



Original Article

Improving Library Performance in The Digital Environment: An End-User Survey of Science, Engineering, And Pharmacy Colleges Affiliated with Sant Gadge Baba Amravati University, Maharashtra

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Abstract:

The study investigates the use, satisfaction, challenges, and expectations of digital library services among students, research scholars, and faculty in Science, Engineering, and Pharmacy colleges affiliated with Sant Gadge Baba Amravati University, Maharashtra. A total of 574 respondents participated, providing insights into library usage patterns, access to digital resources, and perceptions of service quality. Findings indicate that e-journals, e-books, and the OPAC are the most frequently used digital resources, while subscription databases and institutional repositories are underutilized. Respondents reported overall satisfaction with access, remote connectivity, and training/workshops, though OPAC usability, library staff support, and Internet/Wi-Fi revealed mixed experiences. Major challenges included pay walls, limited subscriptions, slow internet, and inadequate training.

Digital resources were perceived to enhance coursework quality, research efficiency, time management, and collaboration. Respondents' key expectations focused on expanded subscriptions, improved infrastructure, better remote access, targeted training, subject-specific guides, and user-friendly interfaces. The study highlights the importance of improving access, infrastructure, training, and usability to optimize digital library performance and maximize academic outcomes.

Keywords: *Digital Library Services, User Satisfaction, E-Resources, Library Usage, Academic Libraries, Sant Gadge Baba Amravati University, etc.*

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Introduction:

In the digital era, academic libraries are increasingly expected to go beyond their traditional roles of book lending and information provision to become dynamic centers of digital learning and research support. The rapid growth of electronic resources, online databases, and digital repositories has transformed the way students and faculty access and utilize information (Thanuskodi, 2019). For institutions in the fields of science, engineering, and pharmacy, where up-to-date information and research resources are crucial, libraries serve as a backbone for academic excellence. However, the transition from traditional print services to digital platforms has not been uniform, and user satisfaction often depends on accessibility, awareness, and technological infrastructure (Madhusudhan, 2020). Within this context, the libraries of colleges affiliated with Sant Gadge Baba Amravati University (SGBAU), Maharashtra, represent a critical case for assessing how end-users perceive library performance in a digital environment.

This study holds importance for both theory and practice. By focusing on the perceptions of end-users, it provides a user-centric evaluation of library performance in the digital environment. The insights gained will help library professionals identify gaps in service delivery and develop strategies that improve accessibility, usability, and awareness of digital resources (Ali & Gatiti, 2020). Furthermore, the study will support higher education institutions in Maharashtra in strengthening their digital library infrastructure, thereby enhancing the quality of education and research outcomes. Ultimately, this research contributes to the broader discourse on

academic library transformation in the digital age.

Purpose of The Research Study:

The primary purpose of this study is to evaluate the performance of academic libraries in the digital environment with a specific focus on end-users. As students and faculty members are the ultimate beneficiaries of library services, their perspectives provide valuable insights into the effectiveness of digital library initiatives (Anunobi & Edoka, 2010). This study seeks to bridge the gap between user expectations and the current level of services offered by college libraries affiliated with Sant Gadge Baba Amravati University, Maharashtra. The findings are expected to guide library administrators and policymakers in designing strategies to strengthen digital services and align them with the learning and research needs of users.

Objectives of The Research Study:

1. To examine the availability and use of digital resources in Science, Engineering, and Pharmacy colleges affiliated to the Sant Gadge Baba Amravati University, Maharashtra.
2. To evaluate user satisfaction with existing digital library services and facilities.
3. To analyze the challenges faced by end-users while accessing digital resources.
4. To explore the impact of digital resources on academic and research activities.
5. To suggest strategies for improving library performance in the digital environment.

Research Questions:

- How effectively are digital resources being utilized by students and faculty in



the Science, Engineering and Pharmacy colleges affiliated to the university?

- What are the major challenges end-users faces in accessing digital library services?
- What improvements do end-users expect from academic libraries in the digital environment?

Significance of The Study:

The study is significant because it helps librarians and policymakers understand the needs of users in the digital era. It provides guidance for improving digital services in academic libraries. By highlighting user expectations and challenges, the study supports the development of library strategies that focus on users. These strategies can enhance research and learning outcomes, making academic libraries more effective and responsive to their communities.

Reviews of Literature:

Recent studies highlight the importance of user satisfaction in digital library services. Azib et al. (2025) found that information quality, system quality, and service quality strongly affect student satisfaction in Malaysia. Jebril (2023) noted that existing user satisfaction models in digital libraries are incomplete, showing the need for better evaluation frameworks. Digital resources have transformed academic libraries, improving access, research efficiency, and user engagement. Ike (2023) reported that digital technologies enhance information dissemination and learning experiences, while Lu (2024) emphasized that digital resources make college libraries more interactive and accessible.

Digital resources have greatly transformed academic libraries, improving

access and learning experiences. User satisfaction depends on factors such as information quality, system quality, and service quality (Kadir et al., 2023). However, challenges like limited infrastructure, resource constraints, and low digital literacy hinder effective use (Peacock, 2025; Ullah et al., 2023). In Indian academic institutions, users often face inadequate training and limited awareness of digital services (Patel et al., 2021). Studies show that while digital tools and Web 2.0 technologies can enhance library services, their benefits are limited unless users receive proper training and orientation. These findings highlight the need for improving infrastructure, training, and awareness to maximize the effectiveness of digital libraries.

Sarode and Shirbhate (2025) studied students and research scholars in Science, Engineering, and Pharmacy colleges of Sant Gadge Baba Amravati University, Maharashtra. They found that users were generally satisfied with digital resources, which improved academic performance and learning outcomes. However, challenges included limited infrastructure, restricted access, and low digital literacy. Similarly, Ullah et al. (2023) and Williams (2023) highlighted barriers such as budget constraints, insufficient IT infrastructure, and inconsistent standards. These studies suggest that improving access, infrastructure, training, and standardization is essential to enhance digital library services.

Research Methodology:

This study used a descriptive survey method to examine the use and satisfaction of digital library services among students, research scholars, and faculty in Science, Engineering, and Pharmacy colleges affiliated with Sant



Gadge Baba Amravati University, Maharashtra. A total of 574 respondents participated, including 218 undergraduate students, 167 postgraduate students, 78 research scholars/PhD scholars, and 111 faculty members. Participants were from Science (35.02%), Engineering (35.89%), and Pharmacy (29.09%) disciplines, with 40.94% male and 59.06% female

respondents. Data were collected through a structured questionnaire, validated for reliability and relevance. Analysis was carried out using frequency, percentage, and Chi-square (χ^2) tests to understand user behavior, satisfaction, challenges, and expectations with digital library services (Creswell & Creswell, 2018; Kothari, 2022; Sarode & Shirbhate, 2025).

Observations And Findings:

1. Respondent Profile:

Table-1: Respondent Profile		
Role	Frequency	Percentage
Student UG	218	37.99%
Student PG	167	29.09%
Research Scholar / PhD Scholar	78	13.59%
Faculty / Lecturer	111	19.4%
Total	574	100%
Discipline / Department	Frequency	Percentage
Science	201	35.02%
Engineering	206	35.89%
Pharmacy	167	29.09%
Total	574	100
Gender	Frequency	Percentage
Male	235	40.94%
Female	339	59.06%
Transgender	0	0%
Total	574	100%

A total of 574 individuals participated in the study, including undergraduate and postgraduate students, research scholars, and faculty members. Undergraduate students were the largest group (37.99%), followed by postgraduate students (29.09%), faculty/lecturers (19.40%), and research

scholars/PhD scholars (13.59%). Respondents came from Engineering (35.89%), Science (35.02%), and Pharmacy (29.09%) disciplines, showing balanced academic representation. Female participants (59.06%) outnumbered males (40.94%), and no respondents identified as transgender.



2. Frequency of use of Library:

Table-2: Frequency of use of Library						
Faculty	Daily	2-3 time/week	weekly	Monthly	Rarely/Never	Sub-total
Science (N=201)	59	71	33	22	16	201
Engineering (N=206)	81	63	20	23	19	206
Pharmacy (N=167)	45	51	17	27	27	167
Total	185 (32.24%)	185 (32.24%)	70 (12.20%)	72 (12.55%)	62 (10.80%)	574 (100%)

The frequency of library use varied among disciplines (Table 2). Overall, about two-thirds of respondents used the library regularly, with 32.24% visiting daily and 32.24% visiting two to three times per week. Weekly and monthly visits were less common, reported by 12.20% and 12.55% of respondents,

respectively, while 10.80% rarely or never used the library. Engineering students were the most frequent users, followed by science students, whereas pharmacy students visited less often. These results suggest that library use was high among science and engineering disciplines but lower among pharmacy students.

3. Frequency of use of Digital Resources:

Table-3: Frequency of use of digital resources						
Types of digital resources	Never	Rarely	Sometimes	Often	Very often / Always	χ^2 Value
E-journals	80 (13.94%)	89 (15.50%)	91 (15.85%)	113 (19.69%)	201 (35.02%)	1.89
E-books	62 (10.80%)	72 (12.55%)	70 (12.20%)	185 (32.24%)	185 (32.24%)	1.23
Institutional repository / theses	91 (15.85%)	82 (14.29%)	103 (17.94%)	197 (34.32%)	101 (17.59%)	4.23
Databases (Scopus/PubMed/IEEE)	127 (22.13%)	94 (16.38%)	123 (21.43%)	131 (22.82%)	99 (17.25%)	5.86
Library OPAC	56 (9.76%)	61 (10.63%)	111 (19.34%)	211 (36.78%)	135 (23.52%)	4.47

Source: Computed from the Survey Data

Table 3 shows the frequency of use of digital resources among respondents. E-journals were the most used, with 19.69% accessing them “often” and 35.02% “very often/always.” E-books were also popular, with 64.48% using them frequently. Institutional repositories and theses were used moderately, while subscription-based databases like Scopus, Pub Med, and IEEE showed mixed use 22.82% used

them “often,” but 22.13% never used them. The Library OPAC was important for resource discovery, with 36.78% using it “often” and 23.52% “very often/always.” Chi-square (χ^2) values indicated uneven adoption for databases (5.86) and OPAC (4.47), while e-journals (1.89) and e-books (1.23) were more consistently used. Overall, respondents preferred e-journals, e-books, and OPAC, while subscription databases



and institutional repositories were less frequently utilized.

4. Way of Accessing Digital Resources:

Table-4: Way of Accessing Digital Resources		
Way of accessing	Yes	Percentage
Mobile	203	35.37%
On-campus computers	194	33.80%
Off-campus (VPN)	99	17.25%
Laptop (Wi-Fi)	78	13.59%
Total	574	100%

Source: Computed from the Survey Data

Table 4 presents the ways respondent's access digital library resources. Mobile devices

were the most commonly used method, with 35.37% of respondents accessing resources through smart phones or tablets. On-campus computers were used by 33.80% of participants, indicating that physical library facilities remain important. Off-campus access via VPN was reported by 17.25% of users, reflecting moderate use of remote connectivity. Laptops with Wi-Fi were the least used, with 13.59% of respondents relying on them. Overall, the findings show that mobile access and on-campus computers are the preferred modes for using digital resources, while remote and Wi-Fi-based access are less frequent.

5. End-User Satisfaction:

Table-5: End-user satisfaction						
Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	χ^2 Value
Adequate access to e-journals and databases	52 (09.06%)	61 (10.63%)	39 (6.80%)	246 (42.86%)	176 (30.66%)	3.39
Catalogue (OPAC) is easy to use	87 (15.16%)	81 (14.11%)	49 (8.54%)	256 (44.60%)	101 (17.59%)	4.41
Remote/off-campus access is reliable	51 (8.89%)	63 (10.98%)	48 (8.36%)	189 (32.92%)	223 (38.85%)	3.67
Library staff provide helpful support	91 (15.85%)	81 (14.11%)	23 (4.01%)	256 (44.60%)	123 (21.43%)	6.45
Library provides training/workshops	48 (8.36%)	89 (15.50%)	31 (5.40%)	223 (38.85%)	183 (31.88%)	3.63
Internet/Wi-Fi supports digital resource use	77 (13.41%)	99 (17.25%)	61 (10.63%)	194 (33.81%)	143 (24.91%)	4.63
Overall satisfaction with digital services	52 (09.06%)	61 (10.63%)	39 (6.80%)	226 (39.37%)	196 (34.15%)	5.01

Source: Computed from the Survey Data

Table 5 shows respondents' satisfaction with digital library services. Most participants were satisfied with access to e-journals and databases, with 42.86% agreeing and 30.66% strongly agreeing. The OPAC catalogue was also rated positively, though 29.27% expressed dissatisfaction. Remote/off-campus access and

library staff support received high approval, but some respondents reported mixed experiences, especially for staff support ($\chi^2 = 6.45$). Training/workshops and Internet/Wi-Fi were generally well received, though about 30% expressed dissatisfaction. Overall satisfaction with digital services was strong, with most



respondents agreeing or strongly agreeing. Chi-square values indicated that responses varied more for staff support and Internet/Wi-Fi, while

access to e-resources and training showed consistent satisfaction patterns.

6. Challenges faced by end-users:

Table-6: Challenges faced by end-users						
Various Challenges	Never	Rarely	Sometimes	Often	Very often/Always	χ^2 Value
Login/authentication failures	226 (39.37%)	196 (34.15%)	39 (6.80%)	61 (10.63%)	52 (9.06%)	1.01
Difficulty locating e-resources	195 (33.97%)	144 (25.09%)	59 (10.28%)	98 (17.07%)	78 (13.59%)	1.89
Pay walls / limited subscriptions	122 (21.26%)	82 (14.29%)	254 (44.25%)	93 (16.20%)	23 (4.01%)	2.81
Slow or unreliable internet	114 (19.86%)	189 (32.92%)	97 (16.90%)	81 (14.11%)	93 (16.20%)	3.39
Lack of awareness of resources	257 (44.77%)	103 (17.94%)	118 (20.56%)	43 (7.49%)	53 (9.23%)	1.33
Lack of training in using resources	99 (17.25%)	103 (17.94%)	155 (27.00%)	74 (12.89%)	143 (24.91%)	2.64

Source: Computed from the Survey Data

Table 6 highlights the challenges faced by respondents in using digital library resources. The most common issue was pay walls and limited subscriptions, experienced “sometimes” by 44.25% and “often” by 16.20% of users. Lack of training was also significant, with 27.00% reporting it “sometimes” and 24.91% “very often/always.” Slow or unreliable internet affected access, with 32.92% experiencing it “rarely” and 16.20% “very often/always.” Challenges in locating e-

resources and login/authentication failures were less frequent, while lack of awareness affected about 20% of respondents. Chi-square values showed higher variation for internet reliability ($\chi^2 = 3.39$) and pay walls ($\chi^2 = 2.81$), and lower variation for login issues ($\chi^2 = 1.01$) and awareness ($\chi^2 = 1.33$). Overall, access issues, inadequate training, and infrastructure were the main obstacles, while awareness and authentication were less problematic.

7. Impact of Digital Resources:

Table-7: Impact of Digital Resources						
Impact Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	χ^2 Value
Access improves coursework quality	54 (9.41%)	60 (10.45%)	45 (7.84%)	189 (32.92%)	226 (39.37%)	3.81
Resources support research/literature reviews	70 (12.20%)	99 (17.25%)	68 (11.84%)	194 (33.80%)	143 (24.91%)	4.58
Resources save time	72 (12.55%)	71 (12.37%)	39 (6.80%)	206 (35.90%)	186 (32.40%)	6.23
Availability enhances collaboration	91 (15.85%)	81 (14.11%)	33 (5.75%)	246 (42.86%)	123 (21.43%)	5.42

Source: Computed from the Survey Data



Table 7 shows respondents' perceptions of the impact of digital resources on academic activities. Most participants agreed that digital resources improve coursework quality (32.92% agree, 39.37% strongly agree; $\chi^2 = 3.81$). For research and literature reviews, 33.80% agreed and 24.91% strongly agreed, though 29.45% disagreed ($\chi^2 = 4.58$). Digital resources were seen as time-saving, with 35.90% agreeing and

32.40% strongly agreeing ($\chi^2 = 6.23$), and they also enhanced collaboration, with 42.86% agreeing and 21.43% strongly agreeing ($\chi^2 = 5.42$). Overall, digital resources positively support coursework, research, time management, and collaboration, though training, awareness, and consistent access are needed to maximize their benefits.

8. Expectations and Suggestions:

Table-8: Expectations and Suggestions						
Improvement Area	Not Important	Unimportant	Neutral	Important	Very Important	χ^2 Value
Better remote access	70 (12.20%)	100 (17.42%)	67 (11.67%)	191 (33.28%)	146 (25.43%)	6.43
Expanded subscriptions	51 (8.89%)	59 (10.28%)	45 (7.84%)	187 (32.59%)	232 (40.41%)	5.96
Regular training/workshops	73 (12.72%)	56 (9.76%)	85 (14.81%)	257 (44.77%)	103 (17.94%)	5.02
Improved website/interface	101 (17.60%)	84 (14.64%)	23 (4.01%)	182 (31.71%)	184 (32.04%)	4.85
Better Wi-Fi/computers	56 (9.76%)	77 (13.41%)	62 (10.80%)	177 (30.83%)	202 (35.20%)	6.61
Subject-specific guides	53 (9.23%)	61 (10.63%)	46 (8.01%)	189 (32.92%)	225 (39.20%)	5.89

Source: Computed from the Survey Data

Table 8 shows respondents' expectations and suggestions for improving digital library services. Expanded subscriptions were the top priority, with 40.41% rating them "very important" and 32.59% "important" ($\chi^2 = 5.96$). Better Wi-Fi and computer facilities were also highly valued (35.20% very important, 30.83% important; $\chi^2 = 6.61$), along with better remote access, which 58.71% considered important or very important. Training and workshops were expected by many (44.77% important, 17.94% very important; $\chi^2 = 5.02$), and subject-specific guides were also favored (39.20% very important, 32.92% important; $\chi^2 =$

5.89). Website/interface improvements received mixed responses, with about one-third rating it neutral or less ($\chi^2 = 4.85$). Overall, respondent's prioritized access, infrastructure, and user support, while training and subject-specific guidance remain important for effective digital resource use.

Conclusions:

The study indicates that students, particularly undergraduates and postgraduates, formed the majority of respondents, with balanced representation from Science, Engineering, and Pharmacy disciplines and



higher female participation. Library use was frequent, especially among engineering and science students, while pharmacy students visited less often. Among digital resources, e-journals, e-books, and OPAC were most commonly used, whereas subscription databases and institutional repositories were less accessed. Respondents reported overall satisfaction with digital library services, particularly in accessing e-resources, remote connectivity, and training/workshops, though OPAC usability, staff support, and Internet/Wi-Fi showed mixed experiences.

Major challenges included pay walls, limited subscriptions, slow or unreliable internet, and inadequate training, while login issues and lack of awareness were less significant. Digital resources were perceived to enhance coursework quality, research efficiency, time management, and collaboration, highlighting their positive academic impact. Key expectations emphasized expanded subscriptions, better infrastructure, improved remote access, targeted training, subject-specific guides, and user-friendly interfaces. Overall, the findings suggest that academic libraries are valuable for teaching and research, but improvements in access, infrastructure, training, and usability are essential to fully meet user needs and maximize the benefits of digital resources.

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