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A survey on faculty members' perspective on digital library plus

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The aim of this paper is to evaluate accessibility, usability, and usefulness of digital library plus (dl+) from the faculty members' perspective. A questionnaire was prepared, and sent to the email address of all participants who had registered in digital library plus. Data analysis shows that only a few number of faculty members are interested to register in digital library and use it. Most of the subjects intended to use e-journals. They believe that journal structures are easy for using. Digital library plus is almost one of the digital library for researchers, educators, graduators, and postgraduate students of Iran in English language. As it is, in its beginning most of the faulty members are not familiar with this phenomenon. In fact digital library evaluation has various aspects but this paper focuses on usability, accessibility, and usefulness of digital library. This paper provides insights into evaluation of digital library plus from the users' perspective.

Key words: Digital library plus, digital library evaluation, faculty members.

INTRODUCTION

The networked environment is an important means through which libraries provide access to information and in which individuals seek information. Digital libraries play an increasingly significant role in new world. "Digital library give us opportunities we never had with traditional libraries or even with the web" (King et al., 2004). As a result, industrialized societies are gradually becoming information societies. Waters (2001) believed that now information is as essential resources for economic and social development (Waters, 2001).

Digital libraries can be defined as collections of valid information and various services that delivered to users by using a variety of technologies. In general, digital libraries are the logical extensions and augmentations of physical libraries in a digital information society (Marchionini et al., 2003). Digital technologies especially digital libraries require new values, attributes, and patterns of behavior to access information. A digital library is not successful unless the system is used effectively. Therefore, there is need to established methods in which to evaluate and measure the performance of library protocols, quality of content, and quality of services. Evaluation can improve digital library services, contents, and finally user satisfactions.

Saracevic (2004) believed that evaluation of digital libraries is not impossible but is a very difficult task to accomplish because of:

(i) Complexity: Digital libraries have very complex structures, so evaluation of digital libraries is difficult, (ii) Newly-digital libraries are new technology and they are in early stage of development,
(iii) Culture: Evaluation is not a part of the culture of operating digital libraries, According to Saracevic (2004) the ultimate goal of digital library evaluation is to study how digital libraries transform research, education,

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learning and life. The essential criteria for digital library evaluation are usability, usefulness, and accessibility of digital library, by evaluation this criteria Managers, developers, and designers can promote their high quality services (Saracevic, 2004). Over the past few years, there has been an increasing investment in information technology in many countries. For example in the last decade, the USA has spent more than three trillion dollars on information technology in the recent decade (Atilgan and Baryram, 2006).

Wilson (2002) suggested that designers and developers should seek the best ways to evaluate the usability and usefulness of their sites, even though they believed that sites should be easy to use and to learn.

In recent years, many managers of Iranian University have interest to establish digital library in their libraries. To reach this aim Rose system new consortia buying model have dramatically increased the availability of online resources, particularly journal articles, in the universities, especially Islamic Azad Universities, and technical institutes of Iran. The degree of acceptance and pattern of use of such materials are of great interest to library collection development. Rose system provides the digital library plus (dl+) to serve the information needs of these large group of society.

In which to offer various services to Iranian Universities, students and faculty members can directly have access to information through e-journals, databases, e-books, Class Mean Embedding (CME), care knowledge system, drug information, medical image through dl+. The accessibility of students can have access to the dl+ based on IP addresses but the faculty members can have access to it through user name and password in everywhere of world. This study tries to evaluate usability, accessibility, and usefulness of dl+ according to faculty members 'perspective at Qom Islamic Azad University and highlights some conclusion about how faculty members at QIAU use dl+.

Background

User evaluation plays a key role in the development of digital library system. While more researches have done digital library evaluation framework from different dimensions and levels, there are less researches on digital library evaluation on user's perspective. Fuhr et al. (2001) proposed a scheme for digital library evaluation which contains four dimensions: data/ collection, system/ technology, user and usage data/collection assessment and mainly focuses on content, description, quality/reliability attributes, and management and accessibility attributes (Fuhr et al., 2001). System / technology assessment is related to user technology, information access, system structure, and document technology. Users and their uses are represented by seeking information (Xie, 2008).

Jeng (2004) studied on evaluation of the New Jersey Digital Highway (NJDH). In this study she evaluated the usefulness and usability of the NJDH, and its portal structure. The NJDH intends to provide an immersive and user centered portal for New Jersey history and culture. This study also evaluate users' perceptions of ease of use, organization of information, terminology, attractiveness, and mistake recovery.

Bertot et al. (2006) adopted a broad understanding of usability, including satisfaction, in addition to ease of use, efficiency, and memorability for the interactive evaluation of Florida Electronic library (Bertot et al., 2006). Tasakonas et al. (2004) examined the interactions of digital library components. They studied the relationships between user-system, user-content, content-system, and they also evaluated usability, usefulness, and system performance of digital library (Chowdhury et al., 2006).

Yang (2001) examined user's problems solving process in using the digital library by adopting an interpretive and situated approach. The findings of this study helped designers to develop and improve better intellectual tools to facilitate user's performance. Bishop et al. (2000) investigated the extent of user, use of the digital library compared to other systems, nature of users, viewing behaviour, purposes, importance of users, and user satisfaction. Cherry and Duff'd (2002) focused on how the digital library was used and the level of user satisfaction with the response time, browse capabilities, comprehensiveness of the collection, print function, search capabilities, and display of document pages. Hill et al. (2000) tested user interfaces of Alexandria digital library. In this study they collected feedback about the users' interaction with the interfaces of Alexandria digital library, the problems of the interfaces, the requirement of system functionality, and the collection of the digital library. Xie (2006) investigated digital library evaluation criteria based on user's input. User developed and justified a set of essential criteria for the evaluation of digital libraries. Tamaro (2008) studied on the user perceptions of digital libraries in Italy. She described the findings of a survey promoted and financed by Fondazione Rinascimento Digitale about user's perceptions of digital libraries in Italy. The primary objective of this survey was to obtain feedback from users on their perceptions of digital library services and to give them an opportunity to make suggestions. The results indicated that users have different perceptions. As mentioned before, user evaluation plays an important role in the evolvement of digital library systems. In this study, we attempt to evaluate usability, accessibility, and usefulness of dl+ from the QIAU faculty member's perspective.

Usability, usefulness, and accessibility in digital library

Usability, usefulness, and accessibility are methodologies

that provide different data regarding the ability of a digital library to meet the need of users. Usability is a multidimensional construct and has a theoretical root in human computer interaction. Identification of the factors that contribute is the first step in digital library evaluation (Borgman and Rasmussen, 2005). Usability focuses on the effective, efficient and satisfactory task accomplishment and aims to support a normal and uninterrupted interaction between the user and the system. Digital library community has shown an increasing interest in usability and presented a set of factors such as ease of use, terminology, navigation, and learnability (Tsakonas and Papatheodorou, 2008). Ease of use is considered as a crucial attribute of digital library interaction (Park, 2000). Usability testing determines the extent to which a digital library, in whole or in part, enables users to intuitively use a digital library (Bertot et al., 2006). Usability can characterize any aspect of the ways that people interact with a system. Usability issues should be considered during the design of digital library services in order to build systems which users with limited technological skills can readily use. Chowdhury (2004) suggested that usability is a relative concept and must be judged on the basis of digital library's intended goals. Dunker et al. (2000) commented that the importance of colors, characters, symbols, and languages comes from different cultural backgrounds that can affect the usability and finally the user satisfaction of digital libraries.

The Human Computer Information (HCI) community generally define usability with respect to the user interface (Nielsen and Levy, 1994) and especially in assessing their effectiveness, efficiency or user satisfaction of the user with a particular interface (Chowdhury et al., 2002; Marchionini and Komoldi, 1998; Norlin, 2000). Nielsen (1993) discussed on four attributes of a system's interface usability, learnability, efficiency, memorability, and errors. Accessibility is an issue that permeates various stages of system uses, from logging in to acquiring a desired document to read. Accessibility testing determines the extent to which a digital library, in whole or in part, provides users with disabilities the ability to interact with digital library (Bertot et al., 2006). Convenience and ease of use are especially important factors. If users experience significant barriers in the form of registration and log in procedures they may abandon their attempts to use a system. Attempts to complete registration and authentication procedures can be frustrated by lack of needed expertise or tools, inadequate instructions, or breakdowns in network connections.

Usefulness defines whether digital libraries constitute valuable tools for the completion of user's tasks. Usefulness answers the questions that whether digital libraries can support users' information needs. Users' work tasks are formed by their social and organizational context and responds to needs like research, authorship, etc (Tsakonas and Papatheodorou, 2008). Usefulness also is the capacity of the system to be used to achieve determined goal. Hong and Thong (2002) reported that system interaction has effect on both users' perceptions about ease of use and usefulness (Hong and Thong, 2002). Usefulness is different from usability. For example, a search for information on special topics such as "evaluation criteria for digital libraries" in different motor engine may result a dozen of files which are not useful. Some retrial files may be worthless to a researcher or even empty. The result of such searches is not useful to the user seeking information. To solve these issues, digital library provides a collection of e-journals and databases in different information areas for different users. In general digital libraries are the logical extensions and augmentations of physical libraries in an electronic information society. Such extensions and augmentations offer new levels of access to broader audience of users (Marchinonini et al., 2004).

Digital library plus

Research on digital library systems started in Europe in the mid-1990s. At that time digital libraries were seeable essentially as repositories of digital texts accessible through a search service that was operating by indexing information stored in a centralized metadata catalogue. The World Wide Web enables wide dissemination of information and services (Ivory and Megraw, 2005). Digital libraries can be defined as information that has associated services delivered to user communities using a variety of technologies (Callan et al., 2003).

Having a better understanding of users and their needs would enable designers to appreciate what end users feel about using digital libraries and what changes would be needed to meet their needs (Blandford and Buchanan, 2003). Digital library Plus (www.digitallibraryplus.com) is a digital library including: Databases such as CAB abstract; Engineering village; AMS; MD Consult; ProQest; and Scopus E-journals such as ACS Publication; American institute of Physics (AIP Journals); JAMA; The American Physiological Society (APS); ASCE; ASME Journals and Publications; bmj.om; Cambridge University press; Elsevier (science direct); Emerald; Institute of Physics; Oxford University Press; RSC; Sage; AIP Scitation; Springer; Taylor and Francis; The IEE online Journals; Gale, and E-Books such as Wiley-Blackwell.

Rose system has established a digital library in cooperation with the great e-publishers from 2002. It provides services for two groups: A) students; B) faculty members. The services for groups A is based on IP address and only locally but the services for group B is based on the user name and Password, so they can connect to this digital library in every point of world, although the contents and services are the same for

Table 1. Distribution of faculty members at 5 colleges.

College	Frequency	%
Basic sciences	34	54.8
Medicine	15	24.2
Humanities	13	21
Technical sciences	--	--
Total	62	100

Table 2. Using of services by faculty.

Services	Frequency of use	%
E-journals	27	43.6
E-databases	21	33.8
E-books	14	22.6
Total	62	100

two groups. The dl+ uses flexible extensible digital object repository architecture as a platform to digital object and metadata. The dl+ also uses a metadata structure based on Metadata Open Description Schema (MODS), metadata encoding and transmission standard (METS), National information Standard Organisation (NISO), and Preservation Metadata Implementation Strategy (PREMIS). A MODS is used for descriptive metadata, provides and retains standard bibliographic cataloguing principles. It is important to say that about 90 IA University around the country have access to the dl+.

Reeves et al. (2003) suggested that there are numbers of reason to evaluate a digital library or system retrieval such as political, social, and economical reasons. According to these factors they identified different types of evaluation such as content evaluation, service evaluation, information retrieval evaluation, usability evaluation, and etc.

METHODOLOGY

There are four colleges at the QIA University including: College of Basic Sciences; Medicine; Humanity sciences; and Technical sciences with about 254 faculty members. Only a few of the faculty members, undergraduate and PhD students and some of the graduate students have registered at the dl+, but the use of it has steadily grown. In this study we try to evaluate the dl+ from the faculty members' perspective. The subjects of this study are all faculty members of QIAU who have registered at dl+ and use it (62 subjects). The tools employed information gathering were a questionnaire that were sent to the mail addresses of subjects. The questionnaire consists of three parts. The first part relate to the personal informant such as gender, and college, and the second part consists of 11 questions related to their uses of dl+, and the last part consists of three open questions to evaluate users' feedback of dl+ (appendix A). About 62 of faculty members answered the questionnaire and sent it back to researchers.

FINDING ANALYSIS

A total 62 faculty members participated in this study. Findings show that about 46 of the subjects (74.2%) were male and 16 of the participants (16%) were female. Table 1 shows the distribution of faculty members at 4 colleges. About 34 of the subjects (58%) were from College of Basic Sciences; 15 of the participants from Medicine College; and 13 of the subjects (21%) were from Humanities Sciences. In another question we decided to evaluate the use of the faculty members of different services which have been provided in the dl+. In this part, subjects selected only their first preferences on using e-Journals. Findings show that about 27 of the subjects (43.6%) selected e-Journals; 21 of the subjects (33.8%) selected Databases; and 14 of the subjects (22.6%) also selected e-Books (Table 2). Another evaluation is undertaken to determine how the subjects use the e-Journals. Findings show that about 58 of the faculty members (93.5%) use e-Journals, among this, about 30 of the subjects (48.4%) were using e-Journals often; 28 of the subjects (45.3%) use it occasionally; and only 4 of the participants never used e-Journals. Then, next question in this study try to determine the faculty members' preferences in the use of the e-Journals by all who had declared that they use them occasionally and frequency (58 of participants). As Table 3 shows about 24 of the subjects have selected science direct (Elsevier) as their first preferences (41.3%); and 11 of the subject (18.9%) have selected it as their second preferences. Although, about 13 of the faculty members (22.4%) have selected Springer as their first, and 13 of the participants selected it as their second preferences.

In answer to the question "what are your reason for using e-journals?" about 33 of the subjects (56.9%) said that they used them for education and teaching activities; 12 of the subjects (20.7%) used for information retrieval; 10 of the subjects (17.2%) used for scientific products; and only 3 of the subjects used them for informed about electronic journals. In other evaluation in this study, authors tried to determine the users' preferences in use of the e-databases (Table 4). About 23 of the participants (37%) use of databases occasionally and frequently, but it is interesting that about 39 of the subjects (62.9%) have not used them at all. Some of the reasons for the low uses of databases may be including:

(i) The complexity of databases,
(ii) Lack of guidelines for using databases,
(iii) Limited title of database,
(iv) Limited subject areas of databases,
(v) Need to the special software for downloading full text of articles (such as the java software that needs for downloading articles from the ProQues e-Journa that is not on the homepage of the digital library).

For the purposes of using databases, about 14 of the participants (60.8%) used the databases for education

Table 3. Use of e-journals by faculty members (first and second preferences).

Title of journal	The 1st preferences		The 2nd preferences	
	Frequency	%	Frequency	%
JAMA	2	3.5	2	3.5
bmj.com	-	-	2	3.5
Cambridge University Press	-	-	4	6.9
Oxford University Press	2	3.5	3	5.1
Science direct	24	41.3	11	18.9
Emerald	2	3.5	12	24
MD Consult	4	6.9	3	5.1
SAG	2	3.5	1	1.7
Springer	13	22.4	13	22.4
AIP	6	10.3	2	3.5
Institute of Physics	3	5.1	3	5.1
Total	58	100	58	100

Table 4. Use of databases by faculty members.

Title of databases	The 1st preferences		The 2nd preferences	
	Frequency	%	Frequency	%
MD Consult	3	13	5	21.8
Proquest	11	47.8	11	47.8
Scopus	8	34.7	7	30.4
AMS	1	4.3	-	-
Total	23	100	23	100

and teaching activities; and 9 of the subjects (39.2%) used them for the aim of scientific products.

Although, most of the e-journals and databases provide different types of alerting systems such as subject alert, table of content alert, and etc, 37 of the subjects (59.6%) declared that use of these services. Only 3 of the subjects (4.8%) stated that they intended to use of Rss feed system. Most of the faculty members bedeviled that this is not a reliable system. Of course, it should be consider that Rss feeds have a weekend structure, the use of them in journals and databases are not convenient for users. As a result findings show that only a few subjects intended to use the Push Technology systems which is provided in the digital library plus.

Conclusion

Although digital library evaluation is a complex work, over the past few years a number of studies performed in this subject area. According to this fact that the concept of digital libraries means different things to different people so, by user evaluation can learn more about users' needs, expectations, and satisfactions. The digital library plus is one of the most reliable digital libraries at Iran. About 90 Iranian Universities have access to the digital library plus. This study tried to evaluate usability, usefulness, and accessibility of digital library plus from the perspective of Qom Islamic Azad University faculty members. The results of this study show that only about one fourth of faculty members at QIA University have registered at digital library plus. Almost all of the participants were satisfied of using the digital library plus. Researchers believe that the other study should be done to find why other faculty members do not use digital library plus.

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