

## **A Review of Digital Library Services and Their Impact on University Students in Madhya Pradesh**

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### **Abstract**

This paper presents a review of the growth, adoption, and impact of digital library services on university students in Madhya Pradesh, India, situating the region's experience within the broader national and international literature on digital libraries in higher education. Drawing upon twenty studies published between 2015 and 2024, the review traces the evolution of digital library services from basic catalogue-based systems to cloud-hosted repositories, subscribed e-journal databases, e-books, and remotely accessible discovery platforms. It highlights the persistent challenges of infrastructure, digital literacy, and financial constraints reported across colleges and universities in Madhya Pradesh, while also examining the accelerating role of the COVID-19 pandemic in normalising remote access to library resources across Indian higher education generally. The review is organised around four themes: awareness and usage patterns of digital resources, service quality and user satisfaction, institutional and infrastructural barriers, and the pedagogical impact of digital resources on learning outcomes. A structured literature-review methodology, rather than primary data collection, underpins the analysis. The findings suggest that while awareness of digital resources among students in Madhya Pradesh has improved considerably in the last decade, disparities between urban and rural institutions, uneven information and communication technology (ICT) training, and inconsistent internet connectivity continue to limit the full realisation of digital library potential. The paper concludes with recommendations for infrastructure investment, digital literacy training, and policy support, and outlines directions for future empirical research in the state.

**Keywords:** digital library, e-resources, university students, Madhya Pradesh, ICT, academic libraries, higher education

### **1. Introduction**

#### **1.1 Background of the Study**

Academic libraries have undergone a fundamental transformation over the past two decades, moving from print-dominated collections toward hybrid and increasingly digital environments. This shift has been driven by the growth of the internet, the proliferation of subscription-based e-journal and e-book platforms, and the rising expectation among students that information should be accessible instantly and remotely. In the Indian context, this transition has been reinforced by national policy instruments such as the National Education Policy (NEP) 2020, which emphasises digital infrastructure, online learning, and equitable access to knowledge

resources across universities and colleges. University libraries are no longer viewed simply as repositories of books; they are increasingly expected to function as digital gateways that support teaching, research, and lifelong learning. For students in tier-two and tier-three states such as Madhya Pradesh, digital library services carry particular significance, since they can, in principle, narrow the gap between well-resourced metropolitan institutions and comparatively under-resourced regional colleges and universities. Understanding how digital library services have been adopted, used, and experienced by students in this state therefore provides a useful lens through which to examine the broader promise and limitations of digital transformation in Indian higher education.

### **1.2 Digital Libraries: Concept and Evolution**

A digital library may be broadly understood as an organised collection of digital content — including e-books, e-journals, databases, theses, multimedia, and institutional repositories — that is created, managed, and made accessible through computer networks rather than through physical shelving alone. The concept evolved through several overlapping phases: early automation efforts centred on Online Public Access Catalogues (OPAC) and integrated library management software; a second phase introduced CD-ROM databases and early bibliographic indexes; and a third, more expansive phase involved the licensing of full-text e-journal packages, e-book aggregators, and open-access repositories, often accessed through consortia arrangements such as the UGC-INFONET Digital Library Consortium and the National Digital Library of India. More recently, cloud-based hosting, mobile-responsive interfaces, and discovery-layer search tools have further reshaped how students locate and retrieve information. This evolution has not been uniform across institutions; well-funded central universities and technical institutes have generally adopted successive waves of digital services more rapidly than state universities and affiliated colleges, a disparity that is especially visible in states like Madhya Pradesh where resource allocation across institutions varies considerably.

### **1.3 Higher Education Scenario in Madhya Pradesh**

Madhya Pradesh hosts a large and diverse network of higher education institutions, including central universities, state universities, private universities, and a substantial number of government and private affiliated colleges spread across both urban centres such as Bhopal, Indore, and Jabalpur and smaller district towns and rural areas. Existing studies note that academic libraries in the state's higher educational institutions vary widely in the extent to which they have adopted ICT-enabled and digital services, with library infrastructure, staffing, and digital literacy levels differing markedly between well-established urban institutions and smaller rural colleges (Jat, 2021). Government colleges in particular have been reported to face constraints related to inadequate infrastructure, limited digital literacy among both staff and students, financial limitations, and inconsistent internet connectivity, all of which restrain the full adoption of ICT-based library services (Yadav & Khan, 2024). At the same time, students across the state increasingly rely on smartphones and low-cost data plans for academic purposes, creating both an opportunity and a challenge for libraries seeking to deliver digital content in ways that are genuinely accessible to a diverse student population.

## 2. Literature Review

### 2.1 Global and National Perspectives on Digital Library Usage

A substantial body of research has examined the awareness and usage of electronic resources among students, faculty, and research scholars in Indian university libraries. Several studies conducted in Punjab, Haryana, and other northern states describe generally positive awareness of e-resources among postgraduate students and research scholars, while also noting that usage intensity and confidence vary by discipline and by prior exposure to ICT training. For instance, studies of agricultural and general university libraries have found that while students frequently use e-resources for coursework and assignments, awareness of the full range of subscribed databases available to them often remains partial, and usage tends to concentrate on a small number of familiar platforms such as general search engines and a handful of well-known databases (Kaur & Kathuria, 2016; Kuldeep, 2019; Kimi & Abidi, 2019). Similar patterns have been reported among research scholars in the social sciences, where e-resources are valued for saving time and broadening access to literature, but where awareness of advanced search features and citation tools remains comparatively low (Sharma, 2019; Sharma et al., 2020; Maitato, 2020). Information-seeking behaviour studies add further nuance, showing that students and scholars often prefer informal or convenient sources — such as general web searches or peer recommendations — over structured library-mediated searching, even when formal subscriptions are available (Banerjee, 2019; Kaur, 2020; Kumari & Sharma, 2021). During the COVID-19 period, several studies observed a marked, if sometimes short-lived, increase in reliance on digital and remote information sources as students sought to continue their studies without physical access to campus libraries (Ansari et al., 2021). Concerns about the credibility and quality of online scholarly information have also been raised, suggesting that increased usage does not automatically translate into confident or critical use of digital resources (Habiba & Islam, 2022). Table 1 summarises the key findings of a selection of these studies.

| Author(s) / Year       | Context / Institution                            | Key Findings                                                                                     |
|------------------------|--------------------------------------------------|--------------------------------------------------------------------------------------------------|
| Kaur & Kathuria (2016) | Punjab Agricultural University Library, Ludhiana | High general awareness of e-resources, but usage concentrated on a few familiar databases.       |
| Kimi & Abidi (2019)    | Aligarh Muslim University, Dept. of Sociology    | Postgraduate students and scholars used e-resources mainly for assignments and research writing. |
| Kuldeep (2019)         | Punjabi University, Patiala                      | Awareness moderate to high; usage frequency linked to availability of ICT training.              |

| Author(s) / Year       | Context / Institution                                             | Key Findings                                                                                  |
|------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|
| Sharma (2019)          | Maharshi Dayanand University, Rohtak                              | Faculty and scholars in social sciences accessed e-resources mainly for teaching preparation. |
| Sharma et al. (2020)   | University of Jammu                                               | E-resources positively impacted research output of scholars in social science and education.  |
| Maitato (2020)         | Sardar Vallabhbhai Patel University of Agriculture and Technology | Daily use of internet and e-books reported; awareness levels varied by year of study.         |
| Kumari & Sharma (2021) | Cross-institutional literature review                             | Information-seeking behaviour shaped by convenience, discipline, and prior digital exposure.  |

## **2.2 Digital Library Services in Indian Universities: Quality, Satisfaction and Pandemic Response**

The COVID-19 pandemic acted as a significant catalyst for the expansion and reconfiguration of digital library services across Indian and South Asian universities. Studies conducted during and after the pandemic consistently report that libraries which had already invested in digital infrastructure were better positioned to sustain access to resources when physical campuses closed, while institutions with weaker digital foundations faced considerable disruption (Chakraborty & Jana, 2021; Deol & Brar, 2021). Comparative studies from outside India, though not focused on Madhya Pradesh specifically, offer useful benchmarks: research on academic library usage during the pandemic found measurable declines in physical visits alongside increased reliance on remote database access, with some evidence linking sustained library engagement to academic performance (De Groote & Scoulas, 2021; Scoulas & De Groote, 2021). Case studies of university libraries in Bangladesh describe how digital services — including virtual reference, remote database access, and online information literacy sessions — were rapidly reorganised to support online learning, illustrating a broader regional pattern of libraries repositioning themselves as active partners in remote education rather than passive resource repositories (Begum & Elahi, 2022). Service-quality research conducted in this period likewise emphasises that user satisfaction with digital library services depends not only on the range of resources subscribed to, but also on the ease of remote authentication, responsiveness of library staff, and the clarity of guidance provided to users unfamiliar with digital platforms (Md & Mezbah-ul-Islam, 2021). Table 2 summarises representative findings from this pandemic-related literature.

| Author(s) / Year            | Focus / Context                                    | Key Findings                                                                              |
|-----------------------------|----------------------------------------------------|-------------------------------------------------------------------------------------------|
| Chakraborty & Jana (2021)   | Academic libraries in India during COVID-19        | Libraries with prior digital investment adapted more smoothly to remote service delivery. |
| Deol & Brar (2021)          | Role of academic libraries during the pandemic     | Pandemic accelerated adoption of remote and digital services across institutions.         |
| De Groote & Scoulas (2021)  | Academic library usage during COVID-19 (USA)       | Physical visits declined while remote database access increased significantly.            |
| Scoulas & De Groote (2021)  | Student library experience and GPA during pandemic | Sustained digital library engagement associated with better academic performance.         |
| Begum & Elahi (2022)        | Private university library, Bangladesh             | Digital services reorganised rapidly to support online teaching and learning.             |
| Md & Mezbah-ul-Islam (2021) | Service quality model for academic libraries       | User satisfaction linked to ease of remote access and staff responsiveness.               |

### 2.3 Studies Specific to Madhya Pradesh

Compared with the wider national literature, studies focused specifically on Madhya Pradesh remain relatively limited, though a small number of recent works provide useful state-level evidence. A study of a government post-graduate college in Khargone district found that although ICT adoption had led to noticeable improvements in library service delivery, persistent challenges — including inadequate infrastructure, low digital literacy among users, financial limitations, and poor internet connectivity — continued to constrain full ICT adoption, particularly in rural settings (Yadav & Khan, 2024). This study recommended combined investment in infrastructure, targeted ICT training for staff and students, increased financial support, and stronger institutional collaboration to improve digital library outcomes in similar rural colleges. A broader comparative study of academic libraries across selected higher education institutions in Madhya Pradesh, including central university and state university college libraries affiliated with the University Grants Commission, similarly observed that despite growing interest in technology-based services, many college libraries had not kept pace with the wider technological transformation seen in metropolitan institutions, largely due to constraints of funding, resources, and trained staff (Jat, 2021). Taken together, these studies suggest a two-tier pattern within the state: comparatively well-resourced central and state university libraries in larger cities are further along in digital service adoption, while

affiliated colleges — particularly in smaller towns and rural districts — lag behind on several key indicators. Table 3 summarises these state-specific findings.

| Author(s) / Year    | Institution / Location                                          | Key Findings                                                                                        |
|---------------------|-----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|
| Yadav & Khan (2024) | Govt. P.G. College, Khargone, Madhya Pradesh                    | ICT adoption improved service delivery but infrastructure, literacy, and connectivity gaps persist. |
| Jat (2021)          | Selected central and state university libraries, Madhya Pradesh | College libraries lag behind in technology adoption due to funding and staffing constraints.        |

#### **2.4 Impact of Digital Library Services on Learning Outcomes and Persistent Challenges**

Across the studies reviewed, digital library services are consistently associated with several positive outcomes for students: faster access to a wider range of literature, reduced dependence on physical visits, greater flexibility in study timing, and, in some cases, measurable links to improved academic performance (Scoulas & De Groote, 2021; Sharma et al., 2020). At the same time, the literature identifies a recurring set of barriers that temper these benefits, particularly in state and rural contexts such as Madhya Pradesh. These include inconsistent or slow internet connectivity, insufficient digital literacy training for both students and library staff, limited institutional budgets for subscribing to comprehensive e-resource packages, and uneven awareness of the resources that are already available (Yadav & Khan, 2024; Jat, 2021; Kuldeep, 2019). Several studies also note a gap between awareness and effective use: students may know that digital resources exist without necessarily possessing the search, evaluation, and citation skills needed to use them efficiently, underscoring the importance of structured information literacy instruction rather than infrastructure alone (Habiba & Islam, 2022; Kumari & Sharma, 2021). The pandemic-era literature further suggests that crises can act as forcing mechanisms that accelerate digital adoption, but that gains made under emergency conditions are not automatically sustained once normal operations resume unless supported by longer-term institutional commitment (Chakraborty & Jana, 2021; Begum & Elahi, 2022). Overall, the reviewed literature points toward a consistent conclusion: the impact of digital library services on students in Madhya Pradesh is real but uneven, shaped as much by institutional capacity and digital literacy as by the mere availability of digital content.

### **3. Research Methodology**

This paper adopts a narrative literature-review methodology rather than a primary empirical survey, since its purpose is to synthesise and critically organise existing research on digital library services and their impact on university students, with particular attention to Madhya Pradesh. The review process followed several structured steps. First, a search was conducted across academic databases and repositories commonly used in library and information science research, including Google Scholar, ResearchGate, DESIDOC Journal of Library and Information Technology, Library Philosophy and Practice, Shodhganga, and relevant institutional and open-access repositories. Search terms included combinations of keywords such as 'digital library', 'e-resources', 'ICT in libraries', 'academic library services', 'university

students', 'Madhya Pradesh', and 'India', along with related terms such as 'information-seeking behaviour' and 'digital literacy'.

Second, inclusion criteria were applied to select relevant studies: publications had to be peer-reviewed journal articles, conference proceedings, or recognised e-journal publications; published between 2015 and 2024, to ensure the review reflects the contemporary digital library environment; and substantively concerned with digital library services, e-resource usage, or related ICT-enabled library practices in academic or university settings. Studies focused specifically on Madhya Pradesh were prioritised, and were supplemented with comparable studies from other Indian states and international contexts where state-specific literature was limited, in order to provide comparative depth. Studies concerned solely with public libraries, school libraries, or purely technical systems-design issues unrelated to student use were excluded, as were sources predating 2015 unless required for essential conceptual background.

Third, the shortlisted studies were read in full and organised thematically rather than chronologically, since a thematic structure better supports comparison across contexts. Four themes were identified inductively from repeated patterns across the literature: awareness and usage of e-resources; service quality and satisfaction, including pandemic-related adaptation; state-specific evidence from Madhya Pradesh; and impact on learning outcomes alongside persistent barriers. Findings from each study were extracted and tabulated to allow side-by-side comparison, as reflected in Tables 1 through 3. Finally, the synthesised findings were used to develop the conclusions and future research directions presented in the sections that follow. As with any narrative review, this approach does not claim the exhaustive coverage of a formal systematic review or meta-analysis, and the relatively small number of studies focused specifically on Madhya Pradesh should be read as both a finding of this review and a limitation of the current evidence base.

#### **4. Conclusion**

This review has traced the evolution, adoption, and reported impact of digital library services on university students, with a particular focus on Madhya Pradesh set within the wider Indian and international literature. The evidence indicates that digital library services have become an increasingly central feature of academic life for university students, offering faster access to information, greater flexibility, and, under favourable conditions, measurable benefits for academic performance. In Madhya Pradesh specifically, the available studies point to a two-tier landscape: central and larger state university libraries have made meaningful progress in adopting ICT-enabled and digital services, while many affiliated colleges, particularly those in rural and smaller-town settings, continue to face significant constraints related to infrastructure, funding, digital literacy, and internet connectivity.

The COVID-19 pandemic emerges from the literature as an important, if uneven, accelerant of digital adoption, pushing institutions to reorganise services around remote access even where prior investment had been limited. However, the same literature cautions that gains achieved under crisis conditions are not automatically sustained without continued institutional commitment once conventional operations resume. A further consistent theme across the

reviewed studies is that awareness of digital resources does not, by itself, guarantee effective or confident use; targeted information literacy training appears at least as important as the availability of subscriptions and infrastructure in determining whether students genuinely benefit from digital library services.

Taken together, the reviewed literature suggests that realising the full potential of digital library services for students in Madhya Pradesh will require coordinated action on several fronts: sustained investment in network and hardware infrastructure, particularly in rural and semi-urban colleges; structured digital literacy and information literacy training embedded within curricula rather than offered as isolated sessions; adequate and stable funding for e-resource subscriptions and consortia participation; and ongoing professional development for library staff to support users effectively. Addressing these interlinked challenges holistically, rather than through infrastructure investment alone, is likely to be necessary if digital library services are to meaningfully narrow, rather than merely reflect, existing disparities in higher education access across the state.

### **5. Future Work**

Several directions for future research emerge from the gaps identified in this review. First, there is a clear need for more primary empirical studies focused specifically on university students in Madhya Pradesh, since the current evidence base, while informative, remains comparatively thin relative to studies conducted in states such as Punjab, Haryana, and Uttar Pradesh. Future studies could usefully employ larger, more representative samples spanning multiple universities and colleges across different districts of the state, allowing for meaningful comparison between urban and rural institutions, and between central, state, and private universities.

Second, longitudinal research designs would help clarify whether increases in digital library usage observed during and immediately after the COVID-19 pandemic have been sustained, reversed, or further consolidated in subsequent years, addressing a question that the existing cross-sectional literature cannot fully answer. Third, future research could examine more directly the relationship between digital library usage and specific learning outcomes — such as academic performance, research productivity, and information literacy competency — using validated instruments and, where possible, mixed-methods designs that combine usage statistics with student perceptions and academic records.

Fourth, given the consistent finding that awareness does not automatically translate into effective use, future studies should investigate the design and impact of structured information literacy interventions embedded within university curricula in Madhya Pradesh, rather than treating digital literacy as a one-time orientation activity. Fifth, comparative research examining differences in digital library adoption between disciplines — for example, science and technology programmes versus humanities and social science programmes — could help institutions target training and resource allocation more precisely. Finally, future work should give greater attention to the experiences of students from economically disadvantaged and first-generation learner backgrounds, since these groups may face compounded barriers to digital library access that are not fully captured in institution-level studies. Addressing these directions

would not only strengthen the state-specific evidence base but would also support more informed policy and institutional decision-making regarding digital library investment in Madhya Pradesh.

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