

## **Measuring Success in Cyberspace: Are We Successful in Cyberspace? A Review of the Current Status of Web-based Library Systems of Open Universities**

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### **Abstract**

**Purpose** The purpose of this paper is to present the findings of a survey conducted among the national level single mode distance education institutions that possess their own library systems. The aim of the study was to identify the current status of web-based library systems offered by the open universities worldwide.

**Methodology** The survey method was used to collect the data from the target population that was scattered in 20 different countries through out the world. An e-mail-based questionnaire was used to collect the necessary information from the librarians of the selected libraries.

**Findings** The current status of web-based library systems was determined in terms of 5 parameters of web services and 7 parameters of user interfaces. It was found that the majority of libraries needed to be upgraded in all 12 parameters.

**Practical implications** This study examined the current status of web-based library systems of open university libraries and produced results that could be useful for librarians and authorities of distance education institutions.

**Originality/ value** The studies that investigate the web-based library systems of distance education institutions are limited in the current literature.

**Keywords:** Web-based library systems, Library websites, Web-based library services, Distance learners, User interface design

### **1. Introduction**

Today's libraries are operating in a complex environment due to the proliferation of information resources and growing popularity of personal and mobile technologies (Frederiksen, 2006). As a result, libraries no longer can survive only in a physical form as a physical place with fixed collections, rather they need to be coupled with a virtual one which is capable of providing 24/7 service. This type of time and place independent library service is undoubtedly very crucial for the self-learning system of the distance education. Hence, user-friendly, content-rich website is an essential feature for a modern distance education institution. However, as Dagli (2005) pointed out, in a hurry to introduce distance education courses, some institutions have gone ahead without necessarily fully considering the support systems that off-campus education requires. As a result, advances in distance librarianship

have not always kept pace with the rapid development in distance education over the past few years (Coffman, 2003). In addition, library services for distance learners, particularly in terms of quantity, quality and content-richness of websites, seem to be a rarely investigated field. Therefore, a study was designed to determine the current status of web-based library systems offered by the open universities worldwide.

## **2. Scope of the study**

The study was limited to national level single mode distance education institutions that possess their own library systems. Online teaching organizations usually called “Virtual Universities” were excluded from the study since they are providing library services through participation with other universities. For example: the ‘Open Universities Australia’ and ‘Open University of Greece’ were not included in this study as they are using other university libraries for providing library services to their students. Besides, all the dual mode institutions were excluded from the study. For example, FENU (Far Eastern National University) Open University was excluded as it was established as a subdivision of Far Eastern National University of Russia.

## **3. Research process**

The study was carried out in three phases. A preliminary phase in which a set of necessary documents were formulated followed by the main survey in which a questionnaire was sent as an e-mail attachment to the librarians of the selected open universities. During the third and the final phase the accessibility of the websites were measured using two types of automatic web tools.

### **3.1. Documentation of necessary information - phase one**

Using the personal and professional contacts and browsing the Internet using Google and Yahoo web search engines, the following documents were formulated to carry out the main survey.

- List of open universities within the scope of this study (Doc.1)
- List of web addresses of open university libraries listed in the Doc.1 (Doc.2)
- List of contact details of librarians of OUs which own multi-paged (at least two pages) websites (Doc.3)

### **3.2. Conducting the survey - phase two**

The survey was conducted among 22 open universities identified in the phase one. A questionnaire, which consisted of three parts - ‘*About the library membership*’, ‘*About the web-based services*’ and ‘*About the library website*’ - was sent as an e-mail attachment with a covering e-mail to the librarians listed in the Doc.3. The questionnaire was also made available in the OUSL library website and link was mentioned in the covering letter. The survey was conducted from January to April 2008.

### **3.3. Measuring the accessibility of the library websites - phase three**

‘WAVE’ web accessibility evaluation tool (version 4.0) and ‘W3C Markup Validation Service’ were used to measure the different dimensions of web accessibility of the websites of responding ed libraries. WAVE at <http://wave.webaim.org> is capable of checking the web pages for conformity issues with several established web accessibility standards such as

WCAG (Web Content Accessibility Guidelines) and Section 508 while W3C Markup Validation Service at <http://validator.w3.org> checks the markup validity of web documents in HTML, XHTML, SMIL, MathML etc.

The website evaluation process using the tools was carried out during the first week of May 2008. All the websites were examined within a 5 day time frame to avoid changes that might occur if the evaluation was carried over a long period of time.

#### 4. Findings

Fourteen (14) librarians responded to the survey at the rate of 63.6%. Out of them 71% of libraries have both national and international student users. In other words, majority of libraries were catering to a widely distributed user population. This type of time and geographically dispersed separated clientele demands a 24/7 service from the library. Therefore, it is very important for these institutions to maintain content-rich, user-friendly web-based library systems.

##### 4.1. Status of web services

The current status of web services was determined in 5 parameters namely, level of availability of web services, contributors of developing web services, limitations of developing and maintaining web services, level of satisfaction of the usage of web service, factors that affect the usage of web services.

**4.1.1. Availability of web services:** The number of delete web services available in the library website is a good indication of library’s ability to cope up with numerous requirements of target user of different categories. Table 1 presents the level of availability of web services in responding ed libraries.

Table 1. Level of availability of web services

<i>Category</i>	<i>n</i>	<i>% (n/Nx100)</i>
Libraries offered above 15 services	3	21
Libraries offered between 10 -15 services	8	57
Libraries offered below 10 services	3	21

*n* - no. of libraries offered the services within the particular range

*N* - total no. of responded libraries (14)

Only 21% of the libraries were found to be having more than 15 services. Nineteen (19) is the highest number of services (out of 27 identified services) provided by an individual library.

**4.1.2. Contributors of developing web services:** Another critical factor that determines the success of any sort of service is the people engaged in the developing process. The contributions of the library staff, teaching staff as well as students are vital for developing and implementing library services.

As expected, senior staff of the library had been involved in developing the web services in all 14 responded libraries. The participation of junior staff (64%) was not that good. Participation of the teaching staff (50%) was at a moderate level. However, the major drawback appeared to be, insufficient contribution on the part of the students (7%).

**4.1.3. Limitations of developing and maintaining web services:** Findings in this regard more or less agree with the general viewpoints. As is expected, ‘Lack of number of staff members’ (79%); and ‘Lack of funds’ (71%) were the major limitations in developing and maintaining web services in the responding libraries. Table 2 presents the results.

Table 2. Limitations of developing and maintaining web services

<b><i>Limitations</i></b>	<b><i>n</i></b>	<b><i>% (n/Nx100)</i></b>
Poor infrastructure facilities	4	29
Negative attitudes of administrators of the university	2	14
Lack of funds to implement and maintain web services	10	71
Lack of staff (number of heads)	11	79
Lack of skilled staff	7	50
Staff resistance	1	7

*n* - no. of libraries that selected the item

*N* - total no. of responded libraries (14)

**4.1.4. Level of satisfaction of the usage of web services:** Usage of library web services is reported to be low all over the world. In this survey, librarians were requested to indicate their observations on the usage of the web services offered by their libraries from a 4-point scale. Level of satisfaction in usage of web services was at a moderate level. 50% of the librarians stated that they were satisfied. One librarian said that he was extremely dissatisfied while there was not a single librarian who mentioned that he/she was extremely satisfied.

**4.1.5. Factors that affect the usage of web services:** This study identified two major barriers that prevent the patrons from using the web services offered by their libraries. They are; ‘Users’ inability to use the service’ and ‘lack of awareness among the user community’. A proactive approach from the part of librarians might be able to remove these factors and enhance the usage. Table 3 points out the identified issues that caused low usage among responding libraries.

Table 3. Factors that affect the usage of web services

<b><i>Factors</i></b>	<b><i>n</i></b>	<b><i>% (n/Nx100)</i></b>
Lack of awareness of availability of web service among users	11	79
Lack of knowledge on “how to use the services” among users	12	86
Lack of Internet facilities for users to access web services	7	50
User resistance to use electronic resources and services	4	29
Lack of cooperation from the teaching staff	3	21

*n* - no. of libraries that selected the item

*N* -total no. of responded libraries (14)

## **4.2. Status of user interface (website)**

The current status of user interfaces was determined by applying 7 parameters namely, availability of library websites, contributors of designing and maintaining websites, limitations of designing and maintaining websites, level of satisfaction of the usage of websites, factors that affect the usage of websites, level of application of accessibility recommendations in designing websites, level of usage of standard HTML codes in designing websites.

**4.2.1. Level of availability of library websites of open universities:** The level of availability of websites is a good measure of usage of web channel in delivering library services for remote learners. However, the current status of availability of library websites is not at an acceptable level. Out of the 44 open universities identified within the scope of this study only 22 (50%) institutions owned at least a two-paged library website.

**4.2.2. Contributors of designing and maintaining websites:** One of the critical factors that determine the design-accuracy and the content-richness of the website is the professional qualifications, knowledge and skills of the web-designers.

Nevertheless, only 6 (43%) of the responded libraries seem to be having the correct composition (the members of the library staff and the members of the university IT department) in their web designing teams.

**4.2.3. Limitations of designing and maintaining the library websites:** There might be many reasons behind the poorly designed and badly maintained sites. The barriers that were identified during this study are presented in the Table 4.

Table 4. Limitations of designing and maintaining websites

<b>Limitations</b>	<b>n</b>	<b>% (n/Nx100)</b>
Organizational culture	6	43
Lack of skilled staff of web designing	6	43
Lack of knowledge of web accessible guidelines	7	50
Insufficient time to design the web page	3	21
Lack of staff to revise the website timely	8	57
Lack of feedbacks/ responses from the users	7	50

*n* - no. of libraries that selected the item

*N* - total no. of responded libraries (14)

‘Lack of staff to update the website timely’ is the major problem stated by the librarians. 50% of librarians stated that ‘Lack of knowledge of web accessible guidelines’ is a barrier in designing accessible websites in their libraries. Besides, 7 (50%) librarians named 3 or more factors as obstacles while 2 (14%) librarians stated that they do not have any problem in this respect.

**4.2.4. Satisfaction of the usage of websites:** Sometimes, highly informative sites are not very popular as the structure and the navigation of the site is cumbersome. The design of the website is one of the most important factors that encourage the visiting and re-visiting of the site.

The librarians were requested to indicate their level of satisfaction of usage of the library website as a measure of frequent visit to the site by target user groups. The majority (71%) of librarians stated that their library websites were under-used.

**4.2.5. Factors that affect the usage of websites:** It is clear from the results that the librarians were not very satisfied with the usage of their websites. Table 5 gives the main obstacles that affect the usage of library websites in the responded libraries. Enhancing the Internet access facilities and improving web browsing skills of users seem to be the solutions for majority of these libraries.

Table 5. Factors that affect the usage of websites

<b>Factors</b>	<b>n</b>	<b>% (n/Nx100)</b>
Lack of promotion of library website	5	36
Lack of web browsing skills of students	6	43
Lack of facilities for students to access Internet	8	57
Website is not very user friendly	5	36
Website takes a long time to download	1	7

*n* - no. of libraries that selected the item, *N* - total no. of responded libraries (14)

**4.2.6. Level of accessibility of websites:** The main technique of measuring the accessibility of websites, particularly for people with disabilities, is to measure the site for conformity issues with established web accessibility standards such as WCAG guidelines and Section 508.

Top-layer pages including the homepage and all the pages within the same domain that were directly linked to it were measured using WAVE automatic accessibility evaluation tool. Total number of pages measured was 152 and total number of instances of errors identified was 779. At first, errors per page of each of the website were calculated and then categorized them into 3 groups. Table 6 presents the results.

Table 6. Level of accessibility of websites – WAVE results

<b>Group</b>	<b>n</b>	<b>% (n/Nx100)</b>
Websites with of 0 – 1.9 errors per page	5	36
Websites with of 2 - 3 errors per page	4	29
Websites with of more than 3 errors per page	5	36

*n* - no. of websites belong to the particular group

*N* – total no. of websites evaluated (14)

Although, there were not many error-free sites, the number of errors per page in majority of sites was not high. Only 36% websites contained more than 3 errors per page.

**4.2.7. Use of standard HTML codes in designing websites:** Use of standard HTML codes is a very important factor in today's website designing, since there are different versions and various types of web browsers. It is very vital to use standard HTML codes in order to get the website displayed similarly for different browser-users. 'W3C Markup Validation Service' was used to measure the usage of standard HTML codes. Details are given in the Table 7.

Table 7. Level of usage of standard HTML codes in designing websites

<b>Groups</b>	<b>n</b>	<b>% (n/Nx100)</b>
Websites free from HTML errors	2	14
Websites consisted of 1-20 HTML errors	6	43
Websites consisted of over 20 HTML errors	6	43

*n* - no. of websites in the group

*N* – total no. of websites measured (14)

## 5. Concluding remarks

The findings of the study are not very satisfying. They point out several very important factors, which are worthwhile for conveying to librarians and authorities of the distance education sector.

First and the foremost factor is the high percentage of institutions operating without a library website. Out of the 44 open universities identified only 22 (50%) institutions owned at least a two-paged library website. There were three institutions that provided some information about the in-house services of the library in the institutional website. Rest of the 19 libraries could not be located on the web during the time of research planning of this study. This may be a bad for reputation of institutions expected to be working in a flexible e-learning environment.

In addition, most of the existing library websites need immediate upgrading in terms of both content and design. Lack of staff, insufficient funds, lack of facilities for students to access the Internet and organizational culture have been identified as the major obstacles for developing and maintaining web services and websites. Major factors that affect the usage of websites and web services are lack of awareness, lack of web browsing skills of students. Besides, only 43% of responded libraries of this study had the right combination (*participation of both library staff and IT staff*) in their web teams. Only 50% of the librarians participated in the survey agreed that they were satisfied with the usage of their web services while the majority (71%) of librarians declared that their library websites were under-used.

This situation demands the librarians to take immediate steps to convince authorities of their parent institutions to provide them with adequate facilities, resources and opportunities in order to design/ redesign websites, develop web services, conduct user awareness programs and promotion campaigns and empowering themselves with necessary skills and knowledge. Correspondingly, the authorities in the distance education sector should strengthen the library services by providing sufficient resources in terms of funds and skilled staff along with expanding the infrastructure facilities in the libraries. The restructuring of the library service, with collaboration of both parties, in the light of new technological developments is very crucial to ensure the academic success of distance learners as well as to reduce the high dropout rates currently endured by the distance education sector.

## 6. References

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