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## USE OF WEB-BASED LIBRARY SERVICES IN SELECT UNIVERSITY LIBRARIES IN INDIA: A STUDY

**Dr. M.Madhusudhan**

Assistant Professor

Dept. of Library & Information Science, University of Delhi, Delhi

Email: mmadhu@libinfosci.du.ac.in

**Dr. V. Nagabhushanam**

Assistant Professor

Kakatiya University, Warangal (A.P.)

E-mail: naga\_v2002@yahoo.co.in

### ABSTRACT

*This paper focuses on the use of web-based library services by users in different sections of the university libraries in India and examines how some of the University libraries provide web access to their collections and user support for that access and the problems faced by users in accessing web-based library services. Findings show that many of the surveyed university libraries are yet to exploit full potential of the web forms, and lagging behind in effective use of library website. A few libraries offer innovative web-based library services in different sections. The paper highlights the current state of web-based library services against which they can benchmark their own web-based library services by university librarians in India. They will also learn how the unique web-based library services enhance the quality of web-based library services in Web 2.0 environment and suggests the new approaches for effective use of web-based library services.*

**Keywords** - Web, Library services, University libraries, India.

### INTRODUCTION

The traditional methods of offering library and information services have changed greatly in recent years because of the development and application of new technology, especially the Internet and web technologies. The demands and expectations of users have also changed considerably. In this changed scenario, more and more libraries in the world over are exploring and offering new web-based library services such as Web catalogues, “Web search engines, Web forms etc. to satisfy the library and information demands of its users” (Syed, 2002). Library users value the services that they access from their desktops because the services save time (Ahmed, 2007) and users expect to access through the Internet at their convenience (Kanamadi and Kumbar, 2006). Because of their popularity with the users, an overwhelming attention is being given to the web-based information services in libraries (Krishnamurthy and Chan,2005).

## **WEB-BASED LIBRARY SERVICES**

For this study, *Web-based Library Services* means, library services provided using Internet as medium and library website as a gateway with the help of integrate library management system. On the user perspective, web-based library services such as: online textbooks, databases, tutorials and a virtual library of links to other useful resources. It provides the unique service of linking to full-text articles, integrating library house-keeping operations, library policies, staff listings, etc. for timely help. 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 (i.e. users’ skills in effective use). In addition, the study aims to highlight the problems faced by the users in accessing web-based library services, their opinions on web-based library services, and expectations in web 2.0 environment.

## **REVIEW OF RELATED STUDIES**

Web-based library services that are modified versions of existing services and technology-driven library services (Arora,2001) or transformed from traditional library services incorporating new services that are peculiar to web environment (Moyo,2004) and underlines its significance for changes in the library information systems paradigms (Cordeiro and Carvalho,2002). The acceptability of web-based interfaces to the Library OPAC is much greater because web interfaces are familiar to the users with its graphical and navigational interfaces.

Users today are accustomed to the dynamic and interactive nature of the Web, as well as social networking tools. Many of them use Web tools to find the information they need (Wang, 2009). It is very imperative for university libraries and librarians to design, develop, enhance, implement, and deliver world class web-based library services, resources, and instructions at the fingertips of library users and “devoting resources to strengthen support in the core areas of teaching and research” (Reddy, 2004) and identify the relevant information and web services based on the user feedback and improve the existing services (Ganesan and Pandian,2004) using web technology as the delivery mode (Bhatnagar and Deshmukh, 2006) and developing country like India where resources are limited, funds are invariably for the library (Parida,2004). Thus making the “right” decision is an almost omnipresent sword of Damocles in library service planning (Decker and Hermelbracht, 2006).

Few research studies of types of web-based library services exist, but one exception is a study by Schubert and Ee-Peng (1998), integrated web-based inter-library loan (ILL) system to replace and enhance the existing manual-based ILL system and the trend towards electronic delivery of articles in ILL (Walton,2008); web-based document delivery service is a value added service available to the users (Chandra, 2002); innovative reference services and other cutting edge digital products such as podcasting and wikis (Lukasiewicz,2007); Chat reference is a

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synchronous way of communication which has special advantages compared with e-mail (Nielsen and Hummelshøj, 2008); Introduction of an instant messaging (IM) reference service fitting into the existing range of help services (Hvass and Myer, 2008); Web forms are becoming increasingly widespread because they facilitate interactivity and can be presented in a more warm, personal way than a simple e-mail link (Dewald,1999). Feldman and Strobel (2002) recommend that for advancing web-based services it is essential to initiate self-service circulation or librarian-mediated online reference. These innovative services are made possible because of the web (Tobin and Kesselman, 2002).

Libraries have always changed the pace of that change somehow feels faster now than ever before (Casey and Savastinuk, 2007). Academic libraries are quickly becoming the major players in adopting and incorporating Web 2.0 applications into their services compared with other types of libraries (Xu, Ouyang and Chu, 2009). For example, RSS feeds can inform library users about new library activities, while blogs enable the library to aggregate knowledge from users (Kim and Abbas, 2010; Schrecker,2008) and setting up a subject-based blog provides constructive resources to assist readers with researching and utilizing this technology (Blair and Level,2008). Web-based library tutorials are the hallmark of good web-based instruction (Dewald, 1999) and provides realistic learning arenas (Su and Kuo, 2010). Virtual library tours are also using new technologies and replace image maps on main campus websites (Bhatnagar,2005).

Furthermore, potential of web services offer many advantages to the library community, but the majority of these advantages will only be realized if web services are standardized (Wusteman, 2006), but, the key issues involved with opportunities, challenges, and future developing trends of delivering dynamic and distributed web-based library information resources, services, and instructions for library users in the digital age (Lillie,2006). It is clear that libraries continue to offer unique and valuable services to their clientele. However, mere provision of such web-based services is not an end in itself. There is an imperative need for libraries to exercise proper awareness, necessary orientation and training of such newly introduced serviced in order to create a positive environment for change (Syed,2002).

The present study takes a broad view of web-based library services to makes sense given the relatively recent creation of the web. Finally, the paper will focus on the imperative need for enhancing the quality of web-based library services in Web 2.0 environment and training programs for creating a positive environment for change.

## **RESEARCH OBJECTIVES**

In the light of the aim of the study and review of literature, the following research objectives were set:

- to identify university library websites in India which have web-based library services;
- to analyse the existing web-based library services in different sections of the university libraries under study;
- to study the use of web-based library services by the users and the frequency of their visits to library website; and

- to suggest the new approaches for effective use of web-based library services in study libraries.

## SCOPE OF THE STUDY

In order to realize the above objectives, the study has been restricted to web-based library services, such as: reference, acquisition, circulation, cataloguing, periodicals, inter library loan/document delivery, and miscellaneous web-based library services and 600 respondents in 20 study university libraries in India (Appendix I) were surveyed. The selection of study libraries was based on functional web-based library services, providing via library website with the help of web-based library automation software during the survey period.

## METHODOLOGY AND ANALYSIS

The survey was conducted by means of a structured questionnaire circulated personally among 600 respondents in 20 study university libraries in India and the response rate was 100 percent. A *stratified accidental random sample method* was used for the selection of respondents and interaction with those who were available in the university libraries during the survey period. The responses received from the users to 24 questions are presented in the form of tables and figures and analyzed by using a simple method of calculation. On the basis of the responses received through questionnaires the data were analysed and interpreted, in the following sections:

### Distribution of questionnaire to users

The respondents were taken from three faculties, viz. sciences, social sciences, and humanities. The users further categorized as: post-graduate students, research scholars, and faculty members and 200 users each taken from three faculties: sciences, social sciences, and humanities. As per the feedback taken from the pilot study, the distribution of users in each faculty that is 200 is further divided as: 80 faculty members, 60 research scholars, and 60 P.G. students (Table 1).

**Table 1: Distribution of questionnaires to users**

Description	Sciences	Social Sciences	Humanities	Total (n=600)
Faculty	80	60	60	200 (33.33%)
Research Scholars	80	60	60	200 (33.33%)
P.G. Students	80	60	60	200 (33.33%)
Total	240(40%)	180(30%)	180(30%)	600 (100%)

**Note:** Figures in parentheses indicate the percentage

Table 1 show that the total respondents are 600 of which 240 are from sciences, and 180 each are from social sciences and humanities.

### Frequency visit of library

This is the most important and basic aspect related to the appraisal of the usefulness of web-based library services, because, most of the e-resources are internet protocol based and accessed full text in the university library or university LAN. Here an attempt has been made to find out the frequency visit of university libraries by the users (Table 2).

**Table 2: Frequency visit of library**

Frequency	Faculty	Research Scholars	P.G. Students	Total
Daily	49 (8.16%)	144 (24%)	130 (21.66%)	323 (53.83%)
Weekly	83 (13.83%)	40 (6.66%)	55 (9.16%)	178 (29.67%)
Occasionally	46 (7.66%)	08 (1.33%)	12 (2%)	66 (11%)
Fortnightly	12 (2%)	02 (0.33%)	03 (0.5%)	17 (2.83%)
Monthly	10 (1.66%)	06 (1%)	00 (0%)	16 (2.67%)

*Note: Figures in parentheses indicate the percentage*

It is evident from Table 2 that 53.83 percent visit the university library daily, followed by 29.67 percent once in a week, 11 percent occasionally, 2.83 percent fortnightly, and only 2.67 percent use the university library once in a month. A selectively higher percentage among research scholars and P.G. students visit the university libraries daily which is indicative of their zeal to use library facilities in their day to day studies.

The frequency visit to university library depends upon the nature of library's e-collections, organization, maintenance and services. It is also revealed at the time of the study that the availability of library services ( e-journals and databases are available in intranet only) are free, which gives them the latest up-to-date literature of their relevant field is the main reason for daily frequency visit to university library by the respondents. It seems that being in the library environment influences respondents of awareness of the resources available to them. Moreover, the web technologies have changed expectations of respondents, their patience, and their willingness to accept web-based library services that are available on demand and are an answer to the expectations of the users.

### Frequency visit of library website

Web technologies have influenced libraries significantly, by which the library has no longer become an exclusive source of academic and research information whether it is decreased door counts or increased use of virtual resources. Moreover, the availability and convenient access to e-resources cast over the web has increased the breadth of users' options than ever for filling their information needs (Ahmed,2007).

The library web site can become the main point of access for all library services and increasingly becoming a more and more a logical gateway to web-based library resources and services, and also become a catalyst for new services, it is necessary to know the frequency of users' visit to the website. Table 3 records the data about it.

**Table 3: Frequency visit of library website**

Frequency	Faculty	Research Scholars	P.G. Students	Total (n=600)
Weekly	61(10.17%)	86 (14.33%)	95(15.83%)	242(40.33%)
Daily	79(13.16%)	83 (13.83%)	57 (9.5%)	219 (36.5%)
Occasionally	42 (7%)	15 (2.5%)	21 (3.5%)	78 (13%)
Fortnightly	08 (1.33%)	10(1.66%)	19 (3.16%)	37 (6.17%)
Monthly	10 (1.66%)	06 (1%)	08 (1.33%)	24 (4%)

**Note:** Figures in parentheses indicate the percentage.

It is clear from Table 3 that 40.33 percent respondents are visiting the library website weekly, followed by 36.5 percent visiting daily, 13 percent visiting occasionally, 6.17 percent visiting fortnight basis and remaining 4 percent respondents visit the library website on a monthly basis.

The poor number of visits that the library website receives is because not giving dynamic contents and providing web-based library services via library website or unaware of web-based resources and services by the users. The same finding with little variation is also pointed out by the Kanamadi and Kumbar (2006).

This finding is a clear indication of proper library orientation extended to users as a method of imparting web access skills and there is an urgent need for web-based information literacy programs for effective use of web-based library services by the study libraries.

### Use of web-based library services

The traditional methods of offering library and information services have changed greatly in recent years because of the development and application of new technology. The demands and expectations of users have also change considerably. In the changed scenario, more and more university libraries in India are exploring and offering new web-based library services such as Web OPAC, web search engines, web forms, etc. to satisfy the users. Table 4 presents the usage of different web-based library services by the respondents.

**Table 4: Use of web- based library services**

Description	Faculty	Research Scholars	P.G. Students	Total (n=600)
Yes	158 (26.33%)	157 (26.16%)	125 (20.84%)	440 (73.34%)
No	42 (7%)	43 (7.16%)	75 (12.5%)	160 (26.66%)

**Note:** Figures in parentheses indicate the percentage.

It is observed from the data in Table 4 that 73.34 percent respondents are using the various web-based library services in their respective university libraries, and remaining 26.66 percent respondents are not using the web-based library services.

An open-ended question to respondents regarding the reasons for using web-based library services reveals that the library users value the services that they access from their desktops because the web-based library services save lot of time and traveling cost. They also appreciate being able to access services at their convenience, without being restricted by the university library's hours of operation, this finding is also consistent with the findings in recent studies (such as: Mirza and Mahmood,2009; Pathak, Mishra and Sahoo, 2008; Bhatnagar ,2005).

### Use of Web-based library services

Web-based library services in study libraries have far reaching effect on the quality of services. These web-based library services are presented seven sections, such as: reference, acquisition, circulation, cataloguing, periodicals, inter library loan/document delivery, and miscellaneous. Table 5 presents data about the extent of web-based library services used by the respondents in different services.

**Table 5: Use of web-based library services by users**

<b>Description</b>	<b>Faculty</b>	<b>Research Scholars</b>	<b>P.G. Students</b>
<b>Reference</b>			
Electronic document delivery service	125 (20.83%)	137 (22.83%)	129 (21.5%)
Web-based reference tools	93 (15.5%)	98 (16.33%)	99 (16.5%)
Electronic current awareness service	92 (15.33%)	96 (16%)	97 (16.16%)
Electronic research guides	70 (11.66%)	72 (12%)	79 (13.16%)
Online current awareness bulletins	34 (5.66%)	49 (8.16%)	56 (9.33%)
Electronic SDI services	57 (9.5%)	67 (11.16%)	55 (9.16%)
CREDO reference (X-refer plus)	63 (10.5%)	48 (8%)	50 (8.33%)
Virtual reference desk/Ask-a-librarian	44 (7.33%)	41 (6.83%)	47 (7.83%)
<b>Acquisition</b>			
List of new arrivals online	135 (22.5%)	150 (25%)	147 (24.5%)
Provision of alert services-like new additions	89 (14.83%)	87 (14.5%)	100 (16.66%)
Electronic indexes	117 (19.5%)	96 (16%)	99 (16.5%)
Electronic reserves	45 (7.5%)	45 (7.5%)	45 (7.5%)
Finding aids (other than OPAC)	16 (2.66%)	35 (5.85%)	58 (9.66%)

### Circulation

Knowing circulation data- (issue/return) online	147 (24.5%)	143 (23.83%)	149 (24.83%)
Knowing availability of – particular document online	122 (20.33%)	131 (21.83%)	138 (23%)
Reservation of documents online	76 (12.66%)	85 (14.16%)	66 (11%)
Status of reserved documents online	57 (9.5%)	62 (10.33%)	58 (9.66%)
Canceling of reservation online	47 (7.83%)	45 (7.5%)	48 (8%)
Online request for renewal of loan	45 (7.5%)	39 (6.5%)	44 (7.33%)
User account status online	45 (7.5%)	52 (8.66%)	51 (8.5%)
Online posting of overdue details	29 (4.83%)	39 (6.5%)	30 (5%)

### Cataloguing

Searching Web OPAC	181(30.16%)	172 (28.66%)	176 (29.34%)
Accessing e-journals	172 (28.67%)	171 (28.5%)	172 (28.66%)
Accessing online databases	158 (26.33%)	153 (25.5%)	159 (26.5%)
Accessing digital collections	127 (21.16%)	106 (17.67%)	111 (18.5%)
Searching multiple catalogues- with single command	22 (3.67%)	23 (3.84%)	35 (5.84%)

### Periodical section

Electronic article delivery	134 (22.33%)	109 (18.16%)	124 (20.66%)
Article alert service	122 (20.33%)	110 (18.33%)	115 (19.16%)
Open J-gate	121 (20.16%)	104 (17.33%)	117 (19.5%)
Pro-active web-based TOC	27 (4.5%)	50 (8.33%)	48 (8%)

### ILL/Document delivery

Electronic document delivery	132 (22%)	123 (20.5%)	110 (18.33%)
ILL based services	60 (10%)	54 (9%)	52 (8.66%)
ILL request web form	36 (6%)	36 (6%)	39 (6.5%)
Online inter library loan service	13 (2.16%)	21 (3.5%)	34 (5.66%)

### Miscellaneous

e-mail based services	151 (25.16%)	157 (26.16%)	137 (22.83%)
Online staff list	118 (19.66%)	117 (19.5%)	114 (19%)
Online Feedback form	110 (18.33%)	105 (17.5%)	120 (20%)
Online library news	103 (17.16%)	121 (20.16%)	106 (17.66%)
Online subject gateways	111 (18.5%)	109 (18.16%)	93 (15.5%)
Online contact addresses	97 (16.16%)	108 (18%)	107 (17.83%)
Online library holidays list	168 (28%)	69 (11.5%)	70 (11.66%)
Web-based FAQ	102 (17%)	92 (15.3%)	97 (16.16%)
Online helpdesk services/Ask-a- Librarian	91 (15.16%)	95 (15.83%)	81 (13.5%)
Online general library policies	78 (13%)	67 (11.16%)	77 (12.83%)
Online integrated push-based – services (e-mail based)	61 (10.16%)	63 (10.5%)	59 (9.83%)



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Web-based library tutorials	51 (8.5%)	57 (9.5%)	52 (8.66%)
Information about special exhibits	46 (7.66%)	45 (7.5%)	67 (11.16%)
Web-based user education/virtual-library tour	53 (8.83%)	47 (7.83%)	55 (9.16%)
Online in-house library bulletins	52 (8.66%)	47 (7.83%)	47 (7.83%)
Library blogs	44 (7.33%)	28 (4.66%)	59 (9.83%)
Online mailboxes for user-comments or suggestions	52 (8.66%)	35 (5.83%)	39 (6.5%)
Library forums (e-mail based)	36 (6%)	46 (7.66%)	43 (7.16%)
Online map of the library	28 (4.66%)	37 (6.16%)	55 (9.16%)
Change password online	32 (5.33%)	37 (6.16%)	46 (7.66%)
Online library chat	09 (1.5%)	26 (4.33%)	34 (5.66%)
Library wiki	02(0.33%)	01 (0.16%)	01 (0.16%)

**Note:** Multiple answers were permitted and Figures in parentheses indicate the percentage.

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As indicated in Table 5, it is interesting to note that web-based services are being utilized by all categories of respondents and a majority utilize electronic document delivery services under each group, namely, faculty, research scholars and P.G. students. The rank correlation co-efficient for faculty and research scholars, research scholars and P.G. students and the faculty and P.G. students were found to be 0.88, 0.98 and 0.83 respectively. While looking at the values of correlation co-efficient, it can be summarized that faculty and research scholars and the faculty and P.G. students opined more or less in a the similar manner as regards the difficult web-based services that are to be used in reference section. But there is a high degree of rank correlation co-efficient between the faculty and research scholars.

As shown in Table 5, the majority of respondents are browsing through the list of new arrivals online (72 percent). The rank correlation co-efficient between the faculty and the P.G. students is 0.95, as it indicates the high correlation between them regarding the web-based services used in acquisition.

It is evident from Table 5 that 73.16 percent of the respondents are knowing the online circulation data (issue/return); 65.16 percent respondents prefer to know availability of a particular document online; 37.82 percent respondents prefer to reserve their documents online; 29.49 percent respondents visit the library website to know the online status of their reserved documents; 23.33 percent respondents visit the library website to cancel their books reservation online; 21.33 percent respondents visit the website to send the renewal request of loan online; 24.66 percent respondents visit the library website to know the their user account status online; and 16.33 percent respondents visit the library website to know the posting of overdue details online.

It can be inferred that among the web-based library services in the circulation, knowing circulation data is the preferred service by all categories of web users.

As demonstrated in Table 5, 88.16 percent of the respondents are searching Web OPAC; 85.83 percent respondents prefer to access e-journals; 78.33 percent of the respondents prefer to access

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online databases; 57.33 percent respondents visit the library website for accessing the digital collections; and 13.35 percent of the respondents visit the library website to search the multiple catalogues with a single command.

Interestingly, many study libraries are using *JCCC@UGC-Infonet* search facility (it is the simultaneous search of multiple online databases and is an emerging feature of automated, web-based library and information retrieval systems) to search the e-journals and databases of UGC-Infonet digital library consortium and *Open J-gate*, is an electronic gateway to global journal literature in *open* access domain, launched in 2006, They provide access to all the open access journals and databases. This finding is a clear indication of proper library orientation extended to users as a method of imparting advance search techniques for effective use of existing federated search facilities in the study libraries.

Among the web-based periodical services used by the respondents, electronic article delivery comes first with 61.15 percent, followed by article alert services (57.82 percent), open J-gate (56.99 percent), where as proactive web-based table of contents (20.83 percent) had recorded a low percentage than the above services.

Among web-based ILL/document delivery services, electronic document delivery occupies first place (60.83%), followed by ILL based services (27.66%) and next in importance is ILL request web form (18.5%). An online ILL service is preferred by a selectively smaller percentage of web users (11.32%) for request for article reprints by e-mail.

Table 5 shows the performance of each category of web users in utilizing other web-based library services. All the categories of users have given their first preference for e-mail based services (74.15%) as the highest used service among 22 web-based library services.

The miscellaneous web-based library services preferences are: Online staff list (58.16%), Online feedback form (55.83%), Online library news (54.98%), Online subject gateways (52.6%), Online contact addresses (51.99%), Online library holidays list (51.16%), Web-based FAQ (48.46%), Online helpdesk/Ask-a- librarian (44.49%), Online general library policies (36.99%), Online integrated push-based services (e-mail based) (30.49%), Web-based library tutorials (26.66%), Information about special exhibits (26.32%), Web-based user education/virtual library tour (25.82%), Online in-house library bulletins (24.32%), Library blogs (21.82%), Online mailboxes for user comments or suggestions (20.99%), Library forums (e-mail based) (20.82%), Online map of the library (19.98%), Change password online (19.15%), Online library chat (11.49%), and Library wiki (0.65%) is the least used service among 22 web-based library services used by the respondents available on the library websites.

### **Use of web forms in reference queries**

Interactivity is a key feature of successful web-based services and web forms are good example of interactivity. Most study library websites have web forms for inviting feedback from the users and a few of them are facilitating a separate web form for different queries (Table 6).

**Table 6: Use of web-forms for different queries**

Description	Faculty	Research Scholars	P.G Students	Total (n=600)
Status of circulation accounts	168 (28%)	150 (25%)	144 (24%)	462 (77%)
Article by e-mail	111 (18.5%)	113 (18.83%)	110(18.34%)	334 (55.67%)
Reference queries	32 (5.33%)	50 (8.34%)	56 (9.33%)	138 (23%)
Reserve/cancel/renewal status of document	29 (4.83%)	39 (6.5%)	42 (7%)	110 (18.34%)
Interacting online with librarian/ acquisition staff	21 (3.5%)	39 (6.5%)	47 (7.83%)	107 (17.84%)
Interacting online with librarian/ reference staff	19 (3.2%)	42 (7%)	41 (6.8%)	102 (17%)
Recommending a new book	22 (3.7%)	32 (5.3%)	47 (7.8%)	101 (17%)
Documents on ILL	12 (2%)	17 (2.83%)	18 (3%)	47 (7.83%)

**Note:** Figures in parentheses indicate the percentage.

Table 6 shows that 77 percent of the users are getting the status of their circulation accounts (issue/return/overdue/user account status) with the help of web-based library automation software via library websites and remaining 33 percent users are unable to get the same. It clearly indicates that a greater number of respondents are getting circulation information, because a majority of study libraries have integrated their circulation accounts with library websites.

Table 6 reveals that 55.67 percent of the respondents are using the web form for request of article(s) by e-mail, while 44.33 percent of the respondents are not availing this facility.

As indicated in Table 6, it is surprising to note that 77 percent of users are unable to use web forms for reference queries and remaining 23 percent using for reference queries. It is clearly indicates that a lesser number of respondents are using web form for reference queries, the study found that majority of study libraries are not providing web forms to its users.

Web forms are becoming increasingly widespread because they facilitate interactivity and “can be presented in a more warm, personal way than a simple e-mail link (Dewald,1999)”. There is a clear direction from this study that the study libraries must facilitate web forms for reference queries.

As indicated in Table 6, 171 (28.5 percent) faculty members, 161 (26.83 percent) research scholars and 158 (26.33 percent) P.G. students are not using web form to reserve/cancel/renewal/status of their documents and twenty nine (4.83%) faculty members, 39(6.5 percent) research scholars and 42 (7 percent) P.G. students prefer web form to reserve/cancel/renewal/status of their documents. Web form is used only by a smaller percentage of users in all categories. It can be inferred that majority of study libraries are not providing the same.

As demonstrated in Table 6, 179 (29.83 percent) faculty members, 161 (26.83 percent) research scholars, and 153 (25.5 percent) P. G. students indicated that they do not interact online with librarian/ acquisition staff. A negligible 21 (3.5 percent) faculty members, 39 (6.5 percent) research scholars, and 47 (7.83 percent) P. G. students indicated that they interact online with librarian/acquisition staff. This service is also being used as a relation service mostly by research scholars and students.

Table 6 indicates 499 (83 percent) users are not interacting online with librarian/ reference library staff for reference queries, and remaining 17 percent are using online tools for the same.

Table 6 clearly indicates that 83 percent of the respondents are not using web form for recommending a new book to library and remaining 17 percent of the respondents are using the same. Among the respondents, in a relative service, research scholars and P.G. students are utilising this services in a better manner than the faculty.

From the data (Table 6), it is observed that a majority under each category is not using web form for getting documents on ILL. Only 7.83% libraries are getting ILL documents on the web request by the users.

Surprisingly, all the study libraries are part and parcel of UGC-Infonet digital library consortium and some of them are members of Developing Library Network (DELNET), New Delhi, which is taking the responsibility of documents on ILL to member libraries. Further, a majority of the services are web-based and ILL based services are not providing web forms.

## **PROBLEMS IN ACCESSING WEB-BASED LIBRARY SERVICES**

There are a number of obstacles to use web-based library services by users. The problem generally includes one, lack of skilled professionals, inadequate computers access, insufficient time, lack of library orientation, and lack of systems. To accomplish the above, a question was put to the respondents to state as to what problems or limitations they experienced while using the web-based library services in their libraries and responses received from them are furnished in Table 7.

**Table 7: Problems in accessing web-based library services**

<b>Problems</b>	<b>Faculty</b>	<b>Research Scholars</b>	<b>P.G. Students</b>
Slow internet connectivity	97 (16.16%)	109 (18.16%)	114 (19%)
Insufficient time	91 (15.16%)	92 (15.33%)	89 (14.83%)
Inadequate computers access	99 (16.5%)	90 (15%)	82 (13.66%)
Lack of systems	67 (11.16%)	86 (14.33%)	108 (18%)
Lack of Library orientation	95 (15.83%)	77 (12.83%)	72 (12%)
Lack of skilled professionals	64 (10.66%)	65 (10.83%)	63 (10.5%)

**Note:** Multiple answers were permitted and Figures in parentheses indicate the percentage.

Table 7 indicates that the slow internet connectivity (53.32%), is the major problem in accessing the web-based library services and 45.32% stated that insufficient time, followed by inadequate computers access (45.16%), lack of systems (43.49%), lack of library orientation (40.66%), and lack of skilled professionals (31.99%) are some of the problems faced by the users while accessing the web-based library services in their respective libraries.

The major contributory factor is very low bandwidths (Madhusudhan, 2007). It is a problem that affects web-based library services access in many universities in India. Further, an open-ended question asked about other problems reveals that frequent interruption in internet connectivity is the major overcome. The problems are almost similar, but their relative place changes slightly between one category of users to another category of users.

### **OPINION ON WEB-BASED LIBRARY SERVICES**

Connectivity is the critical technical factor for browsing web-based library services. The problem of slow access to the Internet also affects users' access and use of web-based library services of the library. To improve the present web-based library services and develop new web-based library services, there is a need to rate the existing services. In this context, a question was put to the respondent users to rate the web-based services rendered by their libraries and responses received from them are presented in Table 8.

**Table 8: Opinion on web-based library services**

<b>Opinion</b>	<b>Faculty</b>	<b>Research Scholars</b>	<b>P.G. Students</b>	<b>Total (n=600)</b>
Good	70 (11.66%)	77 (12.83%)	86 (14.34%)	233 (38.83%)
Very Good	78 (13%)	68 (11.34%)	49 (8.16%)	195 (32.5%)
Satisfactory	25 (4.16%)	37 (6.17%)	39 (6.5%)	101 (16.83%)
Excellent	20 (3.34%)	12 (2%)	21 (3.5%)	53 (8.84%)
Unsatisfactory	07 (1.16%)	06 (1%)	05 (0.3%)	18 (2.96%)

**Note:** Figures in parentheses indicate the percentage.

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It is inferred (Table 8) that very good rating had been given by the faculty by a relatively higher percentage among them, while both research scholars and P.G. Students have given a relatively higher percentage to good in their rating. Excellent had been mentioned by 10 percent by faculty and P.G. students, while it is 6 per cent for research scholars.

From the discussion it can be concluded that good (38.83%) is the highest rating for web-based library services, followed by very good (32.5%), satisfactory (16.83%), excellent (8.84%), and unsatisfactory (2.46%) is the lowest rating among five ratings.

### **SUGGESTIONS TO STRENGTHEN WEB-BASED LIBRARY SERVICES**

A question was asked to the respondent users to suggest the ways and means for improving/strengthening the web-based library services rendered by their libraries. The following are the major suggestions collected from the university librarians for improving the web-based library services in university libraries:

- (i) Updating web pages frequently
- (ii) Content based book services
- (iii) More hyperlinks to web-based library services
- (iv) Facility to upload content by users
- (v) Higher bandwidth and wireless connectivity
- (vi) Institutional archives of faculty publications
- (vii) Simplification of administrative procedures to make the better use of web-based library services
- (viii) All back-volumes of journals should be available online.
- (ix) Digital literacy programs and more web-based tutorials for users

The respondent says that no doubt that web-based library services has made professional life simpler and they feel that it becomes the basic necessity of academic life.

### **SUGGESTIONS**

The survey and the subsequent analysis of the data and the findings of the study have enabled the researchers to provide some practical suggestions for improving the web-based library services expected from study university libraries as follows:

- (i) Every effort should be made on a consistent basis to update the library websites frequently. This will certainly entice users to library websites and then to the library resources and web-based library services.
- (ii) There is an urgent need to develop dynamic library websites and compatible with web 2.0 technologies include web forms in each web-based library service. Web 2.0 facilitates communication, conversation, information sharing, and collaboration within the online community (Stephens and Collins, 2007).

- (iii) UGC of India with the help of INFLIBNET formulate the national web standards for university library websites to meet the new challenges of next-generation web-based library and information architecture and set up web content steering committees to strengthen their controls on information.
- (iv) Facilitate the RSS feeds, library wikis, instant messaging reference services, weblogs, virtual library tours, web-based library tutorials, floor maps, discussion forums and listservs represent the new ultimate level of power for web-based library services.
- (v) Apply the semantic technologies and ontologies will be the key aspects in present generation of web users. “Advanced semantic technologies enable computers to reach a higher level of understanding of the meaning of information being processed. Ontologies try to resolve the problem of ambiguity in natural language and the problems that arise due to the use of transmission meanings, analogy, comparison or metaphor” (Toleva, 2010).
- (vi) Adopt the next generation of the Internet (IPv6). In coming years, Internet and WWW will be the most important platform in academic learning environments.
- (vii) Provide multi-language support content to regional and international users.

## CONCLUSION

Web-based library services will become more widespread and sophisticated as the web becomes common place throughout the world, and to be successful players in the e-world. Libraries must continue to address the web design and implementation issues. As we actively transfer library services, our central purpose remain the same, to serve and teach users to find, evaluate, and use information effectively. The librarians should be expert to hold the hands of the users who are moving towards new communication paradigm a shift from face to face human contact to human machine interaction, from paper to electronic delivery, from text centered mode to multimedia and from physical presence to virtual presence. Despite these changes in communication technology, the reference interview will remain at the heart of the reference transaction. To meet these challenges the librarians may play a leadership role in providing better web-based library services facilities to their current techno savvy users.

The survey has revealed that study university libraries in India are lagging behind in providing web forms to users in different web-based library services, which are effective tools for library-user interaction and communication. It is hoped that study libraries will attend to this lacunae by developing web forms in each web-based library service.

Findings show that many of the surveyed university libraries are yet to exploit full potential of the web and continually develop an effective web-based information literacy programs to provide a high degree of interactivity and flexibility to enhance the use of web-based library services they offer to the users.

Our research is significant because it represents one of the earliest works to shed light on the current level of adoption and use of web-based library services in select university libraries in India and the ways in which individual web-based applications in different sections the study libraries has been used are examined.

Lastly, it should also be noted that this research has limitations. Since it surveyed users from only twenty universities, the users may not accurately represent the whole population. For future research, a broad study should include more university libraries that offer the full range of web-based library services and report the problems faced by users while using them, as well as expanding the study to other libraries in order to gain a broader perspective on the effective use of web-based library services.

### **Bibliography**

Acharya N G Ranga agricultural university, Hyderabad, available online: <http://www.angrau.net/lib.htm> <20 September 2, 2011>.

Ahmed, Ahmed. "Networked e-information services to support the e-learning process at UAE University", *The Electronic Library*, 25.3 (2007): 349- 62.

Ananda Rangapillai library, Pondicherry university, available online: <http://www.pondiuni.org/facil.html> <25 September, 2011>.

Arora, Jagdish. "Web-based digital resources and services: trends and innovations", available online: [http://dspace.inflibnet.ac.in/bitstream/1944/105/1/cali\\_24.pdf](http://dspace.inflibnet.ac.in/bitstream/1944/105/1/cali_24.pdf) <12 September, 2011>.

Bangalore university library, available online: <http://library.bub.ernet.in> < 6 September, 2011>.

Bhatnagar Anjana. and Deshmukh, Vijaya. "Web technologies for user education", available online: <http://dspace.inflibnet.ac.in/bitstream/1944/570/1/27%28cal+06%29.pdf> <22 September, 2011>.

Bhatnagar Anjana. "Web-based library services", *Proceedings of the 3rd Convention PLANNER -2005, Assam University, Silchar, November 10-11*, pp.426-434, available online:<http://dspace.inflibnet.ac.in/bitstream/1944/570/1/27%28cal+06%29.pdf> <8 September, 2011>.

Bhai Gurdas library, Guru Nanak Dev university, Amrithsar, available online: <http://library.gndu.ac.in> <10 September, 2011>.

Blair, Joanna. and Level, Allison V. "Creating and evaluating a subject-based blog: planning, implementation, and assessment", *Reference Services Review*, 36.2 (2008): 156-166.

Casey, Michael, E. and Savastinuk, Laura C. (2007), *Library 2.0: a guide to participatory library services*. Medford, NJ: Information Today.



Central library, North-eastern-hill university, available online: [www.nehu.ac.in/library/index.html](http://www.nehu.ac.in/library/index.html) (accessed September 13, 2011).

Central library, university of Jammu, available at: [www.jammuuniversity.in/campus\\_library.asp](http://www.jammuuniversity.in/campus_library.asp) (accessed September 2, 2011).

Chandra, Harish. "Web-based document delivery service at the central library of IIT Madras", (2002), available online: [http://dspace.inflibnet.ac.in/bitstream/1944/5/1/pdf\\_12.pdf](http://dspace.inflibnet.ac.in/bitstream/1944/5/1/pdf_12.pdf) (accessed September 16, 2011).

Cordeiro, Maria Ines. and Carvalho, Joaquim de. "Web-services: what they are and their importance in libraries", *vine*, 32.4 (2002): 46-62.

Decker, Reinhold. and Hermelbracht, Antonia. "Planning and evaluation of new academic library services by means of web-based conjoint analysis", *The Journal of Academic Librarianship*, 32.6 (2006): 558-72.

Delhi university library system, university of Delhi, available online: <http://crl.du.ac.in> (accessed September 22, 2011).

Dewald, N. H. "Transporting good library instruction practices into the web Environment: an analysis of online tutorials", *The Journal of Academic Librarianship*, 25.1(1999): 26-31.

Dr.T.P.M library, Madurai kamaraj university, available online: [www.mku library.org](http://www.mku library.org) (accessed September 22, 2011).

Dr. Zakir husain library, Jamia millia islamia university, available online: <http://www.jmi.nic.in/zhl/zhlibrary.htm> (accessed September 22, 2011).

Feldman, Sari. and Tracy Strobel. "Advancing your library's web-based services." ERIC Digest, No.ED465379, (2002), available online: <http://www.ericdigests.org/2003-1/web.htm>

Ganesan, P. and Pandian, N. Murugesu. "Evaluating web resources, services and user attitude towards web-based information services at university of Hyderabad library - a study", (2004), available online: [http://dspace.inflibnet.ac.in/bitstream/1944/318/1/04\\_cali\\_11.pdf](http://dspace.inflibnet.ac.in/bitstream/1944/318/1/04_cali_11.pdf) (accessed September 2, 2011).

Goa university library, available online: <http://goalnet.unigoa.ac.in/> (accessed September 22, 2011).

Guindy library, university of Madras, available online: [www.unom.ac.in/chepauklib.html](http://www.unom.ac.in/chepauklib.html) (accessed September 22, 2011).

Hvass, Anna. and Myer, Sue. "Can I help you? Implementing an IM service", *The Electronic Library*, 21.1(2008): 21-30.

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Indira Gandhi memorial library, university of Hyderabad, available online: [www.uohyd.ernet.in](http://www.uohyd.ernet.in) (accessed September 22, 2011).

Jawaharlal Nehru university library, available online: [www.jnu.ac.in/main.asp?sendval=library](http://www.jnu.ac.in/main.asp?sendval=library) (accessed September 22, 2011).

Jayakar library, university of Pune, available online: [www.unipune.ac.in/other\\_academic\\_and\\_service\\_units/Jaykar\\_lib/default.htm](http://www.unipune.ac.in/other_academic_and_service_units/Jaykar_lib/default.htm) (accessed September 22, 2011).

Jawaharlal Nehru library, Kurukshetra university, available online: <http://kukinfo.com/library.htm> (accessed September 22, 2011).

Kanamadi, Satish. and Kumbar, B. D. "Web-based services expected from libraries: a case study of management institutes in Mumbai city", *Webology*, 3.2, (2006), available online: [www.webology.ir/2006/v3n2/a26.html26.pdf](http://www.webology.ir/2006/v3n2/a26.html26.pdf) (accessed September 24, 2011).

Kim, Yong-Mi. and Abbas, June. "Adoption of library 2.0 functionalities by academic libraries and users: a knowledge management perspective", *The Journal of Academic Librarianship*, 36.3 (2010):211-18.

Krishnamurthy, M., and Chan, W.S. "Implementation of library portals for information resources: a case study of the Indian statistical institute, Bangalore (ISIB). *International Information and Library Review*, 37.1(2005):45-50.

LiLiLi. "Leveraging quality web-based library user services in the digital age", *Library Management*, 27.6-7(2006): 390-400.

Lukasiewicz, Adrianna. "Exploring the role of digital academic libraries changing student needs demand innovative service approach", *Library Review*, 56.9 (2007): 821-7.

Madhusudhan, M. "Internet use by research scholars in university of Delhi, India", *Library Hi Tech News*, 24. 8(2007):36-42.

Mirza, Muhammad Sajid. And Mahmood, Khalid. "Web-based services in university libraries: a Pakistani perspective", *Library Philosophy and Practice*, (2009), available online: <http://www.webpages.uidaho.edu/~mbolin/mirza-mahmood.htm> (accessed September 24, 2011).

Moyo, Lesley M. "Electronic libraries and the emergence of new services paradigms", *The Electronic Library*, 22.3(2004): 220-30.

Nielsen, Hans Jorn. and Hummelshøj, Marianne. "What librarians need2know instant messaging and chat as reference services in public libraries", (2008), available online: <http://edoc.hu-berlin.de/conferences/bobcatsss2008> (accessed September 22, 2011).

Osmania university library, available online: [http://202.41.92.19:8080/newgenlibtxt/Opac2\\_0.jsp](http://202.41.92.19:8080/newgenlibtxt/Opac2_0.jsp) (accessed September 12, 2010).

Panjab university, Chandigarh, available online: <http://library.puchd.ac.in> (accessed September 22, 2011).

Parida, Baman. "Emergence of digital library services in India", (2004), available online: <http://dspace.inflibnet.ac.in/bitstream/1944/334/1/04cali75.pdf> (accessed September 22, 2011).

Pathak, S K., Mishra, A and Sahoo, G. "Future of Web Based Library And Information Services: An Indian Scenario" (2008), available online: <http://ir.inflibnet.ac.in/dxml/bitstream/handle/1944/1156/36.pdf?sequence=1> (accessed September 22, 2011).

Reddy, Rama E. "Strategic planning and catalysts for new generation of libraries", (2004), available online: [http://dspace.inflibnet.ac.in/bitstream/1944/307/1/04\\_cali\\_1.pdf](http://dspace.inflibnet.ac.in/bitstream/1944/307/1/04_cali_1.pdf) (accessed September 2, 2011).

Sayaji Rao Gaekwad library, Banaras hindu university, available online: [www.bhu.ac.in/bhulibrary/index.html](http://www.bhu.ac.in/bhulibrary/index.html) (accessed September 22, 2011).

Schrecker, Diane L. "Using blogs in academic libraries: versatile information platforms", *New Library World*, 109.3/4 (2008):117-129.

Schubert, Foo. and Ee-Peng, Lim. "An integrated web-based ILL system for Singapore libraries", *Interlending & Document Supply*, 26.1(1998):10-20.

Stephens, Michael. and Collins, Maria. "Web 2.0, library 2.0, and the hyper linked library", *Serials Review*, 33.4(2007):253-56.

Su, Shiao-Feng. and Kuo, Jane. "Design and development of web-based information literacy tutorials", *The Journal of Academic Librarianship*, 36.4(2010):.320-28.

Syed, Sajjad Ahmed. "Managing change to enhance web-based services in the Arabian gulf libraries", *Online Information Review*, 26.4(2002):265-70.

Toleva, Stefka-Stoimenova. "Evaluation of web-based information systems: users' informing criteria", *Issues in Information Science and Information Technology*, 7, (2010): 297-309.

Tezpur university library, available online: [www.tezu.ernet.in/library](http://www.tezu.ernet.in/library) (accessed September 22, 2011).

Tobin, T. and Kesselman, M. "Evaluation of web-based library instruction programs", *INSPEL*, 34.2(2002):67-75.

University information resource centre, Guru Gobin Singh Indraprastha university, available online: <http://ggsipu.nic.in> (accessed September 22, 2011).

Walton, S. "How we fit six floors of milner library into the palm of your hand", (2008), available online: [http://eprints.rclis.org/archive/00013519/01/How\\_We\\_Fit\\_Presentation\\_](http://eprints.rclis.org/archive/00013519/01/How_We_Fit_Presentation_)

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Sean\_Walton.pdf (accessed September 22, 2011).

Wang, Zhonghong. "Integrated library system (ILS) challenges and opportunities: a survey of U.S. academic libraries with migration projects", *The Journal of Academic Librarianship*, 35.3(2009): 207–20.

White, M.D. "Diffusion of an innovation: digital reference service in Carnegie foundation master's (comprehensive) academic institution libraries", *Journal of Academic Librarianship*, 27.3(2001):173-87.

Wusteman, Judith. "Realizing the potential of web services", *OCLC Systems & Services: International digital library perspectives*, 22.1(2006), available online: [http://www.redorbit.com/news/technology/586697/using\\_ajax\\_to\\_empower\\_dynamic\\_searching/index.html](http://www.redorbit.com/news/technology/586697/using_ajax_to_empower_dynamic_searching/index.html) (accessed September 22, 2011).

Xu, Chen. Ouyang, Fenfei. and Chu, Heting. "The academic library meets web 2.0: applications and implications", *The Journal of Academic Librarianship*, 35.4(2009):324–31.

## Appendix –I

### List of select University libraries in India with URLs (n=20)

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#### Name of the University & URL of the Library

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Acharya N G Ranga Agricultural University, Hyderabad <[www.angrau.net/lib.htm](http://www.angrau.net/lib.htm) >  
Bangalore University, Bengaluru < <http://library.bub.ernet.in> >  
Banaras Hindu University, Varanasi < <http://www.bhu.ac.in/bhulibrary/index.html>>  
Goa University, Goa < <http://goalnet.unigoa.ac.in> >  
Guru Nanak Dev University, Amrithsar < <http://library.gndu.ac.in>>  
Guru Gobin Singh Indraprastha University, Delhi < <http://ggsipu.nic.in>>  
Jamia Millia Islamia , New Delhi < [www.jmi.nic.in/zh/zhlibrary.htm](http://www.jmi.nic.in/zh/zhlibrary.htm) >  
Jawaharlal Nehru University, New Delhi < <http://www.jnu.ac.in/main.asp?sendvol=library>>  
Kurukshetra University, Kurukshetra < <http://kukinfo.com/library.htm>>  
Madurai Kamaraj University, Madurai < <http://www.mkulibrary.org>>  
North Eastern Hill University, Shillong < [www.nehu.ac.in/library.html](http://www.nehu.ac.in/library.html) >  
Osmania University, Hyderabad <[http://202.41.92.19:8080/newgenlibtxt/Opac2\\_0.jsp](http://202.41.92.19:8080/newgenlibtxt/Opac2_0.jsp)>  
Panjab University, Chandigarh <<http://library.puchd.ac.in>>  
Pondicherry University, Puducherry <<http://www.pondiuni.org/facil.html>>  
Tezpur University, Tezpur <<http://www.tezu.ernet.in/Library>>  
University of Delhi, Delhi <<http://crl.du.ac.in>>  
University of Hyderabad, Hyderabad < [www.uohyd.ernet.in/](http://www.uohyd.ernet.in/)>  
University of Madras, Chennai < [www.unom.ac.in/chepauklib.html](http://www.unom.ac.in/chepauklib.html) >  
University of Pune, Pune < [http://www.unipune.ac.in/other\\_academic\\_and\\_service\\_units/Jaykar\\_lib/default.htm](http://www.unipune.ac.in/other_academic_and_service_units/Jaykar_lib/default.htm) >  
University of Jammu, Jammu < [www.jammuuniversity.in/campus\\_library.asp](http://www.jammuuniversity.in/campus_library.asp) >

Libraries provide a variety of library and information services to satisfy different information requirements of users. Here the researcher mentions library and Information services are as under.Â Web-enabled OPACs allow users to search library catalogues and access other services from any client at Library Services anywhere at any time. It allows users to search for the bibliographic records contained within a libraryâ€™s collections.Â Automated library systems also offer community information services in the form of list of names and addresses of local organizations or persons, local leisure facilities, employment etc. Outreach services allow creation of user interest profiles, reading histories, easy selection, delivery and return of items. Copyright Advisory Services. UNT Libraries copyright specialists assist faculty, students, staff and community members in understanding copyright law (including fair use), plagiarism, and publisher agreements and other contracts for transfer or licensing of material protected by copyright. Our services include individual consultations, small-group workshops, and presentations on a variety of subjects. UNT Libraries Scholarly Publishing Services. UNT Libraries Scholarly Publishing Services. The UNT Libraries Scholarly Publishing Services offerÂ Scholars across disciplines use resources provided by the UNT Libraries in the course of their research, including that research that is funded through grants. Web portals, Management libraries, Web-based services, World Wide Web, Internet.Â Libraries in business and management institutes use propriety or in-house software packages for library management. Even though there is a growing trend in libraries to move towards e-resources, some of the libraries still depend upon books and journals.Â The scope of the study is limited to studying the web-based services expected from libraries in All India Council of Technical Education (AICTE) approved management institutes affiliated to the University of Mumbai .The limitation is that this article covers only the day to day library transactions like online catalogue, reservations, etc. Access to online resources is not studied as it is understood that they will have to be web-based only.