



A Study on the Awareness and Utilization of Web and Mobile-enabled Library and Information Services among the Faculty Members, Researchers, and Students of PES University, Bengaluru

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ABSTRACT

This study aimed to ascertain the awareness and utilization of web and mobile-based library and information services among faculty members, full-time researchers, and postgraduate students at PES University (PESU), Bengaluru. The data were collected from 125 respondents through a structured questionnaire. The findings of the study revealed that the PESU library offers 36 out of 52 web and mobile-enabled services (as per the checklist prepared by the researchers), significantly catering to user needs. It is good to note that all 125 (100%) respondents used these web and mobile-based library resources for their learning, teaching, and research purposes. The faculty members have the highest level of awareness, followed by research scholars, whereas students would benefit from additional awareness programs to fully utilize the available web resources. Usage rates vary across services, but e-mail reference, virtual reference, and online current awareness are popular (80.8%-90.4%). Databases have high usage rates (85%) along with other services such as (Online Interlibrary loans (ILL), QR code-based services, and social media-based services (64.8%), which have lower utilization (65.12% and 69.77%, respectively). The study suggests that while some library services are widely used, others require more publicity. Implementing web and mobile literacy instructions and technical support could improve the usage of these services. The findings highlight the importance of these perspectives in designing and enhancing web services.

Keywords: Web and mobile-based library and information services, University library, Bengaluru, Web OPAC, Mobile OPAC

1. Introduction

In the digital age, libraries have evolved significantly, becoming dynamic hubs of digital information accessible anytime and anywhere through the internet. Web and mobile-based library and information services have become essential in the digital age, reshaping how libraries operate and serve their patrons. This transformation is driven by the rapid development of Internet and web technologies, significantly impacting traditional library services. Libraries now offer e-books, academic journals, multimedia content, and databases through online portals, democratizing information access for researchers, students, and the general public. Web-based information services also foster collaboration and knowledge-sharing, serving as virtual communities for discussions, workshops, and collaborative research projects. Web and mobile-based library and information services have become essential components of modern libraries. Libraries are increasingly leveraging these digital tools like online forums, virtual reference services, and interactive learning modules to engage users in innovative ways to meet the evolving needs of their patrons, ensuring that they remain relevant and valuable in the digital era (Sushma & Ramesha, 2022).

The emergence of web and mobile technologies has revolutionized how users interact with libraries, allowing them to submit inquiries from anywhere and at any time. Web-based library services, digital library services, electronic library services, and internet-based library services each hold significant and comparative importance (Bhatnagar, 2005). These terms emphasize the changing dynamics of library services in the digital age. Specifically, web-based information services have seen significant popularity among users, prompting a strong emphasis on their advancement within library systems (Krishnamurthy and Chan, 2005). This increasing focus highlights the transformative effect of web technology on libraries, where easy access to resources and information improves the user experience and propels the evolution of information distribution practices (Sushma & Ramesha, 2023).

2. Web and Mobile-based Library and Information Services

This integration of web and mobile technologies ensures continuous access to information and services from any location worldwide. It also introduces personalized recommendations and collaborative platforms, creating a user-centric and interactive library experience that perfectly aligns with the dynamic digital environment.

According to White (2001), web-based library services can be generally described as “an information access service where users submit inquiries through electronic methods such as email or online forms.” Madhusudhan (2012) stated that “web-based library services” are the delivery of library services via the Internet using a library website as the gateway and supported by an integrated library management system. By employing web technologies and an integrated system, libraries can improve their ability to offer comprehensive and user-centric services to their patrons, surpassing physical boundaries and fully embracing the digital realm’s potential.

Elahi (2016) defined “mobile-based library information delivery patterns” as the arrangements and methods through which a library’s services and information can be distributed to its users using mobile phones. It highlights the evolving nature of information dissemination, where mobile phones serve as a crucial conduit for enhancing the accessibility and delivery of library services in a mobile-driven era. Modern libraries provide an extensive array of web and mobile-based services that greatly simplify accessing information and resources. Among the most popular services are Web OPAC, M-OPAC, Ask-a-Librarian, Bulletin Board, web forms, digital reference, online document delivery, interlibrary loan, online tutorials, current awareness bulletins, email-based services, electronic databases, online circulation, SDI services, electronic article alerts, web-scale discovery, mobile apps, QR-Code based services, library guides, and many others.

3. Research objectives

The following research objectives were established to analyse the web and mobile-based library and information services provided by the PES university library and information centre:

1. To analyse the web and mobile-based library and information services provided by the PES University Library;
2. To examine the level of awareness of web and mobile-based library and information services among the user community;
3. To assess the usage patterns and purposes of web and mobile-based library and information services;
4. To ascertain the importance of web and mobile-based library and information services;
5. To study user opinions on the effectiveness and value of these services provided by the PESU Library

4. Scope and methodology

The survey targeted 150 PES University, Bangalore respondents to investigate the awareness and usage satisfaction of web and mobile-based library and information services. The structured questionnaires were personally distributed to selected individuals, including postgraduate students, full-time research scholars, and faculty members from various departments of PES University. Participants were chosen using a stratified accidental random sampling method, and the researcher interacted with respondents in the university library at the time of the survey to avail more in-depth and qualitative insights into their awareness and satisfaction levels.

5. Existence of the web/mobile-enabled library and information services

Table 1 offers a comprehensive overview of the web and mobile-enabled library and information services at the PESU Library. The PES University Library provides 36 out of the 52 listed services, ensuring extensive support for users' web-based library and information needs.

The PESU Library offers extensive web and mobile-enabled services, excelling particularly in e-databases, other web resources and services, and research support systems. However, there are significant gaps, especially in acquisition and research support, where key services remain unavailable. While the library excels in offering a variety of digital resources and ensuring remote access, it could benefit from expanding services such as virtual reference, online loan renewals, and comprehensive research guidance to support its users better. The absence of mobile apps and certain interactive services like real-time chat also highlights areas for potential improvement to enhance user engagement and accessibility.

6. Analysis of the study

The responses obtained from the faculty members, full-time researchers, and PG students of PESU were analysed and interpreted in the following sections, presented in tables and descriptions.

6.1. Population Characteristics

Table 1 reveals a balanced distribution between male and female respondents, with a slight predominance of males. Table 2 shows a significant proportion of respondents under 30 years old, especially students, reflecting the young demographic of the university population. Faculty members and research scholars are more evenly distributed across the higher age brackets of 30-40 and 40-50 years. This demographic data provides valuable insights for understanding the composition of the survey respondents and can give personalized library and information services to meet the specific needs of these distinct groups.

Web/Mobile –Enabled	Existence	Web/Mobile –Enabled	Existence
I. Reference Services		II. Acquisition Services	
E-mail/SMS-based Services	Yes	Online bibliographic database	Yes
Virtual Reference/Ask-a-Librarian	No	Online Index	No
Online Current Awareness Services	Yes	Alert services for new editions	No
Online Selective Dissemination of Information	Yes	Online purchase requests	Yes
Online Document Delivery Service	Yes	Online list of new arrivals	Yes
		Online acquisition policies	No
III. Circulation Services		IV. Catalogue/ Periodical/ Journals Services	
Alert service (Issue/Return/Reminder)	Yes	Web OPAC/Mobile-OPAC	Yes
Online reservation of documents	Yes	Search multiple library catalogues	No
Online renewal of loan document	No	Pro-active web-based table of content	Yes
Patron account status online	Yes	Article alert services	No
Circulations policies online	No		
V. e- Database Services		VI. Other Resources/Services	
E-Books	Yes	Online Inter Library Loan (ILL)	Yes
E-Journals	Yes	Remote Access Services	Yes
E-Bibliographic Database	Yes	Online subject gateways	Yes
E- Newspapers/Magazines	Yes	Virtual library tours	No
Electronic Theses & Dissertations	Yes	Web-based user education	Yes
		Library news online	Yes
E- Audio-video materials	No	Web-based FAQs (Frequently Asked Questions)	Yes
		Library policies online	No
Institutional Repository/ Digital Library	Yes	Newspaper clippings online	Yes
		Online feedback form	Yes
VII. Research Support Services		Chat with library/ Real-time service	No
Research Guide	No	Library Blog	No
Web-based journal finder for literature search	Yes	QR Code-based services	Yes
Scholarly publishing & Copyright services	Yes	Social media-based services	Yes
Plagiarism/Similarity checking	Yes	Mobile-compatible library website	Yes
Reference / Cite management support	Yes	Mobile apps	No
Shodh Gangotri / Shodh Ganga	Yes	Online learning and teaching platform (video conferencing apps)	Yes
Patent Information and Patent Search	No	Web-scale discovery services	No

Table 1. Existence of the web/mobile-enabled library and information services

Gender	Faculty Member	Research Scholar	Students	Total (n=125)	%
Male	12	9	47	68	54.4
Female	18	11	28	57	45.6
	30	20	75	125	100

Table 2. Gender-wise Population Characteristics

Age	Faculty Member	Research Scholar	Students	Total (n=125)	%
<30	2	5	75	82	65.6
30-40	9	13	0	22	22.1
40-50	19	2	0	21	8.14
	30	20	75	125	100

Table 3. Age-wise Population Characteristics

6.2. Type of access to library resources

Type of access	Faculty Member	Research Scholar	Students	Total (n=125)	%
Manual reach	29	18	68	115	92
Web-enabled	26	12	56	94	75.2
Mobile enabled	20	9	52	81	64.8
All of them	23	6	51	80	64

Table 4. Type of access to library resources

Table 4 reveals the preferred methods of accessing library resources among respondents. Manual access is the most common, used by 92% of respondents, indicating a strong preference for physical visits. Web-enabled access is the next most common, used by 75.2% of respondents, highlighting significant engagement with online resources. Mobile-enabled access is used by 64.8%, showing a substantial shift towards mobile technology. Notably, 64% of respondents utilize all available access methods, reflecting a diverse approach to resource accessibility among the university community.

6.3. Use and purpose of web and mobile-based library and information resources and services

Description	Faculty Member	Research Scholar	Students	Total (n=125)	%
Yes	30	20	75	125	100
No	0	0	0	0	0
	30	20	75	125	100

Table 5. Use of web and mobile-based library and information resources and services

Purpose	Faculty Member	Research Scholar	Students	Total (n=125)	%
-To fulfil the learning needs	23	12	42	77	61.6
-To fulfil the research needs	18	19	7	44	35.2
-To fulfil the teaching needs	28	2	2	32	25.6
-To update current and latest information on the subject	22	12	29	63	50.4

Table 6. Purpose of using web and mobile-based library and information sources

Web and mobile-based library services	Faculty Member	Research Scholar	Students	Total (n=125)	%
Reference Services					
E-mail based Services	28	19	66	113	90.4
Online Current Awareness (CAS)	30	15	58	103	82.4
Online Selective Dissemination of Information (SDI)	29	14	64	107	85.6
Online Document Delivery	28	14	59	101	80.8
Acquisition Services					
Online bibliographic database	23	18	54	95	76
Online purchase requests	30	16	55	101	80.8
Online list of new arrivals	28	16	56	100	80
Circulation Services					
Alert services: E-mail & SMS (Issue, Return & Reminder)	25	18	63	106	84.8
Online reservation of documents	26	19	57	102	81.6
Patron account status online	25	19	58	102	81.6
e-Database Services					
E-Books	26	18	64	108	86.4
E-Journals	26	17	62	105	84
E-Bibliographic Database	27	17	62	106	84.8
E- Newspapers/Magazines	27	18	68	113	90.4
Electronic Theses & Dissertations	28	18	61	107	85.6
Institutional Repository/ Digital Library	24	18	62	104	83.2
E- Audio-video materials	27	18	61	106	84.8
Cataloguing/OPAC/Periodical Services					
Web OPAC/Mobile OPAC	21	12	54	87	69.6
Pro-active web-based table of content (TOC)	21	13	58	92	73.6
Other Services					
Online Inter Library Loan (ILL)	19	12	50	81	64.8
Remote Access Services	21	13	50	84	67.2
Online subject gateways	26	14	56	96	76.8
Library News Online	24	17	57	98	78.4
Web-based user education	22	18	53	93	74.4
Web-based FAQs (Frequently Asked Questions)	24	17	50	91	72.8
Newspaper clippings online	24	18	57	99	79.2
Online feedback form	22	12	52	86	68.8
QR code-based services	24	17	57	98	78.4
Social media-based services	22	18	53	93	74.4
Mobile-compatible library website	24	17	50	91	72.8
Online learning and teaching platform (video conferencing apps)	27	18	61	106	84.8
Research Support Services					
Web-based journal finder for literature search	26	18	57	101	80.8
Scholarly publishing & Copyright services	26	16	57	99	79.2
Plagiarism/Similarity checking	26	17	58	101	80.8
Reference / Cite management support	26	17	55	98	78.4
Shodh Gangotri / Shodh Ganga	25	15	56	96	76.8

Table 7. Awareness of Web and Mobile-based Library and Information Services

According to Table 5, all 125 respondents, comprising faculty members, research scholars, and students, use web and mobile-based library and information resources and services. This demonstrates a 100% adoption rate, emphasizing the importance and widespread acceptance of these web resources at PESU. Table 6 outlines the various purposes of utilizing web- and mobile-based information sources. The primary purpose is to meet learning needs, as indicated by 61.6% of respondents. The next most common use is to update current and latest information on the subject, with 50.4% of respondents. Research needs account for 35.2%, predominantly among research scholars, while 25.6% of respondents, mainly faculty members, use these resources for teaching needs. This data highlights the versatile utility of web-based library services in supporting learning, research, teaching, and staying updated with current information.

Table 7 provides detailed insights into the awareness levels of various web and mobile-based library services among faculty members, research scholars, and students at PESU. The total number of respondents for this analysis is 125. Awareness is highest for email-based services, with 90.4% of respondents. Online selective dissemination of information (SDI) services also has a high awareness rate of 85.6%. Online current awareness services (CAS) and online document delivery are known by 82.4% and 80.8% of respondents, respectively. The most recognized acquisition service is online purchase requests, with 80.8% awareness. The online list of new arrivals and online bibliographic databases follow closely, with 80% and 76% awareness levels, respectively.

The alert services via email and SMS (issue, return, and reminder) have a high awareness rate of 84.8%. Online reservation of documents and patron account status online is known by 81.6% of respondents. E-newspapers/magazines and e-books have the highest awareness of E-Database Services, at 90.4% and 86.4%, respectively. Awareness of e-bibliographic databases, e-journals, electronic theses and dissertations, and e-audio-video materials is also high, ranging between 84% and 85.6%. Awareness of web OPAC/mobile OPAC stands at 69.6%, while pro-active web-based table of content (TOC) services are known by 73.6% of respondents. Awareness of online interlibrary loan (ILL) services is at 64.8%, while remote access services are known by 67.2%. Online subject gateways, library news online, web-based user education, and newspaper clippings online have 72.8% and 79.2% awareness rates. QR code-based services and social media-based services have awareness levels of 78.4% and 74.4%, respectively. The highest awareness in this category is for plagiarism/similarity checking services at 80.8%. Web-based journal finders for literature search, scholarly publishing and copyright services, and reference/cite management support all have awareness rates above 78%.

The data indicates that email-based services, e-newspapers/magazines, and e-books are the most well-known among respondents, with awareness rates of 90.4%, 90.4%, and 86.4%, respectively. This high awareness underscores the importance and integration of digital resources in the academic and research activities at PESU. The widespread knowledge of these services suggests effective communication and a solid digital presence within the library's offerings, catering to the diverse needs of the faculty, research scholars, and students.

6.5. Usage of web and mobile-based library and information services

Table 8 presents a comprehensive analysis of web and mobile-based library service usage among faculty members, research scholars, and students at PESU. The survey includes 125 respondents, with the most commonly used email-based services. Other services include online current awareness services (CAS), online selective dissemination of information (SDI), and online document delivery services. The highest usage is in acquisition services, with online purchase requests, bibliographic databases, and online lists of new arrivals. Circulation services include alerts via email and SMS, online reservation of documents, and patron account status online. E-database services include e-newspapers/magazines, e-books, electronic theses and dissertations, e-journals, e-bibliographic databases, and e-audio-video materials.

Web OPAC/mobile OPAC, while proactive web-based table of contents (TOC) service has a usage rate of 72.8%. Other services include online interlibrary loan (ILL) and remote access services, library news online, web-based user education, and newspaper clippings online. Social media-based and QR code-based services have a usage rate of 64.8% each. Research

Web and mobile-based library services	Faculty Member	Research Scholar	Students	Total (n=125)	%
Reference Services					
E-mail based Services	28	19	66	113	90.4
Online Current Awareness (CAS)	30	15	58	103	82.4
Online Selective Dissemination of Information (SDI)	27	13	64	104	83.2
Online Document Delivery	28	14	59	101	80.8
Acquisition Services					
Online bibliographic database	23	18	54	95	76
Online purchase requests	30	16	55	101	80.8
Online list of new arrivals	27	16	55	98	78.4
Circulation Services					
Alert services: E-mail & SMS (Issue, Return & Reminder)	26	16	61	103	82.4
Online reservation of documents	26	19	57	102	81.6
Patron account status online	25	15	58	98	78.4
e-Database Services					
E-Books	27	18	62	107	85.6
E-Journals	27	17	62	106	84.8
E-Bibliographic Database	27	17	60	104	83.2
E- Newspapers/Magazines	27	18	63	108	86.4
Electronic Theses & Dissertations	28	18	61	107	85.6
Institutional Repository/ Digital Library	24	12	61	97	77.6
E- Audio-video materials	26	18	59	103	82.4
Cataloguing/OPAC/Periodical Services					
Web OPAC/Mobile OPAC	20	12	53	85	68
Pro-active web-based table of content (TOC)	24	12	55	91	72.8
Other Services					
Online Inter library loan (ILL)	21	12	48	81	64.8
Remote Access Services	18	12	51	81	64.8
Online subject gateways	24	14	56	94	75.2
Library News Online	23	14	53	90	72
Web-based user education	23	17	50	90	72
Web-based FAQs (Frequently Asked Questions)	20	17	52	89	71.2
Newspaper clippings online	23	16	54	93	74.4
Online feedback form	21	14	48	83	66.4
QR Code-based services	21	12	48	81	64.8
Social media-based services	18	12	51	81	64.8
Mobile-compatible library website	24	14	56	94	75.2
Online learning and teaching platform (video conferencing apps)	23	14	53	90	72
Research Support Services					
Web-based journal finder for literature search	26	18	56	100	80
Scholarly publishing & Copyright services	26	16	53	95	76
Plagiarism/Similarity checking	25	17	56	98	78.4
Reference / Cite management support	25	17	53	95	76
Shodh Gangotri / Shodh Ganga	24	17	54	95	76

Table 8. Use of Web and Mobile-based Library and Information Services

support services include web-based journal finders for literature search, plagiarism/similarity checking services, scholarly publishing and copyright services, reference/cite management support, and Shodh Gangotri/Shodh Ganga.

The data indicates that email-based services, e-newspapers/magazines, e-books, and electronic theses and dissertations are the most used web and mobile-based library services, with usage rates above 85%. This high usage highlights the importance of these services in supporting academic and research activities at PESU. The strong engagement with e-databases and reference services indicates the significance of digital resources in fulfilling the diverse needs of faculty, research scholars, and students. The varied usage patterns across different service categories suggest a broad acceptance and reliance on digital library resources within the university community.

Table 9 presents data on the perceived importance of various web and mobile-based library services among faculty members, research scholars, and students at PESU. 86.4% of respondents highly value online document delivery services, with e-mail-based services, online current awareness, and online selective dissemination of information also highly valued. Acquisition services are rated as important by 76.8%, with online bibliographic databases and purchase requests being valued at 80% or higher. Circulation services are rated as important by 78.4%, with online reservation of documents and patron account status valued at 79.2% and 72%, respectively. E-database services are highly valued by 81.6%, with e-newspapers/magazines, e-books, e-journals, and electronic theses and dissertations valued at 80% or higher. Cataloguing/OPAC/Periodical services are rated as important by 68.8%, with proactive web-based table of contents (TOC) services at 75.2%. Other services include online interlibrary loan (ILL) services, remote access services, and online subject gateways, FAQs, QR code-based services, and online learning and teaching platforms. Research support services include web-based journal finders for literature search, scholarly publishing and copyright services, plagiarism/similarity checking services, and reference/cite management support.

The data reveals that online document delivery services, e-newspapers/magazines, and scholarly publishing and copyright services are perceived as highly important among the web and mobile-based library services at PESU. These services play an important role in supporting academic and research activities, indicating a strong recognition of their value in enhancing learning, research, and scholarly communication. The varied importance ratings across different service categories highlight the diverse needs and priorities of faculty members, research scholars, and students, emphasizing the critical role of digital resources in modern academic environments.

6.6. Opinion on web and mobile-based library and information services

Table 10 reveals the opinions of faculty members, research scholars, and students at PESU regarding web and mobile-based library services. Most (71.2%) agree that PESU's library provides enough web-enabled resources for learning, teaching, and research. A substantial proportion (60%) agree or strongly agree that the library provides sufficient support for using these services, indicating institutional support for leveraging digital tools in academic activities. However, opinion is mixed regarding the compatibility of the library's website with handheld devices. While 50.4% agree or strongly agree that the website is compatible, 36% are neutral or disagree, indicating room for improvement. A strong inclination (51.2%) is towards using handheld devices more if library resources are more mobile-friendly, emphasizing the importance of mobile-friendly library services. The majority (70.4%) agree that web/mobile literacy instructions with technical support would increase the use of digitally enabled library services, highlighting the value of educational support in enhancing engagement with digital resources.

It reflects a positive perception of the availability and support of web and mobile-based library services at PESU, particularly in facilitating learning, teaching, and research activities. However, there are clear opportunities for improvement in enhancing mobile compatibility and providing adequate technical support to encourage further the use of web and mobile-based resources among faculty, research scholars, and students. Addressing these aspects

Web and mobile-based library services	Faculty Member	Research Scholar	Students	Total (n=125)	%
Reference Services					
E-mail based Services	24	17	65	106	84.8
Online Current Awareness (CAS)	26	17	63	106	84.8
Online Selective Dissemination of Information (SDI)	25	14	61	100	80
Online Document Delivery	26	15	67	108	86.4
Acquisition Services					
Online bibliographic database	21	17	58	96	76.8
Online purchase requests	24	16	60	100	80
Online list of new arrivals	20	16	58	94	75.2
Circulation Services					
Alert services: E-mail & SMS (Issue, Return & Reminder)	22	15	61	98	78.4
Online reservation of documents	23	15	61	99	79.2
Patron account status online	20	15	55	90	72
D. e-Database Services					
E-Books	23	14	62	99	79.2
E-Journals	23	14	63	100	80
E-Bibliographic Database	23	13	61	97	77.6
E- Newspapers/Magazines	24	13	65	102	81.6
Electronic Theses & Dissertations	24	13	63	100	80
Institutional Repository/ Digital Library	21	14	61	96	76.8
E- Audio-video materials	23	14	66	103	82.4
Cataloguing/OPAC/Periodical Services					
Web OPAC/Mobile OPAC	18	11	57	86	68.8
Pro-active web-based table of content (TOC)	22	13	59	94	75.2
Other Services					
Online Inter library loan (ILL)	14	16	56	86	68.8
Remote Access Services	18	17	59	94	75.2
Online subject gateways	21	19	59	99	79.2
Library News Online	20	17	57	94	75.2
Web-based user education	20	18	53	91	72.8
Web-based FAQs (Frequently Asked Questions)	20	18	59	97	77.6
Newspaper clippings online	18	12	57	87	69.6
Online feedback form	14	16	56	86	68.8
QR Code-based services	21	19	59	99	79.2
Social media-based services	20	17	57	94	75.2
Mobile compatible library website	20	18	53	91	72.8
Online learning and teaching platform (video conferencing apps)	20	18	59	97	77.6
Research Support Services					
Web-based journal finder for literature search	22	18	62	102	81.6
Scholarly publishing & Copyright services	23	18	63	104	83.2
Plagiarism/Similarity checking	21	18	62	101	80.8
Reference / Cite management support	20	17	61	98	78.4
Shodh Gangotri / Shodh Ganga	22	16	62	100	80

Table 9. Importance of Web and Mobile-based Library and Information Services

Description	Faculty Member	Research Scholar	Students	Total (n=125)	%
My University Library provides enough web-enabled library resources for learning, teaching and research					
Strongly Disagree	3	2	4	9	7.2
Disagree	1	0	2	3	2.4
Neutral	8	1	15	24	19.2
Agree	11	12	38	61	48.8
Strongly Agree	7	5	16	28	22.4
	30	20	75	125	100
My University Library provides enough support for the use of web and mobile-based library services					
Strongly Disagree	2	2	3	7	5.6
Disagree	2	2	6	10	8
Neutral	8	2	23	33	26.4
Agree	10	10	30	50	40
Strongly Agree	8	4	13	25	20
	30	20	75	125	100
My University Library website is compatible with handheld (Mobile) devices					
Strongly Disagree	4	2	2	8	6.4
Disagree	1	1	10	12	9.6
Neutral	10	6	26	42	33.6
Agree	9	8	23	40	32
Strongly Agree	6	3	14	23	18.4
	30	20	75	125	100
I would use my handheld devices if there were more resources in the library that were compatible with it					
Strongly Disagree	4	1	1	6	4.8
Disagree	2	3	14	19	15.2
Neutral	9	7	20	36	28.8
Agree	13	6	31	50	40
Strongly Agree	2	3	9	14	11.2
	30	20	75	125	100
Web/Mobile literacy instructions with technical support will increase my use of more digitally enabled library services					
Strongly Disagree	2	1	1	4	3.2
Disagree	0	1	7	8	6.4
Neutral	7	5	13	25	20
Agree	14	10	40	64	51.2
Strongly Agree	7	3	14	24	19.2
	30	20	75	125	100

Table 10. Opinion on Web and Mobile-based Library and Information Services

could potentially enhance user satisfaction and maximize the utility of web services in academic settings.

Table 10 reveals the opinions of faculty members, research scholars, and students at PESU regarding web and mobile-based library services. Most (71.2%) agree that PESU's library provides enough web-enabled resources for learning, teaching, and research. A substantial

proportion (60%) agree or strongly agree that the library provides sufficient support for using these services, indicating institutional support for leveraging digital tools in academic activities. However, opinion is mixed regarding the compatibility of the library's website with handheld devices. While 50.4% agree or strongly agree that the website is compatible, 36% are neutral or disagree, indicating room for improvement. A strong inclination (51.2%) is towards using handheld devices more if library resources are more mobile-friendly, emphasizing the importance of mobile-friendly library services. The majority (70.4%) agree that web/mobile literacy instructions with technical support would increase the use of digitally enabled library services, highlighting the value of educational support in enhancing engagement with digital resources.

It reflects a positive perception of the availability and support of web and mobile-based library services at PESU, particularly in facilitating learning, teaching, and research activities.

However, there are clear opportunities for improvement in enhancing mobile compatibility and providing adequate technical support to encourage further the use of web and mobile-based resources among faculty, research scholars, and students. Addressing these aspects could potentially enhance user satisfaction and maximize the utility of web services in academic settings.

7. Suggestions to strengthen web-enabled library and information services

Through the comprehensive survey and subsequent data analysis, the researchers have been empowered to formulate practical recommendations to elevate web and mobile-based library and information services across university libraries. These recommendations, derived from user feedback and the study's insights, include strategies that can significantly enhance the library experience. The following are some of the key strategies:

- Conduct regular workshops, orientations, and training sessions to increase faculty, research scholars, and students' awareness of web—and mobile-enabled library services.
- Utilize various communication channels such as email newsletters, social media, and notice boards to disseminate information about specific services
- Focus on optimizing the library website and resources for better compatibility with mobile devices.
- Provide robust technical support for users encountering issues accessing or using web—and mobile-based library services. Establish a dedicated helpdesk or online support portal to address queries promptly.
- Offer regular training sessions or online tutorials covering basic troubleshooting and navigating digital library resources.
- Promote interactive features like online forums, chat support, and virtual reference services. to facilitate real-time assistance and personalized guidance for users seeking information.
- Encourage feedback loops where users can provide input on their experiences with specific services, helping to refine and improve service delivery.
- Collaborate with publishers, academic societies, and other institutions to expand the range of e-books, e-journals, databases, and multimedia resources.
- Implement user-centric policies that prioritize user needs and preferences in developing and deploying web-enabled library services.
- Regularly assess and update these policies based on feedback from faculty, research scholars, and students to ensure alignment with evolving technological trends and educational requirements.

8. Conclusion

The study explores integrating web and mobile technologies in library services at PES University, Bengaluru, aiming to provide personalized access, recommendations, and interactive experiences. The library offers 36 out of 52 web and mobile-enabled services. The study found that all 125 participants use web and mobile-based library resources for learning, teaching, and research purposes. The comprehensive analysis of awareness, use, and perceived importance of web-enabled library and information services at PESU highlights strengths and improvement areas. The data indicates high awareness and utilization across various user groups, with significant reliance on services such as e-books, online journals, and online document delivery. These services are crucial for supporting learning, teaching, and research endeavours. However, the findings also reveal opportunities to enhance these services further. Improving mobile compatibility, expanding technical support, and increasing awareness through targeted campaigns are essential. Moreover, there is a clear demand for more interactive features and expanded content resources, which could be achieved through strategic partnerships and continuous feedback mechanisms. The insights gained from this study can guide PESU in refining its web-enabled library services to better meet the evolving needs of its academic community. PESU can strengthen its position as a hub for scholarly engagement and information dissemination in the digital age by prioritizing user-centric enhancements and fostering a supportive digital environment.

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