

Investigation of the Status of User Interface in Web-based Version of Library Software in Khuzestan Province Islamic Azad University Branches

A'zam Khorram Din¹, Nafiseh Ahmadi²

¹Khomein Branch, Islamic Azad University, Khomein, Iran

²Faculty member of Payame Noor University, Laasanat Branch, Department of Library and Information Sciences

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ABSTRACT

The present research investigates the status of user interface in web-based version of library software in Khuzestan Province (in Iran) Islamic Azad University. Research variables included search, integration, guidance and display. Research was a descriptive survey. Statistical population of the research included all users of digital libraries under web in 5 Islamic Azad Branches in Khuzestan Province, including Ahwaz, Mahshahr, Dezful, Shoushtar and Masjid-e-Soleiman Azad Universities. Research instrument was a questionnaire. Data were analyzed by means of SPSS software. Investigation of the results showed that all variables (search, integration, guidance and display) were in acceptable status.

KEYWORDS:User Interface, Web-based Version, Library Software

INTRODUCTION

Having a website is necessary for today's service and production organizations. Libraries and information centers which are considered as knowledge centers and have played significant role in collection and distribution of knowledge are also included in this list. Most libraries and information centers tried to establish websites and provide internet service from mid-90s. At present, digital library is no longer considered as an additional service but it is a means of communication with users (Davidson AND Yanki, 2006). Libraries are important institutes in the field of information systems and digital libraries emphasize on communication with users. In fact, establishment of communication with contents of information systems needs an environment which facilitates this access. This environment is called user interface and is the only means of communication. A good user interface considers satisfaction of users and is of great importance in information systems because it represents the structure of the present information and transmits its designer's thoughts (ZerehSaz, 2005). Digital library providers try to design user-friendly interfaces. On the other hand, although digital libraries have removed time and place restrictions but libraries will be confronted with many problems if their website user interfaces are not designed appropriately (Norouzi, 2010).

No independent research has been conducted up to now to investigate the user interfaces of digital libraries website in Khuzestan Province Islamic Azad Universities. Therefore, the present research aims to make use of standards and criteria to investigate the interfaces of the mentioned libraries based on Delphi method and information storage and recovery experts.

RESEARCH LITERATURE

Application of computers to libraries started in 1960s, parallel to application of computers to various educational and commercial sections. Although borrowing section was the first section of libraries which made use of computers due to high workload in borrowing books, computers speed and exactness convinced librarians to use computers in other sections of libraries. Therefore, different software was designed for different parts of libraries like ordering, list-making, periodicals, and public lists. User interface of information systems are important parts of such software. It is in fact a part of software which acts as a means for communication between user and website. It is important in satisfaction of users and facilitates mutual understanding between user and system.

Considering educational and research mission of university libraries and the importance of digital libraries in establishment of communication and provision of service for users, design of such websites and consideration of efficient elements in them is of great importance. It seems that it is necessary to include characteristics which result in flexibility of library websites and better communication with users (FarajPahlou and Saberi, 2005). If very strong software is designed but it does not have a user-friendly user interface, users will not use it (Spolsky, 2002).

Microsoft computer dictionary defines User interface as: a point in which a connection is established between two elements so that they become able to work together, Software which enables a program to work with a user or with another program like operating system or computer hardware. User interface can be in the form of a line-command interface, a menu or a graphical interface. It can be in the form of a card, electricity plug or other device which connects a part of hardware to computer so that

information is transferred from one place to another. It can be a standard like ISO/OSI standards which controls systems and networks. In another sentence, this book says: user interface is a part of a software or application which establishes communication with user (Microsoft explanatory dictionary, below user interface headword). Miller and Thomas believe that user interface page is an important means of communication of users with software and websites. Regardless of special performances of interactive systems, user interfaces are always important elements in digital libraries and webpage of library software (Miller and Thomas, 1999). The importance of user interface in computer systems is so great that it convinces researchers to identify its elements (Beheshti, 231-240; 24).

User interfaces of computer systems and library software are important because they make their information accessible and indicate the structure of information in a library system or software and the way they communicate with each other. User interface has a lot of impacts on users' minds and indicates designers' thoughts. This helps users recognize and understand library software well and make use of the software effectively. A good user interface attracts many users and makes them attach to the software (Yan and Li Chan, 2002). Therefore, it is necessary to design computer systems effectively and designers of library software should have a comprehensive recognition of users and the information system working area and addressees in order to be able to design an optimum and efficient interface (Zerehsaz, Fattahi, 2006).

Library software is actually computer software for storage, process and recovery of information which is usually written by one of the famous programming languages. Library software is a necessity for management of information and librarianship and information professions make use of computers speed, exactness and facilitation of working processes (fattahi and Parirokh, 2006, p 1773).

Research background in Iran

Mohammadi (2012) conducted a research titled "evaluation of user interface of virtual reference service of Organization of Documents and National Library of IRI from users' viewpoints". They tried to investigate satisfaction level of users of the mentioned library service. They investigated demographic features, computer technologies and satisfaction level of users. Their study was a survey and users' satisfaction was evaluated via electronic questionnaire. They concluded that satisfaction level was high and e-mail (50.20%) and continuous conversation (38.34%) were the expected methods of receiving service. They also concluded that in spite of users' satisfaction with the present user interface, its design needs to be revised based on users' viewpoint. Rizan (2011) conducted a master degree thesis titled: "investigation of relationship between user interface of Persian papers databases using evaluation method and 5 constructs: general information, search, display of information, storage and recovery and guidance." They investigated 6 public and private databases. He concluded that sssdatabase is the first database (point: 276) and Nemayehis the last database (point: 164). Roben et al (2012) investigated the quality of evaluation of digital libraries from users' viewpoints. They used several criteria for judgment on digital libraries and considered users' viewpoints. Waljas (2009) tested users and believed that the most important goal of design of interactive services is their realistic and pleasant aspect of them; web services and mobile terminals have been developed over the last few decades in order to satisfy users' needs for managing media and social interactions contents. He evaluated 3 web services by 3 evaluators by means of exploratory evaluation method. He also dealt with discovering strengths/weak points. Yushina and Widyawati Abdul (2007) evaluated "efficiency of user interface of continuous list of malaysia Islamic University public library". This study was concentrated on 10 exploratory principles of Nilson and basic problems of usability were identified.

RESEARCH METHODOLOGY

The present research is an applied study. Evaluation research methodology was used to conduct the research and library method was used for collection of criteria. Considering the absence of a formulated criterion for investigation of user interface of digital libraries, a list of texts and references were extracted and finally, Delphi method was used to explore experts' opinions. After data collection, SPSS software was used for analyzing data and answering the questions. Statistical population of the research included all users of digital web-based libraries in Khuzestan Province Islamic Azad University branches: Ahwaz, Mah-Shahr, Dezfool, Shoushtar and Masjid-e-Soleiman Azad Universities.

Data were collected by means of field method and questionnaire. Research questionnaire was extracted from references and texts. It was finalized by experts' ideas and by means of Delphi method. Then, it was used for investigating of 4 constructs concerning search, integration, guidance and display of information. The questionnaire had 50 questions in four sections. Questions 1 to 17 evaluate search criterion in user environment, questions 18 to 24 evaluate integration in user interface, questions 25 to 38 evaluate guidance in user interface and questions 39 to 50 concerns the quality of information display in user interface. After collection of data, descriptive indicators like tables, graphs and mean values were used for answering research questions. Validity of the questionnaire was verified by Delphi method and its Cronbach's alpha was 0.9. Then, 950 questionnaires were distributed among users of web-based digital libraries of 5 Islamic Azad University branches in Khuzestan province (Ahwaz, mah-Shahr, Dezfool, Shoushtar, Masjid-e-Soleiman). 892 analyzable questionnaires were returned and data were analyzed.

Data analysis

Descriptive test results

Investigation of universities: most students belonged to Dezfool Islamic Azad University (33.7%). After that, respondents belonged to Ahwaz University (28.5%), Shoushtar University (19.6%), Mah-Shahr University (13.5%) and Masjid-e-Soleiman University (4.7%).

Investigation of respondents' gender: 65% of the respondents were female and 35% of them were male.

Investigation of marital status of respondents: 74% of the respondents' were single and 26% of them were female.

Research variables construct score: in this section, descriptive statistics of the constructs: search, integration, guidance and display are investigated:

Table 1: descriptive indices of research constructs

| Research variables | minimum | maximum | mean | Standard deviation |
|------------------------------|---------|---------|----------|--------------------|
| Shoushtar University | 98 | 190 | 163 / 14 | 13 / 83 |
| Dezfoul university | 96 | 190 | 163 / 48 | 13 / 7 |
| Ahwaz University | 97 | 192 | 163 / 78 | 13 / 7 |
| Masjid-e-Soleiman University | 94 | 191 | 162 / 2 | 14 / 22 |
| Mah-Shahr University | 100 | 193 | 163 / 01 | 13 / 54 |

The above table indicates means, standard deviations and range of variations of the constructs. As it can be seen, the greatest range of variations belongs to masjid-e-Soleiman University.

Results of inferential analysis

First question: how is the level of observation of "search" construct in web-based version of library software of Khuzestan province Islamic Azad Universities?

As it can be seen in table 2, respondents' mean score in "search" construct is significantly greater than average point (51) in all universities. This indicates that "search" construct mean is above average. Therefore, it can be said that "search" construct is in a favorable level from all universities students' viewpoints. The best status of "search" construct belongs to Mah-Shahr University and the weakest status belongs to masjid-e-Soleiman University.

Table 2: one-sample t test for "search" construct

| variable | | Sample size | Average level (number of questions multiplied by 3) | mean | Standard deviation | T value | Degree of freedom | p-value |
|-------------------------|------------------------------|-------------|-----------------------------------------------------|---------|--------------------|---------|-------------------|---------|
| Search criterion | Shoushtar University | 892 | 51 | 55 / 52 | 5 / 17 | 26 / 1 | 891 | 0 / 000 |
| | Dezfoul university | 892 | 51 | 55 / 58 | 4 / 92 | 27 / 8 | 891 | 0 / 000 |
| | Ahwaz University | 892 | 51 | 55 / 21 | 5 / 39 | 23 / 3 | 891 | 0 / 000 |
| | Masjid-e-Soleiman University | 892 | 51 | 54 / 94 | 5 / 28 | 22 / 3 | 891 | 0 / 000 |
| | Mah-Shahr university | 892 | 51 | 55 / 77 | 4 / 81 | 29 / 7 | 891 | 0 / 000 |

Second question: how is the level of observation of "integration" construct in web-based version of library software of Khuzestan province Islamic Azad Universities?

As it can be seen in table 3, respondents' mean score in "integration" construct is significantly greater than average point (21) in all universities. This indicates that "integration" construct mean is above average. Therefore, it can be said that "integration" construct is in a favorable level from all universities students' viewpoints. The best status of "integration" construct belongs to Masjid-e-Soleiman University and the weakest status belongs to Shoushtar University.

Table 3: one-sample t test for "one-sample t test for "search" construct"

| variable | | Sample size | Average level (number of questions multiplied by 3) | mean | Standard deviation | T value | Degree of freedom | p-value |
|------------------------------|------------------------------|-------------|-----------------------------------------------------|---------|--------------------|---------|-------------------|---------|
| Integration criterion | Shoushtar University | 892 | 21 | 22 / 67 | 2 / 61 | 19 / 1 | 891 | 0 / 000 |
| | Dezfoul university | 892 | 21 | 23 / 21 | 2 / 53 | 26 / 1 | 891 | 0 / 000 |
| | Ahwaz University | 892 | 21 | 22 / 7 | 2 / 26 | 22 / 4 | 891 | 0 / 000 |
| | Masjid-e-Soleiman University | 892 | 21 | 23 / 32 | 2 / 09 | 33 / 1 | 891 | 0 / 000 |
| | Mah-Shahr university | 892 | 21 | 22 / 99 | 2 / 61 | 22 / 8 | 891 | 0 / 000 |

Third question: how is the level of observation of "guidance" construct in web-based version of library software of Khuzestan province Islamic Azad Universities?

As it can be seen in table 4, respondents' mean score in "guidance" construct is significantly greater than average point (42) in all universities. This indicates that "guidance" construct mean is above average. Therefore, it can be said that "guidance" construct is in a favorable level from all universities students' viewpoints. The best status of "guidance" construct belongs to Ahwaz University and the weakest status belongs to Mah-Shahr University.

Table 4: one-sample t test for “one-sample t test for “guidance” construct”

| variable | | Sample size | Average level (number of questions multiplied by 3) | mean | Standard deviation | T value | Degree of freedom | p-value |
|---------------------------|------------------------------|-------------|-----------------------------------------------------|---------|--------------------|---------|-------------------|---------|
| Guidance construct | Shoushtar University | 892 | 42 | 45 / 63 | 4 / 43 | 24 / 4 | 891 | 0 / 000 |
| | Dezfoul university | 892 | 42 | 45 / 51 | 4 / 35 | 24 / 1 | 891 | 0 / 000 |
| | Ahwaz University | 892 | 42 | 46 / 49 | 4 / 2 | 31 / 9 | 891 | 0 / 000 |
| | Masjid-e-Soleiman University | 892 | 42 | 45 / 21 | 4 / 63 | 20 / 7 | 891 | 0 / 000 |
| | Mah-Shahr university | 892 | 42 | 44 / 98 | 4 / 18 | 21 / 3 | 891 | 0 / 000 |

Fourth question: how is the level of observation of “display” construct in web-based version of library software of Khuzestan province Islamic Azad Universities?

As it can be seen in table 5, respondents’ mean score in “display” construct is significantly greater than average point (36) in all universities. This indicates that “display” construct mean is above average. Therefore, it can be said that “display” construct is in a favorable level from all universities students’ viewpoints. The best status of “display” construct belongs to Ahwaz University and the weakest status belongs to Masjid-e-Soleiman University.

Table 5: one-sample t test for “one-sample t test for “display” construct”

| variable | | Sample size | Average level (number of questions multiplied by 3) | mean | Standard deviation | T value | Degree of freedom | p-value |
|--------------------------|------------------------------|-------------|-----------------------------------------------------|---------|--------------------|---------|-------------------|---------|
| Display construct | Shoushtar University | 892 | 36 | 39 / 33 | 3 / 64 | 27 / 3 | 891 | 0 / 000 |
| | Dezfoul university | 892 | 36 | 39 / 18 | 3 / 77 | 25 / 2 | 891 | 0 / 000 |
| | Ahwaz University | 892 | 36 | 39 / 37 | 3 / 65 | 27 / 6 | 891 | 0 / 000 |
| | Masjid-e-Soleiman University | 892 | 36 | 38 / 73 | 4 / 12 | 19 / 8 | 891 | 0 / 000 |
| | Mah-Shahr university | 892 | 36 | 39 / 26 | 3 / 77 | 25 / 8 | 891 | 0 / 000 |

CONCLUSION AND DISCUSSION

The first question of the research investigated the level of observation of “search” construct in web-based library software in Khuzestan Province Islamic Azad Universities. Results showed that “search” construct was in favorable level in the mentioned library software. This matches the results of Roben et al (2012, hill et al (2000), rizan (2011) and Norouzi (2010). Therefore, managers of Khuzestan Universities are advised to consider items like: natural search capability, capability of results rating, capability of sending search results through e-mail, capability of suggesting related keywords, capability of indexing search results, capability to print search results, capability of phrase-based search, capability of limiting search results for example by date, capability of simple search, capability of advanced search, capability of field search, capability of searching with small words and capability of changing search language, and design long-term programs for identification of weak points of the mentioned indices in order to improve libraries continuously.

The second question of the research investigated the level of observation of “integration” construct in web-based library software in Khuzestan Province Islamic Azad Universities. Results showed that “integration” construct was in favorable level in the mentioned library software. This matches the results of Roben et al (2012) and Norouzi (2010). Therefore, managers of Khuzestan Universities are advised to consider items like: similarity of updated dates in all pages, inclusion of a descriptive page for describing hoe page, use of field, access to site through search engines, similarity of presentation of information from top right side of all Persian pages, similarity of colors used in all pages which have similar function, maintenance of primary discipline across website and similarity of the phrases which are used for a particular process in all pages, and formulate long-term plans for identification of weak points of these indices and help improve the mentioned indices continuously.

The third question of the research investigated the level of observation of “guidance” construct in web-based library software in Khuzestan Province Islamic Azad Universities. Results showed that “guidance” construct was in favorable level in the mentioned library software. This matches the results of Roben et al (2012, hill et al (2000), rizan (2011) and Norouzi (2010). Therefore, managers of Khuzestan Universities are advised to consider items like: provision of information for search engine, inclusion of FAQ section, inclusion of website map, inclusion of navigation section in the top and bottom of pages, inclusion of “ask librarian” section, inclusion of a section called “about us”, provision of guidance on any page, inclusion of auxiliary information on conditions of site,

inclusion of e-mail help, inclusion of step-by-step guidance system, inclusion of guide option for simple and advanced search, and formulate long-term plans for identification of weak points of these indices and help improve the mentioned indices continuously.

The fourth question of the research investigated the level of observation of “display” construct in web-based library software in Khuzestan Province Islamic Azad Universities. Results showed that “display” construct was in favorable level in the mentioned library software. This matches the results of Roben et al (2012, hill et al (2000), rizan (2011) and Norouzi (2010). Therefore, managers of Khuzestan Universities are advised to consider items like: capability of automatic display of searching method in results page, possibility of presenting a choice for displaying all results, capability of presenting images in large size, assigning a title for each page, capability of displaying images in thumbnail form, capability of printing information without changing computer settings, capability of displaying results in more than one language, possibility of selecting one or more than one items for displaying, capability of displaying search words in bold, possibility of limiting results display, possibility of demonstrating results completely and placing fields titles in right side (for single fields) and in the top (for list fields), and formulate long-term plans for identification of weak points of these indices and help improve the mentioned indices continuously.

Further, future researchers are advised to: 1. Investigate other variables which influence on the status of user interface. 2. Interview IT and management experts in order to produce novel capabilities for reducing students’ search speed and provision of more applied information. 3) Investigate survey, interview and observation methods at once for collecting data in order to improve results quality.

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REFERENCES

1. Hill, L. L. et al. (2000). Alexandria digital library: User evaluation studies and system design. *Journal of the American Society for Information Science*, Vol. 51 No.3, 246-259.
2. Li-chuan; Lin, Iswng-yuan (2002). "What should we consider for user interface design?". 2002. [on-line]. Available: <http://sign/interface/vesource.html>.
3. Spolsky, joel(2002)” User Interface Design for Programmers Chapter1:Controlling your environment makes you happy”[available at: Academic Research premier userexperience.ACM.[online]. Available:<http://portal.acm.org/citation.cfm?id=152034015205>
4. Miller, Lance A., John C. Thomas.(1999). Behavioral issues in the use of interactive systems. *International Journal of Human-Computer Studies* 51(2):169-196.
5. Yushiana, M.; Widyawati Abdul, R. (2007). "Heuristic evaluation of interface usability for a web-based OPAC". *Library Hi Tech*. volume 25.number 4. P .538 from <http://www.emeraldinsight.com/Insight/ViewContentServlet?Filename=/published/emeraldfulltextarticle/pdf/2380250408.pdf>
6. Yu, Li-chuan; Lin, Iswng-yuan (2002). "What should we consider for user interface design?". 2002. [on-line]. Available: <http://sign/interface/vesource.html>
7. Waljias, minna(2009). Development of evaluation heuristics for web services userexperience.ACM.[online].Available :<http://portal.acm.org/citation.cfm?id=1520340152055>