



Web-Based Library Services, Web 2.0/3.0 Technologies and Library Website Evaluation: Evidence from College Libraries of Meerut and Ghaziabad

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ABSTRACT

The advancement of web-based technologies has significantly transformed the manner in which academic libraries interact with their users, provide information services, and facilitate access to electronic resources. This research paper is developed with particular emphasis on library websites, Web 2.0 and Web 3.0 applications, online library services, user perceptions, and the analysis of website content in selected libraries of Meerut and Ghaziabad.

A descriptive-analytical survey methodology was employed, incorporating structured questionnaires, direct observation, and interviews for data collection. The study considered the perspectives of both library professionals and users, while library websites were examined separately through content analysis. The website evaluation focused on aspects such as visibility, design, navigation, and the availability of general library-related information. The assessment of web technologies included social networking platforms, instant messaging, mobile technologies, cloud computing, QR codes, document and presentation sharing, video and photo-sharing platforms, podcasts, social cataloguing, social bookmarking, mashups, wikis, RSS feeds, and blogs.

The findings indicate that a considerable number of the libraries had established an online presence through either independent library websites or sections within institutional websites. Web-based technologies were utilized for disseminating library news and announcements, promoting resources and services, communicating with users, providing reference assistance, and supporting information-literacy activities. The findings further indicate generally positive perceptions among library professionals and users regarding the usefulness of web-based technologies. Nevertheless, challenges related to professional skills, ICT infrastructure, information security, networking facilities, training, and institutional policies continue to affect effective implementation.

The study concludes that the successful delivery of web-based library services depends not merely on establishing a website but also on developing well-organized navigation, regularly updated content, mobile-friendly access, clear guidance to electronic resources, online user facilities, interactive services, continuous staff training, and systematic website maintenance. Strengthening these components can contribute to the development of more accessible, responsive, and user-oriented academic library services.



Keywords: Web-based library services; Library websites; Web 2.0; Web 3.0; Social networking; RSS; Blogs; Academic libraries; Meerut; Ghaziabad

1. INTRODUCTION

The modern academic library is gradually evolving from being primarily a physical repository of information into a comprehensive web-enabled information service. The growth of the Internet, electronic publishing, social networking platforms, mobile technologies, and cloud-based applications has considerably influenced the ways in which users search for, assess, and access information. Library websites now serve as an important digital platform through which institutions can provide information about library timings, collections, rules and regulations, available services, OPAC facilities, electronic resources, announcements, and various forms of user support.

Web 2.0 tools introduced greater interactivity and user participation. Social networking, blogs, wikis, RSS feeds, instant messaging, media sharing and social tagging can support communication, marketing, information literacy and collaborative knowledge sharing. This extends this discussion to Web 3.0 and other emerging web-based tools, recognizing that libraries must continuously adapt to changing user expectations.

This paper focuses on two connected questions from the thesis: first, how libraries use Web 2.0/Web 3.0 tools and related online services; and second, what features are present in the websites of the studied libraries. The resulting analysis provides a structured picture of the web presence and online-service environment reported in the original study.

2. REVIEW OF LITERATURE

Earlier research primarily focused on awareness and utilization of electronic resources, Internet applications, the development of digital libraries, and the evolving responsibilities of library and information professionals. In subsequent studies, greater attention was given to emerging technologies such as social media, web-based applications, mashups, social tagging, evaluation of library websites, and the use of electronic information resources. Collectively, these studies reflect the increasing integration of digital and web technologies into modern academic library services.

Devi and Verma's work on content-analysis-based evaluation of library websites is relevant to the website component of the study. Dutta, Mandal and Mukhopadhyay examined the use of Web 2.0 technologies for information services. Rahman and Shoeb considered social media as a tool for redesigning archival literacy services. Vaidya and Harinarayana examined the role of social tags in web-resource discovery. These studies collectively support the view that library websites and participatory technologies should be assessed not merely for presence but for the services and information functions they provide.

3. OBJECTIVES OF THE STUDY

The web-service component represented through the following objectives:

1. To examine the use of web-based tools and technologies in the selected libraries.
2. To study the purposes for which Web 2.0 and Web 3.0 tools are used.
3. To assess librarians' knowledge of web-based tools and their training needs.
4. To assess users' satisfaction with web-based tools and technologies.



4. RESEARCH METHODOLOGY

The study used a descriptive-analytical survey design. Structured questionnaires were administered to library personnel and library users, and observations and interviews were used to supplement the survey data. This selected twenty libraries for the broader ICT study, with nine from Meerut and eleven from Ghaziabad.

The website evaluation examined prominence, type of website, design characteristics, navigation tools and general information. This used MS Excel and SPSS for coding, tabulation and analysis. Frequencies, percentages and chi-square statistics were used in the reported website and web-technology analysis.

5. WEB 2.0 AND WEB 3.0 TOOLS IN LIBRARIES

This evaluates a broad group of web-based tools, including social networking sites, instant messaging, mobile-based technologies, cloud computing, QR codes, presentation/document sharing, vodcast/video sharing, photo sharing, podcasts/audio sharing, social cataloguing, social bookmarking/folksonomies/tagging, mashups, wikis, RSS feeds and blogs.

The reported findings show that several of these technologies had become part of the library communication environment. RSS feeds, wikis and blogs were among the tools with substantial reported use. The purposes were not restricted to publicity. This records applications such as library news and events, announcements, new-arrival information, OPAC updates, user education, information literacy, reference support, marketing of library resources and services, and user-community engagement.

The study also records librarians' knowledge pathways. The reported knowledge table indicates self-learning/self-motivation, online tutorials and search engines, professional colleagues, and formal training/workshops/conferences as sources of learning. This suggests that continuing professional development is an important component of sustainable web-service implementation.

Web technology / activity	Reported finding	Service implication
Wikis	48 libraries (53.3%) reported usage in the relevant table	Collaborative knowledge sharing and organization
RSS feeds	70 libraries (77.7%) reported usage	News, events and new-arrival updates
Blogs	61 libraries (67.7%) reported usage	News, announcements and library promotion
Web-based tool knowledge	81 respondents (90.0%) reported self-learning/self-motivation	Informal learning is a major pathway
Search engines/online tutorials	75 respondents (83.3%)	Online learning supports skill development
Formal training/workshops/conferences	66 respondents (73.3%)	Institutional training remains important



User satisfaction	87 respondents (96.6%) reported satisfaction	Positive perception of web-based tools in the reported sample
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6. PURPOSES, IMPACT AND BARRIERS

The several purposes for web-based tools. A large proportion of respondents agreed or strongly agreed that such tools support marketing of library resources and services, user-community engagement, current-awareness and selective dissemination functions, library news and events, user education/information literacy, and online reference service.

The reported impact measures indicate that respondents associated web-based technologies with an improved library image or reputation, advanced or better library services, greater work satisfaction, faster library operations and coordination of routine work. These are perceptions recorded by the study rather than independent measures of operational performance.

This also identifies barriers. Lack of knowledge and technical skills among library staff, information/data security concerns, inadequate ICT infrastructure and poor Internet access/networking were among the issues examined. The training-needs table shows strong demand for training in Internet and electronic resources and services, website creation and maintenance, Web 2.0 applications and Web 3.0 applications.

Training need	Yes	No
Internet and electronic resources/services	74 (82.2%)	16 (17.7%)
Create and maintain websites	69 (76.6%)	21 (23.3%)
Web 2.0 applications	65 (72.2%)	25 (27.7%)
Web 3.0 applications	79 (87.7%)	11 (12.2%)

7. LIBRARY WEBSITE CONTENT ANALYSIS

The website analysis provides a second perspective on web-based library services. In the reported website sample of 100, 88% had a library website and 12% did not. Of the websites reported, 41% were separate library websites and 59% were part of an institutional website.

The design assessment shows that 92% of the websites were reported to load quickly, all used English, 69% had clear headings, 62% displayed the library name on the homepage, 80% had suitable font size, 70% had suitable colours and 68% used multimedia. However, only 40% were reported as multilingual. Logical structure and ease of navigation were also not universal.

Navigation analysis indicates that 84% of the websites were accessible from the institute homepage, 83% provided a link to e-resources, and 71% provided a catalogue/OPAC link on the homepage. Only 10% had a site map and 15% had quick links. Institutional repository links were reported on 44% of websites, while publisher-based e-resource search facilities were reported on 30%.

General information was unevenly represented. About 91% provided information about the library, 76% provided collection information, 82% provided library hours, 70% provided



library services, 69% provided rules and regulations, 71% provided membership details, 68% provided a staff directory and 80% provided contact details. In contrast, only 20% provided mission/goals/objectives, 40% provided e-resource guidance or policies, and 38% provided library committee information.

Website feature	Reported availability
Library website available	88%
Separate library website	41%
Part of institutional website	59%
Website loads quickly	92%
Clear headings	69%
Suitable font size	80%
Multilingual website	40%
Accessible from institute homepage	84%
E-resource link on homepage	83%
OPAC link on homepage	71%
Institutional repository link	44%
Site map	10%
Quick links	15%
About library	91%
Library collections	76%
Library hours	82%
Library services	70%
E-resource guidance/policies	40%

8. DISCUSSION

The combined findings demonstrate that a library's web presence has two dimensions: communication and service delivery. Blogs, RSS feeds and social-networking tools support ongoing communication, while OPAC links, e-resource access, repositories, user accounts and online reference services extend the functional reach of the library.

The website data also show that presence alone is insufficient. A website can exist while lacking features that make it a practical service portal. The relatively limited availability of site maps, quick links, multilingual information, institutional-repository links and e-resource guidance indicates areas that can be strengthened. At the same time, the high availability of basic information such as library details, hours and contact information provides a useful foundation.

The training findings are especially important. The substantial demand for training in Web 3.0, Internet and electronic resources, website creation and Web 2.0 indicate that professional development must accompany technological change. This recommendation also emphasizes information-literacy programmes for users and promotion of library services so that available web resources are actually used.

9. RECOMMENDATIONS

Based on these recommendations and website findings, the following measures are proposed:

1. Maintain a current, user-centred library website as a formal library service portal.
2. Provide direct and clearly labelled links to OPAC, e-resources, institutional repositories and major online services.
3. Improve navigation through consistent menus, site maps, quick links and logical page structures.

10. CONCLUSION

The web-based component that indicates that college libraries in Meerut and Ghaziabad have moved toward a more interactive online information environment. Library websites, RSS feeds, blogs, wikis, social networking and other technologies provide channels for communication, user engagement and information delivery. The reported satisfaction and perceived impact findings show that respondents generally recognized the usefulness of these tools.

At the same time, the website analysis reveals that the quality and depth of web services vary. The presence of a website does not automatically ensure effective discovery or access to all library resources. Clear navigation, OPAC and e-resource links, repository access, current information, mobile compatibility, guidance and regular maintenance are necessary for a functional digital service environment.

The study therefore supports a service-oriented approach to web technology. Libraries need to combine technology adoption with professional training, user education, infrastructure, policy and continuous evaluation. Such an approach can help college libraries strengthen their role as accessible, networked and user-centred information centres.

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