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**A USABILITY STUDY OF ONLINE LIBRARY SYSTEMS : A CASE OF SULTANAH
BAHIYAH LIBRARY, UNIVERSITI UTARA MALAYSIA**

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A USABILITY STUDY OF ONLINE LIBRARY SYSTEMS: A CASE OF SULTANAH BAHİYAH LIBRARY, UNIVERSITI UTARA MALAYSIA

Abstract:

The purpose of this study was to investigate usability of online library systems in Universiti Utara Malaysia (UUM). This study evaluated the usability of Sultanah Bahiyah Library's web based systems by investigating the aspects of simplicity, comfort, user friendliness, control, readability, information adequacy/task match, navigability, recognition, access time, relevancy, consistency and visual presentation. This study examined user's views about the usability of digital libraries whereas current and perceived importance. A sample of 45 students of Master of Business Administration (MBA) has been chosen. The Sultanah Bahiyah Library's web based systems is very important especially for students and academic staffs of Universiti Utara Malaysia. The usability of the Library's web based systems makes students easy to connect and for that the website should be helpful and attractive within good contents. The result found that the parallel nature of the users' current views about the usability of digital libraries and users' perceived importance of digital library usability allows direct comparison of all usability properties. The overall results yielded significant difference for the variables of user's current views and perceived importance.

Key Word: Usability, Online Library Systems, Sultanah Bahiyah Library

1.0 INTRODUCTION

Globally, millions of dollars are being invested in the provision of digital information resources that could be classified as digital libraries. The investment is in various directions, including digitisation projects, technical developments and formulation of necessary standards. The assumption as such presumably that this investment is making documents readily and usefully available to all appropriate user communities. However, this assumption needs to be challenged. The question of how users may have satisfying and productive experiences working with digital libraries is always the focus for research, recently and need for future (Blandford & Buchanan, 2003). In addition, libraries have come to exist in response to needs in human communities. Digital libraries are no exception. Digital library components such as tools, frameworks, and collections, may grow out of a conception by providers, but digital libraries as a whole will thrive or wither only as they serve or fail to serve their user communities (France, Nowell, Fox, Rani and Zhao, 1999). Moreover, the digital library is diffuse enough to be applicable to a wide range of digital entities that able to access physically, as well as digital holdings and libraries where collections are almost completely digitally.

Digital libraries are potentially powerful tools, but their potential will be realized only if users are able to harness that power and take it in fruitful directions. As with all new technologies, early adopters will persevere with using systems almost regardless of the costs and benefits. However, to have an impact commensurate with current investment, it is essential that there be take-up by a much broader community of potential users. (Blandford & Buchanan, 2003). In specific, prior to wide-spread use of the Internet, traditional libraries were the major information source for the public. Over the last ten years, libraries have increasingly provided online access to information through websites, with a blurring between Internet-based digital libraries and these traditional online access points (Sokvitne, 2002). In advanced, Jasek (2004) believe that by improved web sites library design it will increase web usability of online library systems. This is because Working with library website usability is at the core of the business of many firms, such as Elsevier's User Centered Design Group. Reviewing usability of specific library web sites to help individual customers, or assisting in design of electronic services and products offered by Elsevier, usability is a mantra for them. In addition, Sokvitne (2002) argued both provide electronic information, clients can be differentiated through their level of research training, access to support networks and willingness to learn. Users of Internet-based digital libraries are commonly untrained and unwilling to invest time learning complex systems to retrieve results.



Theoretically, digital library is a library in which a significant proportion of the resources are available in machine-readable format for example as opposed to print or microform, accessible by means of computers. The digital content may be locally held or accessed remotely via computer networks. Formally, in libraries, the process of digitization began with the catalog, moved to periodical indexes and abstracting services, then to periodicals and large reference works, and finally to book publishing. Some of the largest digital libraries are purely digital having few if any physical holdings. According to France, *et. al.*, (1999) that digital libraries must reach out to users from all walks of life, serving information needs at all levels. To do this, they must attain high standards of usability over an extremely broad audience. This paper details the evolution of one important digital library component as it has grown in functionality and usefulness over several years of use by a live, unrestricted community. In addition, Covey (2002) mention that as the needs and expectations of library users change in the digital environment, libraries are trying to find the best ways to define their user communities, understand what they value, and evolve digital library collections and services to meet their demands. In part, this effort requires a closer, more formal look at how library patrons use and respond to online collections and services.

Practically, Internet-based digital libraries must provide intuitive and simple access because it is more appropriate for library websites to be designed in order to suit the needs of academic researchers (Jordon, 1998). Therefore, the website will include more powerful functions. However, previously, traditional libraries are limited by storage space; digital libraries have the potential to store much more information, simply because digital information requires very little physical space to contain it. As such, the cost of maintaining a digital library is much lower than that of a traditional library. A traditional library must spend large sums of money paying for staff, book maintenance, rent, and additional books. In the similar way, Bates, Wilde and Siegfried (1995) describes that digital libraries hold great promise as structured repositories of quality-checked information that can be manipulated and accessed in powerful ways. However, they also pose great challenges from many different directions: technical, organizational, legal, and others. In particular, as digital libraries become more widely available it is becoming clear that they also pose usability difficulties.

Computer-based library systems, as similar to web-based library are becoming pervasive throughout public and university libraries. The study of user interactions with on-line library systems is important for a number of reasons. First, most libraries have chosen to use on-line systems exclusively, and to discontinue traditional card catalogs. This means that patrons must be able to operate these systems to find materials in the library or they must rely on the library staff assistance. Second, on-line library systems are representative of information retrieval systems in general. They share a number of features with other types of databases and the World Wide Web, such as keyword search and the use of Boolean operators. However, remote access (entering the system via a personal computer outside the library) may affect the manner in which users interact with the system. Although this accessibility may make using library systems more convenient, it also may introduce a new set of difficulties for users, such as limiting the amount of help that reference librarians can provide (Rousseau, Jamieson, Rogers, Mead & Sit, 1998). Suppose, by introducing electronic based library, this will provides more function and services that cannot offers by traditional library. Recently, digital libraries can immediately adopt innovations in technology providing users with improvements in electronic and audio book technology as well as presenting new forms of communication such as blogs application and mobile base technology.

Given the unique nature and amazing rate of growth of the web, it is clear that website usability is an issue that is becoming increasingly important for library website developers to address. Libraries are now concerned about how their virtual counterparts respond to remote library user's demands and how efficient they are for users to use. Today libraries realize that their webpage can be successful only when they meet the usability criteria of being clear, appealing and easy to use (Murray & Costanzo, 2006). Meanwhile, McMullen (2001) mention that as libraries moves forward into the digital age, web presence becomes increasingly important for meeting the needs of our users. The library web interface represents a critical meeting ground between the information professional and the individual who is seeking information. In addition, Blandford and Buchanan (2003) views from the position that digital libraries are required to enable users to access the information they need to perform their tasks effectively.



Put another way: digital libraries need to be both useful and usable. In contrast, as yet there is no consensus on what the key criteria are for evaluating the usability of digital libraries. The challenge is made more complex by the variety of user types for libraries. For example, some users are the end users of information, finding documents that address their immediate information needs within the context of the task currently being performed, while others are expert intermediaries, performing a document search on behalf of someone else. However, Rousseau, Jamieson, Rogers, Mead and Sit (1998) said that an increasing number of users are accessing the system from remote locations. Not only is the online system accessible throughout the university campus, users at other colleges and universities throughout the state also accessed. Many users may not be able to receive training at the university. Consequently, system redesign may be a more viable means of improving user performance than training. In advanced, as mention by Blandford and Buchanan (2003) that digital library users have varying levels of expertise, both in information seeking and in the topic on which information is sought. Also, the tasks of collection maintenance have very different requirements to those of document retrieval and management (from an individual's perspective)

However, as preliminary works, in this paper we focus on usability testing of online library system by concentrating to the former library of University Utara Malaysia that is called 'Sultanah Bahiyah Library'. This is important efforts for evaluating the web-based version of library, as important to evaluating physical-based library, because this library suppose have ability to serve more than 20 thousands users, both online or non online users of daily operation.

2.0 PROBLEM STATEMENT

Making library services available online is not only expensive; it is also very risky, as such experienced by any library all over the world including the Sultanah Bahiyah Library of University Utara Malaysia. Covey (2002) cited that the library's roles there are not at all clear. Neither are its relationships with users or with other information services. There is little information about how library users behave in a network environment, how they react to online library services, and how they combine those services with others such as search engines like Google, bookstores like Amazon, Internet gateways like Voice of the Shuttle, and instructional technologies like WebCT or Blackboard. In addition, Foott and Huggard (2004) rises that he first question of a usability study is to work through exactly what usability involves. Many people would define usability as a study of whether a piece of software or user interface, is actually usable by users. This is similar to what have been argued by France *et. al.*, (1999) that user studies have been part of library and information science for at least a century. Studies of online library, includes usability testing will provided important corrections to the design of such systems.

Practically, University Utara Malaysia digital library formerly called 'Sultanah Bahiyah Library' has identified that many user's experienced difficulty locating information on the website, despite support and training being available to all user's. To the best of knowledge, there are limited previous studies especially about usability testing of library websites, just like 'Sultanah Bahiyah Library'. Users are likely to access identical information through a variety of pathways, due to their varied experience and domain knowledge. Therefore, it is necessary to have flexibility built-in to the navigation structure. For example, one of study examined the use of terminology in a web environment. In an examination of language on academic library web pages, for examples, Spivey (2005) noted that since successful navigation of a large library web site depends on the clarity of the home page its vocabulary deserves scrutiny by managers of these Internet sites. Similarly, these issues have potentially occurred to UUM online library if common problems of website usability are not investigates yet.

Studies of digital libraries, where most transactions occur over the network, will prove even more challenging, as cited by Hix and Hartson (1993) and Foott and Huggard (2004). However, they also pose great challenges from many different directions, as such technical, organizational, legal, and others. In particular, as digital libraries become more widely available it is becoming clear that they also pose usability difficulties (Blandford, *et. al.*, 2004).



Because of these, there is no simple analysis of why digital libraries can be so difficult to use. In fact, Blandford and Buchanan (2002) highlight a number of issues, from the individual to the social, and from the superficial (e.g. conflicts in the terminology used by different stakeholders) to deeper issues concerning fundamental difficulties users sometimes have in even knowing what they are looking for. On the other side, there is no unique view of the development process for digital libraries. As for examples, Bates (2002) discusses the complexities of digital library development in terms of a “cascade” of interactions. In addition, Blandford, *et. al.*, (2004) argued that one key challenge is to understand users’ difficulties in working with information and particularly with digital libraries and to equip developers with ways of thinking about users and their needs that help guide digital library development and evaluation. Overall, examine the usability of online library of University Utara Malaysia is the focused for this study with concentrate on user views of student’s users.

3.0 RESEARCH OBJECTIVES

The objectives of this research is to examine the online library on user current views and perceived importance toward the Sultanah Bahiyah Library online system based on specific criteria such as Simplicity, Comfort, User friendliness, Control, Readability, Information adequacy/task match, Navigability, Recognition, Access time, Relevancy, Consistency and Visual presentation.

4.0 LITERATURE REVIEW

Computer-based library systems are becoming pervasive throughout public and university libraries. The study was done to survey the users of a representative system to assess the degree to which they used the system’s functionality, their difficulties with the system, and their experiences learning the system. One of main finding mention that majority of the 966 users of the system made limited use of the more advanced system commands and had difficulty understanding how the system works (Rousseau, *et. al.*, 1998). Beside that, here, usability of websites is the top most issues of library study because it can impact on future performance of online resources, just like online library. Like wise, Freeman and Norris (2005) noted that today, the major question is how libraries will determine if their websites are useful and usable. To assess website usability, libraries refer to various evaluation methods that help in assessing it. There are several evaluation methods to estimate website usability. One of the methods is distribution of simple questionnaires to sample of users. Usability testing was used to gain a human perspective, while an expert review of the website was conducted by using published checklists. In addition, Neilson and Norman (2006) have found that users of the web have a low tolerance for difficult designs or slow sites.

The International Standards Organization defines usability as a feature that establishes effectiveness and satisfaction with which a specified set of users can achieve a specified set of tasks in a particular environment (Norlin, 2006). According to Norris and Freeman (2005) usability addresses the relationship between tools and their users. In order for a tool to be effective, it must allow intended users to accomplish their tasks in the best way possible the same principle applies to websites. In fact, the U.S. Department of Health and Human Services has defined website usability as the measure of the quality of a user's experience when interacting with a website. While, Nielsen (2006) describes website usability as a quality attribute that assesses how easy user interfaces are to use. In addition, Murray and Costanzo (1999) point to additional components of website usability, accessibility, appeal, consistence, clarity, simplicity, easy navigation and forgiveness of user blunders. The website usability components are usually assessed during evaluation of website usability.



Usability can be divided into two dimensions ease of use and usefulness or “perceived ease of use” and “perceived usefulness” as cited by Thong *et al.*, (2002). When designing a library website, it is essential to recognize that both novice and experienced user groups must be able to locate their required information within the site. While many websites provide instructions to assist novice users, a study conducted by the University of Washington revealed that novice web users rarely read instructions or tips (Veldof *et al.*, 1999). In fact, according to McMullen (2001) usually those users who are familiar with research are likely to be more easily satisfied with library website design than those unfamiliar with libraries and research, largely due to their domain knowledge which is used to support navigation decisions. Therefore, a good websites should be intuitive for users who have had no previous experience because those with little background knowledge commonly find library websites quite confusing and difficult to use.

Mann Library established that the most logical and appropriate response for them was to design one adaptive user interface, which allowed users multiple navigation options to reach the same destination. The implementation options for such a system include visual metaphor, a list of resources, a range of searching options, varied results layouts and several delivery format (Payette, 1998). The provision of inbuilt alternative pathways allows a variety of options for users to reach their desired information and recognizes the varying logical constructs held by users.

Research conducted by User Interface Engineering shows that people cannot find the information they seek on websites about 60% of the time. Studies by Forrester Research estimated several costs of bad site design. One of the most striking is the loss of repeat visits from 40% of the users who do not return to a site when their first visit resulted in a negative experience (Hoglund, 2006). Realizing the importance of website usability, website developers strive to improve this quality attribute by evaluating it with the help of various evaluation methods that aid in determining and eliminating the existing flaws of a website. Therefore, it is important for library website designers to remember that there is not a generic user being served and how important to provide a general design that meets common user needs to supports generic behavior patterns.

5.0 METHODOLOGY

The instrument used for this study involves two parts users’ current views toward the usability of digital libraries and users’ perceived importance toward the usability of digital libraries. Koohang (2004) outlined 12 items as the instruments to measures users’ current views about usability of digital libraries. All the items were determined as usability properties of digital libraries. A five-point Likert scale was used to assess each usability property. The scale’s descriptors are 5 for Strongly Agree, 4 (Agree), 3 (neither Agree nor Disagree), 2 (Disagree) and 1 (Strongly Disagree).

From prior investigation, the survey appears to be a highly valid and reliable instrument suitable to measure users’ current views about the usability of digital libraries. The second part of the instrument measures users’ perceived importance towards the usability of digital libraries. This part of the instrument was developed based on the 12 usability properties identified by Koohang (2004). This portion of the instrument also used a five-point Likert scale, as describes as; 5 for Very Important, 4 (Important), 3 (Somewhat Important), 2 (Slightly Important), and 1 (Not Important at all).

The fact that the two scales share parallel construction and employ the same 12 usability properties is central to this study. These design features allow sets of views grounded in different cognitive frames to be compared. The users’ current views about the usability of digital libraries scale is intended to tap current views held by digital library users in regard to applied digital library usability. The digital library users’ perceived importance of usability scale is intended to tap design ideals held by digital library users.



The instrument was administered to total 85 students who were enrolled in a Master of Business Administration (MBA) at Faculty of Business Management in Universiti Utara Malaysia. However, specifically, the study was involved 45 students as sample of the study. The respondents were 16 males and 29 females. The respondents were informed that their participation in the study was voluntary and the subjects were guaranteed anonymity. All respondents had used the digital libraries (searching the digital library to find full-text articles) through various courses they had taken in the MBA program. The digital library used by the respondents includes hundreds of databases from various vendors. Usually, the respondents used only the following databases to search for full-text articles and journals that provided by Sultanah Bahiyah Library of Universiti Utara Malaysia: ACM Digital Library, Blackwell Synergy, CCH online Library Cambridge Journal Online, CLJ Law, Dissertation Online, EconLit-Ovid, EmeraldInsight, ERIC, EBSCOhost, FirstSearch, Lexis-Nexis, ProQuest, Global Market Information Database, IEEE Xplore, NSTP Online Science Direct, XRefer Plus, West Law and World Scientific. These databases contain digital full-text scholarly journals, substantive news periodicals, general interest periodicals and popular periodicals searchable by subjects. Other features of the digital library include electronic books, online references, digital collections and online help.

6.0 RESEARCH FINDINGS

6.1 Demographic Background

Basically, Table 1 below show basic statistic for every demographic variable on this research. For age, overall, there are 27 respondents aged between 24-29 years old, followed by 12 respondents (18-23 years), 4 respondents (30-41 years) and 2 respondents (36-41 years). For gender, 29 of respondents are female and 16 respondents are male. While, for years of experience with Internet, demographic data shows that 16 respondents are had have 1-2 years experiences, then followed by 15 respondents (3-5 years), 9 respondents (over than 5 years) and 5 respondents for below or 1 year experiences. In fact, for item Proficiency of Using Electronic/Digital Library, most of respondents scored in level good (28 respondents), then followed by average (8 respondents) and excellent (9 respondents).

	Mean	Std Deviation	Minimum	Maximum
Age	1.9111	0.73306	1.00	4.00
Gender	1.6444	0.48409	1.00	2.00
Years of experience with internet	2.6222	0.93636	1.00	4.00
College Status	2.0000	0.92932	1.00	4.00
Proficiency of using electronic/ digital library	1.9778	0.62118	1.00	3.00

Table 1: Statistics of Demographic Variables.



6.2 Users' Current Views and Users' Perceived Importance

6.2.1 Users' Current Views

Table 2 below shows the descriptive analysis for users' views about the digital library's actual usability. It includes the mean score and standard deviation for each usability property. No item fell below the mid-point of the five-point scale. The mean scores ranged from 3.6222 to 4.111. The total mean score was 3.926.

6.2.1.1 Means and standard deviations for users' current views

Table 3, 4, 5 and 6 shows the means and standard deviations for age, gender, prior experience with the internet, college status and proficiency of using the digital library respectively.

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
Simplicity	45	1	5	4.111	1.005
Comfort	45	2	5	4.000	0.798
User friendliness	45	3	5	4.044	0.706
Control	45	2	5	4.044	0.852
Readability	45	2	5	4.111	0.745
Information adequacy/task match	45	2	5	3.733	0.889
Navigability	45	1	5	3.911	0.949
Recognition	45	1	5	3.778	1.185
Access time	45	1	5	3.867	1.198
Relevancy	45	2	5	3.822	0.806
Consistency	45	2	5	3.622	1.029
Visual presentation	45	2	5	4.067	0.751

Table 2: Users' Current Views about the Digital Library.



Users' current views		
18-23 Years	Mean	4.090
	N	12
	SD	0.519
24-29 Years	Mean	3.877
	N	27
	SD	0.493
30-35 Years	Mean	4.021
	N	4
	SD	0.443
36-41 Years	Mean	3.417
	N	2
	SD	0.000
Total	Mean	3.926
	N	45
	SD	0.496

Table 3: Means and Standard Deviations for Age.

Users' current views		
Male	Mean	3.718
	N	16
	SD	0.486
Female	Mean	4.040
	N	29
	SD	0.471
Total	Mean	3.926
	N	45
	SD	0.496

Table 4: Means and Standard Deviations for Gender.



	Users' current views	
Below or 1 Year	Mean	4.250
	N	5
	SD	0.546
1-2 Years	Mean	4.224
	N	16
	SD	0.532
3-5 Years	Mean	3.728
	N	15
	SD	0.272
Over 5 Years	Mean	3.546
	N	9
	SD	0.254
Total	Mean	3.926
	N	45
	SD	0.496

Table 5: Means and Standard Deviations for Prior Experience with Internet.

	Users' current views	
Excellent	Mean	3.944
	N	9
	SD	0.496
Good	Mean	4.015
	N	28
	SD	0.521
Average	Mean	3.594
	N	8
	SD	0.242
Total	Mean	3.926
	N	45
	SD	0.496

Table 6: Means and Standard Deviations for Digital Library Proficiency.



6.2.2 Users' Perceived Importance

Table 7 shows the descriptive analysis for users' perceived importance of digital library usability. It contains the mean scores and standard deviation for each usability property. This indicates statistically high mean scores. The mean scores ranged from 3.756 to 4.3111. The total mean score was 4.002.

6.2.2.1 Means and standard deviations for users' perceived importance

Table 8, 9, 10 and 11 shows the means and standard deviations for age, gender, prior experience with the internet, college status and proficiency of using the digital library respectively.

	<i>N</i>	<i>Min</i>	<i>Max</i>	<i>Mean</i>	<i>SD</i>
Simplicity	45	2	5	4.311	0.848
Comfort	45	2	5	3.756	0.981
User friendliness	45	2	5	3.911	0.925
Control	45	1	5	3.867	0.869
Readability	45	2	5	3.956	0.999
Information adequacy/task match	45	1	5	4.133	0.944
Navigability	45	1	5	4.133	0.920
Recognition	45	1	5	3.956	0.976
Access time	45	1	5	3.911	0.949
Relevancy	45	2	5	3.978	0.892
Consistency	45	2	5	4.022	0.839
Visual presentation	45	1	5	4.089	0.925

Table 7: Users' Perceived Importance of the UUM Online Digital Library.



Users' perceived importance		
18-23 Years	Mean	4.368
	N	12
	SD	0.367
24-29 Years	Mean	3.840
	N	27
	SD	0.657
30-35 Years	Mean	4.208
	N	4
	SD	0.323
36-41 Years	Mean	3.583
	N	2
	SD	0.118
Over 41 Years	Mean	-
	N	-
	SD	-
Total	Mean	4.001
	N	45
	SD	0.601

Table 8: Means and Standard Deviations for Age.

Users' perceived importance		
Male	Mean	3.885
	N	16
	SD	0.751
Female	Mean	4.066
	N	29
	SD	0.503
Total	Mean	4.001
	N	45
	SD	0.600

Table 9: Means and Standard Deviations for Gender.



	Users' perceived importance	
Below or 1 Year	Mean	4.300
	N	5
	SD	0.796
1-2 Years	Mean	4.156
	N	16
	SD	0.554
3-5 Years	Mean	3.900
	N	15
	SD	0.575
Over 5 Years	Mean	3.732
	N	9
	SD	0.555
Total	Mean	4.002
	N	45
	SD	0.601

Table 10: Means and Standard Deviations for Prior Experience with Internet.

	Users' perceived importance	
Excellent	Mean	4.148
	N	9
	SD	0.465
Good	Mean	4.086
	N	28
	SD	0.627
Average	Mean	3.541
	N	8
	SD	0.455
Total	Mean	4.002
	N	45
	SD	0.601

Table 11: Means and Standard Deviations for Digital Library Proficiency

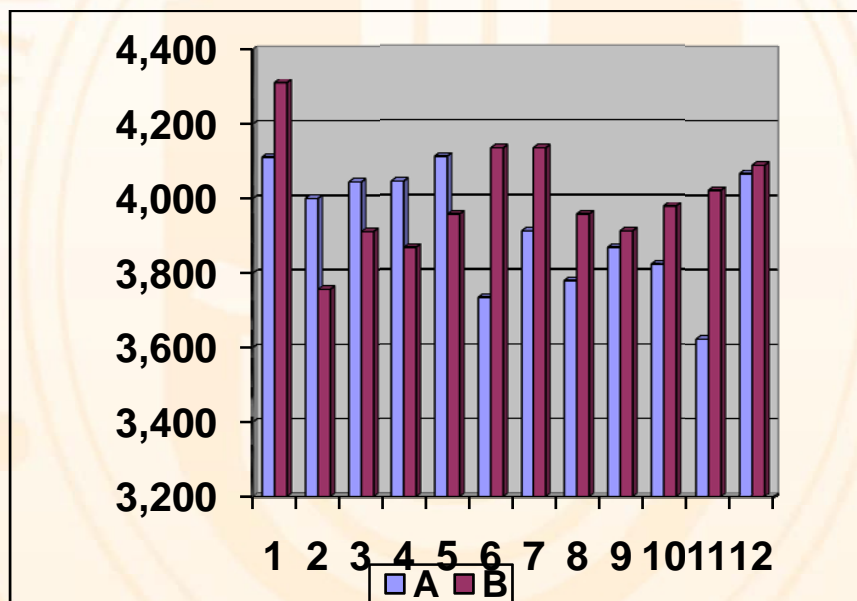


6.3 Users' Current Views and Users' Perceived Importance

Bar chart 1 depicting a graphic representation of users' current views about the digital library's actual usability (represented by the A bars) and users' perceived importance of digital library's usability (represented by the B bars). The mean scores for most usability properties were higher for users' perceived importance of digital library's usability. However, usability properties such as comfort, user-friendly, control and readability were low for users' current views of digital library's usability.

Users' proficiency of using digital libraries influenced the views of actual usability. In the other hand, some level of meta-knowledge about a product's underlying technology is needed to use such product confidently. Meanwhile, proficiency of using digital libraries gives credibility to the views of users toward digital libraries.

In sum, these findings suggest that enlisting internet savvy and experienced digital library users is a valid means to capture usability design suggestions and to test the efficacy of digital library design changes. Therefore, users must be engaged in determining the level of website usability. Their collective understanding of usability must be tapped. Their sentiments for design improvements must be considered and their feedback about the product itself must be acknowledged.



Bar Chart 1: Users' Current Views and Users' Perceived Importance.

Legend: A = users' current views, B = users' perceived importance, 1 = simplicity, 2 = comfort, 3 = user friendliness, 4 = control, 5 = readability, 6 = information adequacy/task match, 7 = navigability, 8 = recognition, 9 = access time, 10 = relevancy, 11 = consistency, 12 = visual presentation



7.0 DISCUSSION AND CONCLUSION

This research emphasized that (1) users' current views about the usability of digital libraries disclose what users believe about the usability of existing digital library systems and (2) users' perceived importance of digital library usability reveals what users believe the systems ideally should be in regard to usability. Overall, actual user experience which means that users' proficiency of using electronic/digital library is adequate to measure the actual usability of existing digital library systems (as indicated by combination of mean 3.926). Most users also believed that digital library website usability is important (as indicated by a combination of mean 4.002). Furthermore, the parallel nature of the users' current views about the usability of digital libraries and users' perceived importance of digital library usability allows direct comparison of all usability properties.

The difference between outcomes achieved and a desired target is referred to as gap analysis. The gap can be addressed in a variety of manners. For example, the gap can be closed by renegotiating the target or by improving performance. For the providers of digital library services accepting adequate ratings may suffice in the short term but the hyper-competitive nature of the publishing industry favors those firms with a competitive advantage. Therefore, better usability may become such an advantage. Beside that age sensitized digital library users in regard to the perceived importance of digital library usability. Another way to state this finding is that prior internet experience gave users an insight into design-for-usability issues.

As more digital libraries are created, evaluation of their effectiveness for future development is becoming more important. The result of this study showed that there were some influence between demographics background and the usage of the digital library. For instance, based on the result of this study indicated that female users' are almost double than male users'. This indicated that, most of the digital library users are female. In addition, the result also found that most respondents of the study reported average or higher level of proficiency in using digital library. This indicated that, at least for this sample frame, most users were fluent, be in control and comfortable using the digital library as their source of information.

In finale, this research focused on twelve usability properties of digital library such as simplicity, comfort, user friendliness, control, readability, information adequacy/task match, navigability, recognition, access time, relevancy consistency and visual presentation. These usability properties may be an initial step in setting usability standard for digital libraries. The result found that the parallel nature of the users' current views about the usability of digital libraries and users' perceived importance of digital library usability allows direct comparison of all usability properties. In all instances digital library users' current views of their actual experiences are lower than their desired levels of usability. In the other word, users' perceived that the usability of digital library website is important and it's become their desire to sustain in accessing it. In advance, Covey (2002) noted that digital libraries are still relatively immature whereas most are still at a stage where limited experimentation is more important than well-informed strategic planning. While libraries have excelled at assessing the development and use of their traditional collections and services, comparable assessments of online collections and services are more complicated and less well understood



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