

Use of Web-Based Library Services in Management Institute Libraries Affiliated to Savitribai Phule Pune University: A Study

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Abstract

Purpose: It inspires continuous and purposeful transformation and offers users participation. As a result, it requires a study on library websites, web-based library services, and the use of Web 2.0 and 3.0 tools

Design/methodology/approach: The researcher adopted the Convenience Sampling Method for the selection of the sample. There are 168 Management Institute affiliated to the university. So all 168-college library librarians were in the sample study.

Findings: It is experience that from 115 Management Institute Libraries, 109 (94.8%) libraries offer web-based library services. This indicates a strong understanding of the importance of providing resources and access through digital channels.

Originality/value: Investigator had a literature review to find out what are resources available on web-based library services. Based on earlier studies this study was conducted.

1. Introduction

World Wide Web makes it possible to communicate, studying, teaching, education. The role of libraries is prime factor in the promotion of research. With the application of this technology, it became possible to have access to various information sources and databases available in various parts of the globe (Deka, 2007)

It is seen and discovered that many libraries are providing web-based library services through their college websites, Institutional Repository, Web Blog, and Web OPAC. Many libraries are currently implementing new technology to fulfil user's requirement.

2. Web-Based Library Services

The Web-based Library Services offers via the Internet, with the assistance of an cohesive library system, and a library website as a gateway. Web-based library services include tutorials, databases, eBooks, and a virtual library with links to other helpful resources, all from the user's point of view. It offers the special ability to

link to full-text articles, integrate policies, staff lists, housekeeping procedures, and other library resources for quick assistance. According to (White,2001), it can be defined broadly as ‘an information access service in which users ask questions via electronic means e.g. email or web forms. The present paper looks at the web-based library services provided by different libraries in different sections and their use by users. The purpose of the study was to learn what type of web based library services were used in different sections and how they were used. Furthermore, the study intends to emphasize the challenges that users have when access web-based library services, their perspectives, and their needs in the web digital environment.

3. Need of the Study

It inspires continuous and purposeful transformation and offers users participation. As a result, there is a need to investigate library websites, web-based library and information services, and the use of Web 2.0 and 3.0 tools such as Blog, Bookmark, RSS, Podcast, Mashups, YouTube, Wiki, Social networks (Facebook, Twitter, etc.), Mobile web, QR, Web-OPAC, and other tools in Indian Institutes of National Importance libraries. (Abda Khanum, 2018)

4. Literature Review

Mandal, And Saha(2022) Researchers examine the methods for integrating geographic search skills into the VuFindopen source discovery code to enable users to easily identify relevant and acceptable data resources.

Shivakumaraswamy (2019) has researched the online library services offered by Mysore's engineering institutions. The study covered a variety of web-based services, including circulation, acquisition, cataloging, reference, and periodical, as well as the problems users encountered when attempting to use these services

Khan,Bhatti.(2018) studied the linguistics net based applications for digital libraries. Investigator examines the views of university librarians in Asian nation concerning linguistics net tools and its use in digital libraries.

Arif, Ameen and Rafiq (2017) have examined the distant education student's satisfaction by using web-based library services of the Allama Iqbal University (AIU), Pakistan. The findings indicate that the users of the AIU library were satisfied with the web-based library services. However, on-line books, web- OPAC and Web radio service weren't able to satisfy the users' data desires.

Haruna, Kiran and Tahira (2017) validated by trial and error the LibWEBSQ activity scale. The investigator investigated the connection among web-based service with user satisfaction. The investigator studied the two federal universities of the Northwestern region of African country.

Si, Wanigasooriya and Ranaweera (2017) have done a study to asses and judge problems associated with e-service quality. The fifteen Sri Lankan University library websites.it had been found that though university libraries were giving variety of web-based library services.

Copenhaver, and Koclanes (2016) Analyze the amount and complexity of the reference requests that are received, as well as the deployment of a Web-scale discovery service.

Kalita and Hazarika (2016) have done a case study on 10 universities on web-based services in University libraries in Assam. It had been found that web log was the extremely preferred application by librarians

followed by RSS feed and Instant electronic communication.

Zhang, Shen, Zhu and Yang (2016) has observed that users rely upon mobile devices to get info to realize the needs of users. Several libraries launch mobile application. The investigator has studied the transmission of library service from web-based to mobile app.

Ahmed (2015) suggested applications to staff in the libraries in net 3.0 setting, whereas a thought of benefits and downsides makes this analysis a lot of valuable for the librarians.

Tesendic, and Boberic (2015) Examine the creation of a web service that serves as a go-between for the Audio Library system for those with low vision.

Bawalaya (2014) have done a study of the University Zambia and Copperbelt University Libraries on the provisions of web and web-based library services. It was found that the University libraries have not fully use web technologies for providing web-based services like reference services, circulation, and inter-library loan services.

5. Hypothesis

1. Library users are satisfied with the Web Based Library services provided by the college libraries.
2. Providing Web Based Library services are expensive in terms of finance.
3. Web Based Library services are not used at high extent by users of Management College libraries.

6. Objectives of the Study

The objectives of the present study are as follows:

- 1) To investigate and identify the current level of web-based Library services in Management Institute libraries affiliated to Savitribai Phule Pune University.
- 2) To identify strength and weaknesses of existing web-based Library services of libraries under study.
- 3) To suggest possible solutions for gaps if any in web-based Library services and suggest priorities for continuous improvement.
- 4) To measure the cost and benefits of web-based Library services.

7. Research Process and Method

Research Method

The aim of this paper is to discuss possible development directions for Library 4.0, using the research content that follows (Fig. 1). First, all literature available on major reference databases (e.g. Google Scholar, Ebsco-Host, LISA, Korean databases, etc.) that discusses Web 4.0 and Library 4.0 was collected (Noh, Y. (2015))

The researcher adopted the Convenience Sampling Method for the selection of the sample. There are 168 Management Institute affiliated to the university. So all 168 college library librarians were in the sample study. Out of 168 college librarians, 115 librarians filled out the questionnaire. Hence, the rate of response was 68.45%.

Sr. No.	Categories	Management Institute Librarians	Total %
1	Questionnaire Distributed	168	100%
2	Questionnaire Received	115 (68.45%)	68.45%
3	Questionnaire Analyzed	115 (68.45%)	68.45%

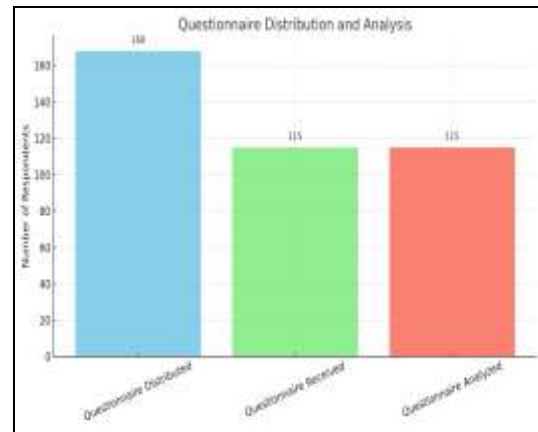


Table & Fig 7.1: Sample Distribution (Libraries) of Questionnaires

8. Data Analysis

The analysis of the study is described below.

8.1. Provision for Automation package / Software?

The responses to the question "Are you using a library automation package/software?" revealed that 98.6% of male librarians (72 out of 73) answered "Yes," while only 1.4% (1 librarian) responded "No." Overall, 114 out of 115 librarians (99.1%) reported using automation software, with just one librarian (0.9%) indicating otherwise.

Are you using library automation package / software?					
(n = 115 Librarians)			Yes	No	Total
Male / Female	Male	Count	72	1	73
		% of Total	62.6%	0.9%	63.5%
	Female	Count	42	0	42
		% of Total	36.5%	0.0%	36.5%
Total		Count	114	1	115
		% of Total	99.1%	0.9%	100.0%

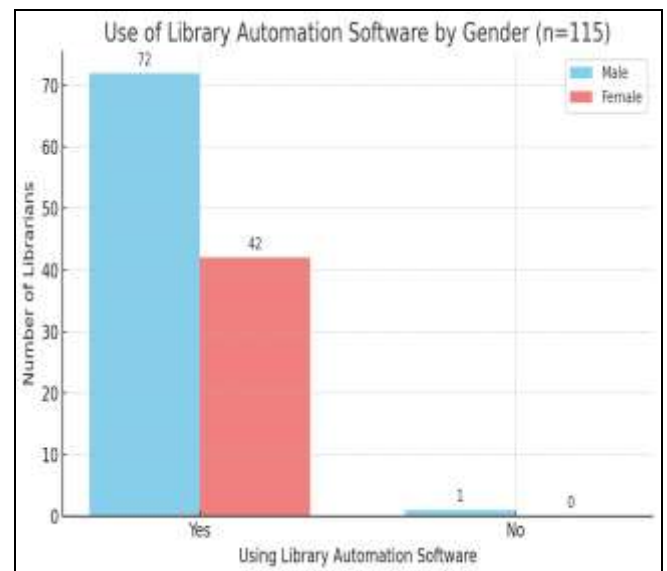


Table & Fig 8.1 Library automation package / software

8.2 Internet& WIFI Facilities

Networking - Do you have Internet & WIFI Facilities?					
(n = 115 Librarians)			Yes	No	Total
Male / Female	Male	Count	73	0	73
		% of Total	63.5%	0.00%	63.5%
	Female	Count	42	0	42
		% of Total	36.5%	0.00%	36.5%
Total		Count	115	0	115
		% of Total	100.0 %	0.00%	100.0 %

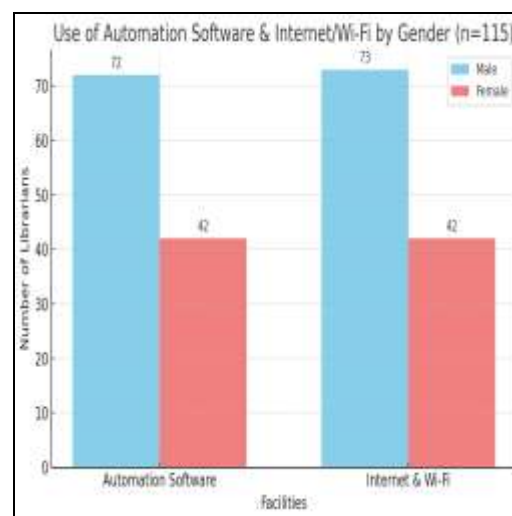


Table & Figur 8.2 Internet & WIFI Facilities

The data reveals that all 115 respondents, both male and female, unanimously confirmed that their libraries provide internet and Wi-Fi facilities. This signifies a complete, 100% affirmative response rate among the librarians when asked about the availability of internet and Wi-Fi access in their institutions.

8.3 College Website

Do you have College Website?					
(n = 115 Librarians)			Yes	No	Total
Male / Female	Male	Count	73	0	73
		% of Total	63.5%	0.00%	63.5%
	Female	Count	42	0	42
		% of Total	36.5%	0.00%	36.5%
Total		Count	115	0	115
		% of Total	100.0%	0.00%	100.0%

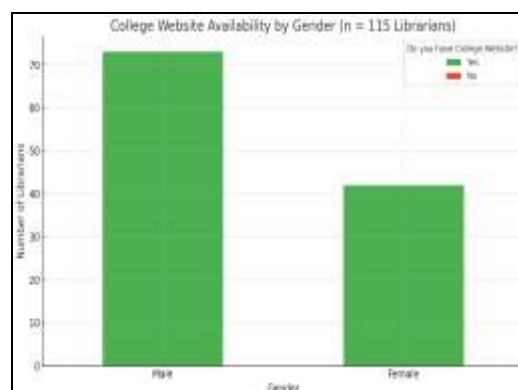


Table & Figur 8.3 College Website

The table indicates that all 115 respondents, comprising both male and female librarians, unanimously confirmed the existence of an official college website for their respective institutions. This results in a 100% affirmative response to the question, "Do you have a college website?" The finding underscores the widespread recognition of the importance of maintaining a digital presence in the academic environment, serving as a foundational platform for communication, information dissemination, and the delivery of web-based library services.

8.4 Does library provides Web Based Library Services

Does library provides Web Based Library Services					
(n = 115 Librarians)			Yes	No	Total
	Male	Count	71	2	73
		% of Total	61.70%	1.70%	63.50%
	Female	Count	38	4	42
		% of Total	33.00%	3.50%	36.50%
Total		Count	109	6	115
		% of Total	94.80%	5.20%	100.00%

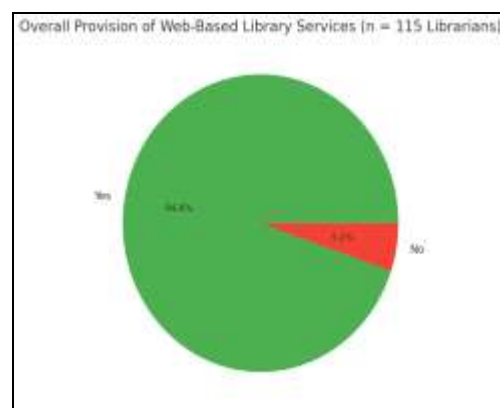


Table & Figur 8.4 Web Based Library Services

The table reveals that a significant majority of libraries—94.8% of the respondents—provide web-based library services to their users. This high adoption rate highlights a clear recognition among management institute libraries of the critical role that digital platforms play in delivering timely, efficient, and user-centered access to information resources. It reflects the libraries' proactive approach in embracing technology to enhance service delivery and meet the evolving needs of students, faculty, and researchers in a digital learning environment.

8.5 Source to Provide Web Based Library Services

Which Source do you use to Provide Web Based Library Services								
Gender	Library Web page	Institutional Repository Through	Library Web OPAC	Mobile App	Social Media (Whats App, Skype	Library Blog	Library Face Book Page	Twitter
(n = 115 Librarians)	Count	Count	Count	Count	Count	Count	Count	Count
Male	55	31	70	9	46	23	22	3
Female	28	17	36	8	24	8	12	0
Total	83	48	106	17	70	31	34	3
% within Male / Female	72.1 7%	41.74%	92.17 %	15.00 %	60.87%	26. 96 %	29.57 %	2.61%

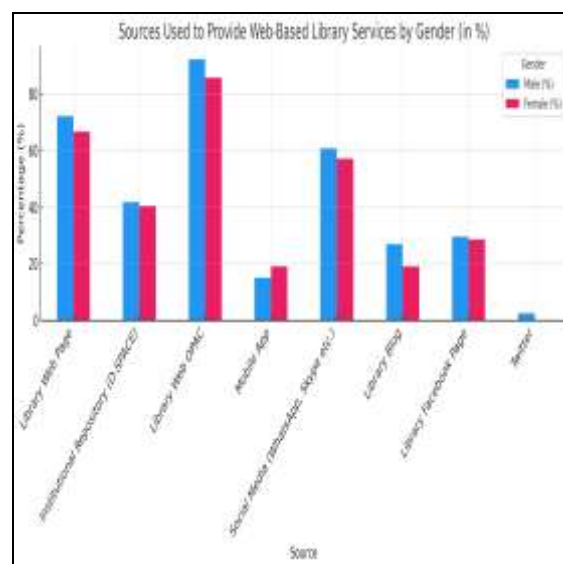


Table & Figur 8.5 Source to Provide Web Based Library Services

The data clearly shows that the library web OPAC is the most widely used source for accessing library services, with 92.17% of both male and female users relying on it. Following closely is the library's official web page, which serves as the second most popular resource. Social media platforms, particularly WhatsApp, also play a significant role, along with the Institutional Repository accessed through DSPACE. In comparison, other sources such as mobile apps, the physical library, and library blogs are utilized much less frequently by users.

8.6 Web-Based Library Services Used by

Gender	Postgraduates	Faculty Members	Research Scholars
(n = 115 Librarians)	Count	Count	Count
Male	35	25	10
Female	25	15	05
Total	60	40	15
% within Male / Female	52.17%	35%	13.04%

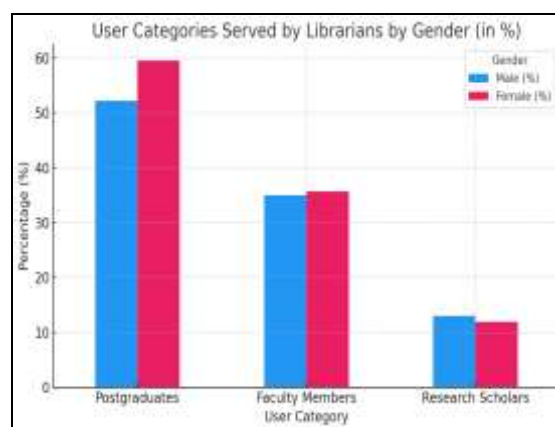


Table & Figur 8.6 Web Based Library Services used by

According to the table, 52.17% of the respondents, totaling 60 individuals, identified postgraduate students as the most frequent users of the library. Among the 115 respondents, a majority of 60.87% (70 librarians) were male, while females comprised 39.13% (45 librarians) of the total respondents.

8.7 Strengths of Web Based Library Services

As per your opinion what are the strengths of Web Based Library Services						
Gender	Relevance and unique content	User Friendly	Effective use of services	Remote Access	Availability 24/7 & Up-to-Date	Convenience
(n = 115 Librarians)	Count	Count	Count	Count	Count	Count
Male	15	51	37	52	28	0
Female	13	35	23	30	32	0
Total	28	86	60	82	60	0
% of Total	24.35%	74.78%	52.00%	71.00%	52.00%	0%

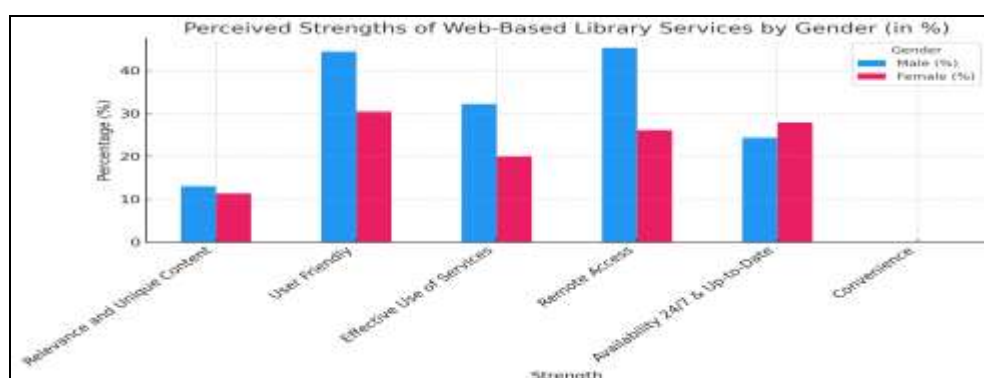


Table & Figur 8.7 Strength of Web Based Library Services used by

The table focus the strengths of web-based library services as perceived by the respondents. The most highly rated strength is the user-friendly nature of these services, with 74.78% of respondents (51 males and 35 females, totaling 86 individuals) recognizing this feature. Remote access ranks second, selected by 71.00% of respondents (52 males and 30 females, totaling 82 individuals), reflecting its significant importance. In contrast, relevance and unique content received a considerably lower response rate of 24.35%, while convenience was identified by none of the respondents, registering a 0% response rate.

8.8 Weakness of Web-Based Library services

As per your opinion what are the Weakness of Web-Based Library services				
Gender	Lack of Systems	Limited Access Terminals	Slow Internet Connectivity (Bandwidth)	Technical Problem
(n = 115 Librarians)	Count	Count	Count	Count
Male	13	47	34	19
Female	10	24	18	15
Total	23	71	52	34
% of Total	20.00%	61.74%	45.22%	29.57%

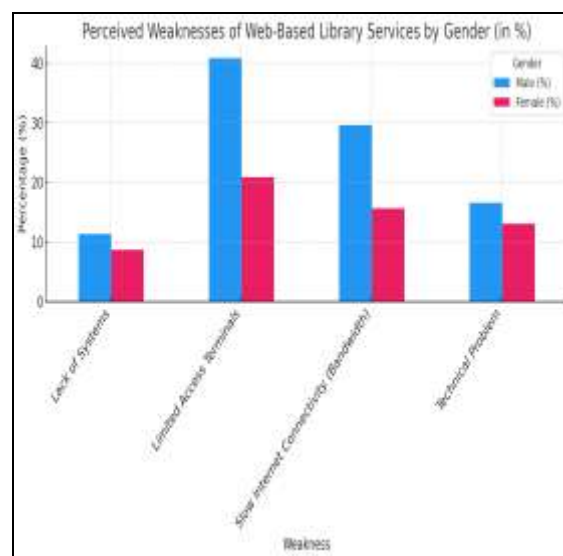


Table & Figur 8.8 Weakness of Web-Based Library services

The table presents the perceived weaknesses of web-based library services as reported by 115 librarians, categorized by gender. The most commonly identified weakness is the limited number of access terminals, cited by 61.74% of the total respondents (71 librarians), with 47 males and 24 females highlighting this issue. Slow internet connectivity, specifically bandwidth limitations, is the second most frequently reported problem, noted by 45.22% of respondents (52 librarians), including 34 males and 18 females. Technical problems affecting the services were reported by 29.57% of librarians (34 in total), with 19 males and 15 females expressing this concern. Lastly, a lack of adequate systems was identified as a weakness by 20.00% of respondents (23 librarians), including 13 males and 10 females. This data suggests that limited access terminals and internet speed are the most significant challenges faced in delivering effective web-based library services

8.9 Web-Based Library service is used at high extend

Which Web-Based Library service is used at high extend?						
(n = 115 Librarians)		Web OPAC	Links to E - Resources	E Books	Electronic Document Delivery	Total
Male	Count	58	12	1	0	71
	% of Total	51.3 %	10.6 %	0.9 %	0.0 %	62.8 %
Female	Count	32	8	1	1	42
	% of Total	28.3 %	7.1 %	0.9 %	0.9 %	37.2 %
Total	Count	90	20	2	1	113
	% of Total	79.6 %	17.7 %	1.8 %	0.9 %	100.0 %

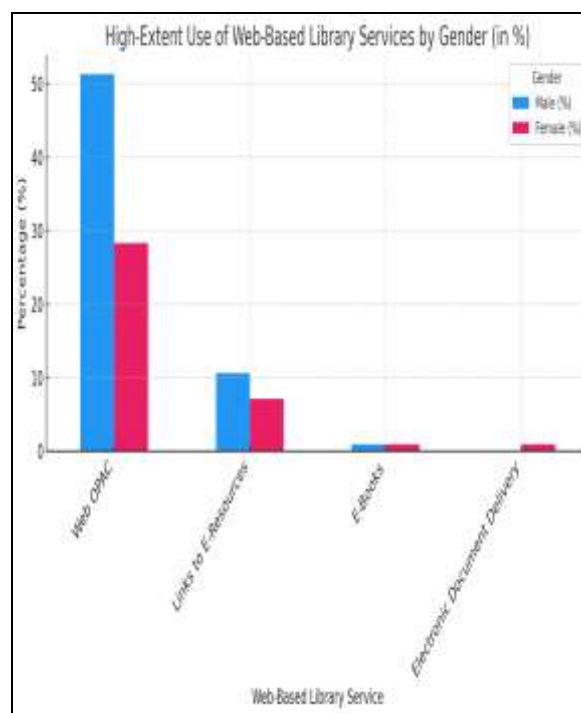


Table & Figur 8.9 Web-Based Library service is used at high extend

The data clearly shows that the Web OPAC is the most widely used web-based library service, with 90 users accounting for 79.6% of the total respondents. Of these, 58 are male and 32 are female users. The second most utilized service is the links to electronic resources, used by 20 respondents, representing 17.7% of the total. In contrast, e-books and electronic document delivery are the least utilized services, with only 2 users (1.8%) accessing e-books and just 1 user (0.9%) utilizing electronic document delivery.

8.10 Suggestions to strength Web-Based Library services

Any suggestions to strength Web-Based Library services for its continuous improvement.					
(n = 115 Librarians)		Need of regular intervals User Awareness	Need of regular intervals Users Feedback	Need to improve ICT Infrastructure Facilities	Total
Male	Count	20	25	28	73
	% of Total	17.4 %	21.7 %	24.3 %	63.5 %
Female	Count	12	7	23	42
	% of Total	10.4 %	6.1 %	20.0 %	36.5 %
	Count	32	32	51	115
	% of Total	27.8 %	27.8 %	44.3 %	100.0 %

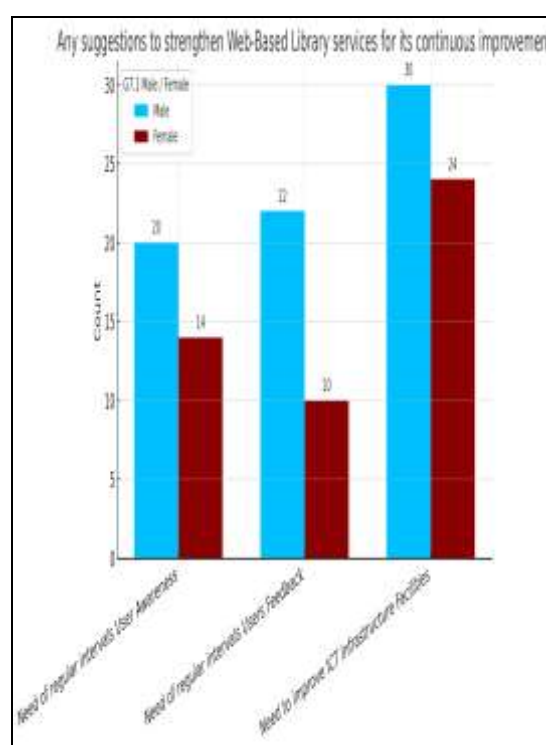


Table & Figur 8.10 Suggestions to Strengthen Web-Based

Library Services

The table presents a detailed breakdown of responses to the question, “What suggestions do you have to strengthen web-based library services for continuous improvement?” Among the 115 librarian respondents, 63.5% (73) were male and 36.5% (42) were female. The most frequently cited suggestion was the need to improve ICT infrastructure facilities, which received 44.3% of the responses (51 individuals). This was followed by calls for regular user feedback, and regular user awareness programs, each receiving 27.8% of responses (32 respondents respectively). These findings highlight key areas identified by librarians as essential for enhancing and sustaining the effectiveness of web-based library services.

8.11 Cost benefit / effective

Providing Web-Based Library service is cost benefit / effective				
(n = 115 Librarians)		Yes	No	Total
Male	Count	28	45	73
	% of Total	24.3%	39.1%	63.5%
Female	Count	18	24	42
	% of Total	15.7%	20.9%	36.5%
	Count	46	69	115
	% of Total	40.0%	60.0%	100.0%

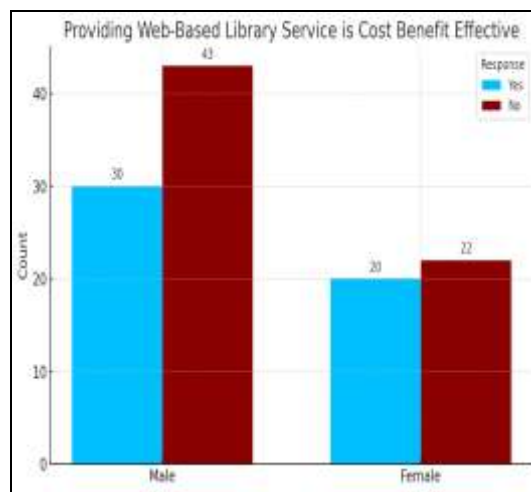


Table & Figur 8.11 Cost benefit / effective

The table provides a detailed breakdown of responses to the question, “Is providing web-based library service cost-beneficial or cost-effective?” Among the 115 librarian respondents, 63.5% (73) were male and 36.5% (42) were female. Of the male librarians, 24.3% (28) believed that web-based library services are cost-beneficial or cost-effective, whereas 39.1% (45) disagreed. Among female librarians, 15.7% (18) viewed the services as cost-effective, while 20.9% (24) did not. Overall, only 40.0% of the respondents (46 librarians) considered web-based library services to be cost-beneficial or cost-effective, whereas a majority of 60.0% (69 librarians) felt otherwise. This indicates a prevailing skepticism regarding the cost efficiency of these services among the surveyed librarians.

9. Testing Hypothesis

9.1 Hypothesis: 1: Library users are satisfied with the Web Based Library services provided by the college libraries.

Chi-Square Tests						
	Value	df	ic Significan ce (2-	Exact Sig. (2-sided)	Exact Sig. (1-sided)	Point Probabilit y
Pearson Chi-Square	219.654 ^a	6	0.000	0.000		

Likelihood Ratio	227.069	6	0.000	0.000		
Fisher-Freeman-Halton Exact Test	223.302			0.000		
Linear-by-Linear Association	97.949 ^b	1	0.000	0.000	0.000	0.000
N of Valid Cases	380					

Table 9.1 Hypothesis One

P value of 0.000 is much lower than the commonly accepted levels of either .05 or .10 so, the investigator rejects the null hypothesis.

p-values: Since all the Chi-Square statistics were high (indicating a large discrepancy between observed and expected values) and all the p-values were very low (less than 0.000), that is why the investigator had reject the null hypothesis.

9.2 Hypothesis: 2 Providing Web Based Library services are expensive in terms of finance.

Chi-Square Tests						
	Value	df	Asymptotic Significance (2-sided)	Exact Sig. (2- sided)	Exact Sig. (1- sided)	Point Probability
Pearson Chi-Square	.168 ^a	2	0.92	0.916		
Likelihood Ratio	0.17	2	0.919	0.916		
Fisher-Freeman-Halton Exact Test	0.204			0.936		
Linear-by-Linear Association	.112 ^b	1	0.737	0.796	0.405	0.065
N of Valid Cases	380					

Table 9.2 Hypothesis Two

P value of 0.916 is much higher than the commonly accepted levels of either .05 or .10 so, the investigator accepts the null hypothesis.

P-values: Since all the Chi-Square statistics were very low (indicating a close fit between observed and expected values) and all the p-values were very high (greater than 0.9), the investigator **fail to reject the null hypothesis**. There was not adequate evidence to conclude a statistically substantial connection between the variables based on this test.

9.3 Hypothesis: 3 Web Based Library services are not used to a high extent by users of Management College libraries.

Chi-Square Tests			
	Value	df	Asymptotic Significance (2-sided)
Pearson Chi-Square	140.378 ^a	6	0.000
Likelihood Ratio	132.846	6	0.000
Linear-by-Linear Association	0.141	1	0.707
N of Valid Cases	378		

Table 9.3 Hypothesis Three

P value of 0.000 is much lower than the commonly accepted levels of either .05 or .10 so, the investigator reject the null hypothesis.

p-values: Since all the Chi-Square statistics were high (indicating a large discrepancy between observed and expected values) and all the p-values are very low (less than 0.000), , that is why the investigator had reject the null hypothesis.

10. Findings

1. 115 Management Institute Libraries, 109 (94.8%) libraries offer web-based library services to their users. It indicates a strong understanding of the importance of providing resources and access through digital channels.
2. The investigator finds that (115) 100% of Management College has a website. Librarians should take the initiative to create a library page through which they can provide online library services.
3. Many college libraries have a Library Web Page, Library Blog, and Library Facebook Page, Institutional Repository, the study found that (106) 92.2% of libraries have a library web page, Library Blog, and Library Facebook Page, Institutional Repository. Through this, they provide the Web-Based Library Services.
4. While studying are there any suggestions to strengthen, Web-Based Library services for its continuous improvement? The researcher found that Need to Improve ICT Infrastructure Facilities received the highest responses 44.3% (51) followed by the Need for regular intervals Users Feedback 27.8% (32) and Need of regular intervals User Awareness 27.8% (32) respectively.
5. While studying whether Web-Based Library service is cost-benefit / effective or not. The researcher found out that, according to 40.0% of respondents (Librarians) (46) it is cost-effective, while 60.0% (69)) it is not cost-effective.
6. The study shows Web OPAC is the most used web-based library service, with a total count of 90 (79.6%). Links to E-Resources is the second most used service, 20 (17.7%) of the total count. E-Books and Electronic Document Delivery are the least used services, with a total count of 2 (1.8%) and 1(0.9%), respectively.

7. While observing the weakness of web-based library services. Limited Access Terminals choice has the greatest response rate with the majority of respondents 61.74% (71) of the total (115) respondents.

11. Conclusion

Web-based library services have changed the scenario of libraries interaction with their patrons, it offering unprecedented access to information and resources. By leveraging the power of the internet, libraries have been able to expand their reach, enhance user experience, and adapt to the changing needs of their communities. (Ramteke, S. (2024)

Key benefits of web-based library services include:

- **24/7 accessibility:** Users can access library resources from anywhere, at any time, eliminating geographical and temporal constraints.
- **Expanded reach:** Libraries can serve a wider audience, including those who may not have easy access to physical library locations.
- **Enhanced user experience:** Online catalogs, databases, and digital collections provide intuitive and user-friendly interfaces for searching and accessing information.
- **Cost-effective:** Web-based services can reduce operational costs by eliminating the need for physical storage and reducing staffing requirements.
- **Innovation and collaboration:** Libraries can collaborate with other institutions and organizations to share resources and develop new services.

Web-based library services will probably grow much more advanced and essential to libraries' futures as technology develops further. Libraries may establish themselves as vital information and learning centers in the digital age by adopting these advances.

References

- **Ahmed, W.** (2015), "Third generation of the Web: libraries, librarians and Web 3.0", *Library Hi Tech News*, Vol. 32 No. 4, pp. 6-8. <https://doi.org/10.1108/LHTN-11-2014-0100>
- **Bawalya, T.** (2014). Internet and Web based library Services Provision among Academic Libraries in Zambia: A Comparative study of the University Zambia and Copperbelt University Libraries. *International Research: Journal of Library and Information Science*, 4(4), 475-493.
- **Deka, Prasanta Kumar and Singh, Sanjay Kumar.** (2007). Web technology for library in digital environment with references to college libraries of Guwahati, 5th convention PLANNER 2007, Guwahati University, Guwahati.
- **Deepjyoti Kalita & Tilak Hazarika** (2014). Web based Interactive Services in the University Libraries in Assam and perception of library managers and users: a case study. [Paper presented at the International Conference on Social Sciences and Humanities (ICSSH 2014)]

- **Haruna, B., Kiran, K., and Tahira, M.** (2017), "Modelling web-based library service quality and user loyalty in the context of a developing country", *The Electronic Library*, Vol. 35 No. 3, pp. 507-519.
<https://doi.org/10.1108/EL-10-2015-0211>
 - **Henderson, S., Copenhaver, K., & Koclanes, A.** (2016). Integrating the Library into the First-Year Experience: a Personalized Approach. Paper presented at *First National Personal Librarian and First Year Experience Library Conference*, Cleveland, Ohio, United States.
 - **Khan, S. A., and Bhatti, R.** (2017). "Digital Competencies for Developing and Managing Digital Libraries: An Investigation from University Librarians in Pakistan." *The Electronic Library*, 35(3), 573–97.
<https://doi.org/10.1108/el-06-2016-0133>
 - **Khanum, A., Lee, C.-Y., & Yang, C.-S.** (2023). Involvement of deep learning for vision sensor-based autonomous driving control: A review. *IEEE Sensors Journal*, 23(14), 15321-15341.
<https://doi.org/10.1109/JSEN.2023.3280959>
 - **Li, S., Wanigasooriya, P., & Ranaweera, A.** (2017). Evaluation and assessment of e-service quality of university libraries in Sri Lanka. *European Academic Research*, 4(12), 10646-10671.
 - **Mandal, S. and Saha, S.** (2022), "Designing Web-scale geographic search interface for libraries", *Library Hi Tech News*, Vol. 39 No. 3, pp. 21-25. <https://doi.org/10.1108/LHTN-12-2021-0088>
 - **Marilyn Domas White.** (2001). Diffusion of an innovation: Digital reference service in Carnegie Foundation master's (comprehensive) academic institution libraries. *The Journal of Academic Librarianship*, 27(3), 173-187.
 - **Muhammad Arif, Kanwal Ameen, Muhammad Rafiq** (2017), "Assessing Distance Education Students Satisfaction with Web-based Services: a Pakistani's Perspective", *Online Information Review*, Vol. 41 Iss 2.
<https://doi.org/10.1108/OIR-07-2016>
 - **Noh, Y.** (2015). Imagining Library 4.0: Creating a Model for Future Libraries. *The Journal of Academic Librarianship*, 41(6), 555-565.
 - **Shivakumaraswamy, K.N.** (2019). Use of Web-Based Library Services in Mysore City Engineering Colleges in Karnataka, India: A Study. *Library Philosophy and Practice (e-journal)*, 2370.
<https://digitalcommons.unl.edu/libphilprac/2370>
- Ramteke, S.(2024). *Web 3.0: Evolution of web-based library services*. International Journal of Science and Research (IJSR), 13(10), 492–495. <https://doi.org/10.21275/SR241005162833>
- **Tesendic, D. and Boberic Krsticev, D.** (2015), "Web service for connecting visually impaired people with libraries", *Aslib Journal of Information Management*, Vol. 67 No. 2, pp. 230-243.
<https://doi.org/10.1108/AJIM-11-2014-0149>
 - **Zhang, M., Shen, X., Zhu, M., and Yang, J.** (2016), "Which platform should I choose? Factors influencing consumers' channel transfer intention from web-based to mobile library service", *Library Hi Tech*, Vol. 34 No. 1, pp. 2-20. <https://doi.org/10.1108/LHT-06-2015-0065>