, preferred resource types, access modes, and user behavior.

### 3.1 Frequency of Digital Resource Use

The study indicates a high frequency of digital resource usage among health science library users, reflecting the growing reliance on electronic information. Faculty members and research scholars predominantly access digital resources on a daily basis, driven by teaching preparation, research activities, and scholarly publishing requirements. Postgraduate students also report frequent



usage, particularly during dissertation work and clinical postings.

In contrast, undergraduate students exhibit moderate but regular usage, often limited to examination preparation, assignments, and basic coursework. The comparatively lower frequency among undergraduates may be attributed to limited research exposure, lack of formal training, and greater dependence on prescribed textbooks. These findings suggest a direct correlation between academic progression and intensity of digital resource utilization.

### **3.2 Purpose of Digital Resource Utilization**

Digital resources are utilized for diverse academic and professional purposes within health science colleges. The primary purposes include:

- **Academic Learning:** Students extensively use e-books and lecture-related digital materials for understanding core concepts and preparing for examinations.
- **Research and Scholarly Writing:** Faculty members and research scholars rely heavily on e-journals and databases for literature review, data interpretation, and publication.
- **Clinical Reference:** Access to updated guidelines, treatment protocols, and case studies supports clinical learning and evidence-based practice.
- **Teaching Support:** Faculty members use digital resources to design lectures, prepare presentations, and update course content.

The dominance of research- and learning-oriented usage highlights the centrality of digital resources in academic workflows.

### **3.3 Types of Digital Resources Utilized**

Among the various digital resources available, electronic journals emerge as the most extensively used, owing to their relevance, currency, and scholarly value. Specialized online databases are also widely accessed, particularly for systematic literature searches and evidence-based information retrieval.

E-books are primarily used by students for curricular support, while open-access resources serve as supplementary materials, especially when subscription-based access is limited. Institutional repositories and multimedia learning resources, although available in many libraries, remain relatively underutilized. This underutilization points toward gaps in awareness, promotion, or perceived relevance.

### **3.4 Access Modes and Platforms**

Digital resources are accessed through both on-campus library networks and remote access systems. The availability of off-campus access significantly enhances utilization by enabling users to retrieve information beyond library hours. Web-based interfaces and mobile-compatible platforms further facilitate flexible access.

However, variations exist in user experience due to authentication processes, system responsiveness, and internet connectivity. Libraries with seamless access mechanisms report higher usage and satisfaction levels, emphasizing the importance of user-friendly digital platforms.

### 3.5 Search Behavior and Information-Seeking Practices

The study reveals that most users prefer **keyword-based searches** and basic search options rather than advanced search strategies. While faculty and research scholars demonstrate greater familiarity with Boolean operators, filters, and citation tracking tools, students often rely on general search features. This variation in search behaviour underscores the importance of information literacy training to improve search efficiency and resource discovery.

### 3.6 Barriers Affecting Utilization Patterns

Despite widespread availability, several factors constrain optimal utilization of digital resources:

- Limited awareness of subscribed databases
- Inadequate training in advanced search techniques
- Technical issues such as slow internet or system downtime
- Overdependence on freely available internet sources

These barriers highlight the need for continuous user engagement, infrastructural upgrades, and targeted training initiatives.

### 3.7 Implications for Health Science Libraries

The observed utilization patterns suggest that while digital resources are integral to health science education and research, their full potential remains underexploited. Libraries must adopt a user-centric approach that emphasizes awareness, accessibility, and skill development. Regular assessment of utilization patterns can help libraries align digital collections with user needs and institutional objectives

## 4. Challenges in Digital Resource Utilization

Despite significant investments in digital library infrastructure and electronic information resources, health science college libraries continue to face multiple challenges that limit the effective utilization of digital resources. These challenges are multidimensional, encompassing technological, organizational, financial, and user-related factors. Identifying and understanding these constraints is essential for developing strategies that enhance both utilization and user satisfaction.

### 4.1 Lack of Awareness and Inadequate User Orientation

One of the most persistent challenges in digital resource utilization is the lack of awareness among users regarding the range of digital resources available in their libraries. Many students, particularly at the undergraduate level, are familiar only with a limited number of commonly used databases or freely available internet sources. The absence of structured orientation programs and regular user awareness campaigns results in underutilization of subscribed resources. Without proper guidance, users often fail to explore specialized databases, institutional repositories, and advanced research tools that are crucial for health science education and research.

### 4.2 Insufficient Digital Literacy and Search Skills

Effective utilization of digital resources requires a certain level of digital and information literacy. Many users possess basic computer skills but lack proficiency in advanced search techniques such as Boolean



logic, subject headings, filters, and citation tracking. This limitation leads to inefficient searches, information overload, and difficulty in identifying high-quality and relevant literature. In health sciences, where precision and reliability of information are critical, inadequate search skills significantly reduce the value derived from digital resources.

#### **4.3 Technological and Infrastructure Constraints**

Digital resource utilization is highly dependent on reliable ICT infrastructure. Challenges such as slow internet connectivity, limited bandwidth, outdated computer systems, and insufficient access points continue to affect user experience in many health science college libraries. Technical issues, including system downtime and authentication failures, further discourage users from relying on digital platforms. These infrastructural constraints are particularly problematic during peak academic periods, such as examinations and research submission deadlines.

#### **4.4 High Cost of Subscriptions and Licensing Issues**

Health science digital resources, especially specialized medical and clinical databases, involve high subscription and licensing costs. Budgetary constraints often limit the number of databases that libraries can subscribe to, leading to partial coverage of user needs. In some cases, restrictive licensing terms, such as limited simultaneous users or access restrictions, hinder effective utilization. Financial limitations also affect the ability of libraries to upgrade systems, renew subscriptions, and expand digital collections.

#### **4.5 Limited Promotion and Marketing of Digital Resources**

Another major challenge is the lack of systematic promotion of digital library services. Libraries often assume that users are automatically aware of available resources, which is rarely the case. The absence of regular communication through emails, library websites, social media, or academic departments results in low visibility of digital resources. Without consistent promotion, even high-quality resources remain underused.

#### **4.6 Underutilization of Institutional Repositories and Open Access Resources**

Although institutional repositories and open-access platforms have the potential to enhance access to locally generated research and global scholarly content, their utilization remains limited. Factors contributing to this issue include lack of faculty participation, absence of mandatory deposit policies, and limited awareness of the benefits of open-access publishing. Consequently, valuable institutional research output often remains inaccessible or underrepresented.

#### **4.7 Dependence on Freely Available Internet Sources**

Many users prefer general search engines and freely available websites over authenticated digital library platforms. While these sources offer convenience, they may lack credibility, accuracy, and peer review. Overdependence on such sources undermines the use of authoritative digital resources subscribed by libraries and poses risks to academic and clinical decision-making.

#### **4.8 Human Resource and Training Limitations**

The effective management of digital resources requires skilled library professionals with expertise in digital systems, database management, and user training. In some institutions, limited staffing and

inadequate professional development opportunities restrict the library's ability to provide personalized support, conduct training programs, and maintain digital systems efficiently.

#### 4.9 Implications of the Challenges

These challenges collectively contribute to a gap between the availability of digital resources and their actual utilization. If unaddressed, they can reduce the return on investment in digital library infrastructure and negatively impact teaching, research, and clinical practice. Addressing these challenges requires a holistic approach that combines technological enhancement, user education, policy support, and proactive library leadership.

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