Summer 8-12-2019

Familiarity and Application of Web 2.0 Technologies in Education and Learning by LIS Postgraduate Students

Maryam Shabankareh
Tehran University of Medical Sciences, sh.gums@gmail.com

Fatemeh Sheikhshoaei
fashoaei@sina.tums.ac.ir

Fereydoon Azadeh
Tehran University of Medical Sciences, azadeh.fe@gmail.com

Masoud Mohammadi
Tehran University of Medical Sciences, mohammadi.msd84@gmail.com

Familiarity and Application of Web 2.0 Technologies in Education and Learning by LIS Postgraduate Students

Maryam Shabankareh, Fatemeh Sheikhshoaei*, Fereydoon Azadeh, Masoud Mohammadi

MSc. Medical library and information Sciences, Tehran university of medical sciences, Tehran, Iran

Assistant professor, Medical library and information Sciences department, Tehran university of medical sciences, Tehran, Iran (Corresponding author) fashoaei@sina.tums.ac.ir

Associate professor, Medical library and information Sciences department, Tehran university of medical sciences, Tehran, Iran

PhD student, Medical library and information Sciences department, Tehran university of medical sciences, Tehran, Iran

Abstract

Background and Aim: Web 2.0 technology is considered as one of the most important communication technologies in higher education. The goal of this study was to determine the level of familiarity and use of web 2.0 technologies in education and learning by LIS postgraduate students of universities affiliated with MSRT[1] and MOHME[2] in Tehran.

Methodology: This is an applied study of descriptive-correlational type that was conducted by survey. The statistical population of the study consisted of 197 postgraduate students of medical librarianship, informatics, and scientometrics who were selected by stratified random sampling. The data collection tool was a researcher-made questionnaire whose validity and reliability have been confirmed. Descriptive and inferential statistics were used for data analysis and significance determination, respectively.

Results: Students had the highest familiarity with Wikis (mean of 4.26 and SD of 0.77) and the least familiarity with labeling and markup sites (mean of 2.85 and SD of 1.17). The level of familiarity with Web 2.0 technologies was higher in MOHME students than MSRT studnets, which showed a significant difference in this regard.

Conclusion: The level of acquaintance and utilization of MSRT and MOHME students from Web 2.0 technologies is relatively good. It is expected to provide equal opportunities for all students in education and training to promote the application of Web 2.0 technologies through the inclusion of relevant lessons in students' curricula and their use as educational tools.

Keywords: Web 2.0, Postgraduate Students; Librarianship and Information Science; Teaching; Learning

[1] Ministry of Science, Research and Technology

[2] Ministry of Health and Medical Education

Introduction

There have been changes in communication patterns, information access modes, deliberation, and at times activity of users with rapid development of information technology in the present era. Web 2.0 technologies are among these technologies, which are a new type of web with advanced tools, standards, and services for communication among users that is also known as the user-based Web (1-4).

Web 2.0 provides some of the most practical and most prominent tools and services such as wikis, blogs, RSS, instant messengers, social networks, labeling and markup sites, video, audio and image sharing sites, which have managed to influence the life skills of different people over the last two decades, promoting participation, interaction and collaboration, socialization, creativity, autonomy and communication, workgroup, cognitive skills, problem-solving skills, and critical thinking (5, 6).

Higher education institutions, including universities (especially at postgraduate level), are pioneers in the use of Web 2.0 technologies. These centers have attempted to invest information technology types in various fields and domains to meet the technical and educational requirements of their clients (5, 7). Learning and education is a major area of higher education that has been linked to Web 2.0 technologies (8).

Research indicates that Web 2.0 applications have potential advantages in creating effective learning and training environments. Enabling the communication between individuals and development of a different educational approach through participatory learning and social knowledge creation are a main advantage of Web 2.0 (9, 10).

Since Web 2.0 has become popular outside a specific discipline or subject area, we can take advantage of its features for academic and professional affairs of library and information science so that the application of Web 2.0 can lead to improving quality of educational and scientific products, gaining familiarity with modern knowledge, reducing information gaps, increasing interactions and participation among students and eventual enriching and promoting of innovations in all fields of study, including LIS (11).

Although the training facilities of Web 2.0 based environments have been confirmed, the use of Web 2.0 has not taken a formal character and many students, educators and librarians have little knowledge in this regard (3, 11-15). Considering the nature and features of LIS, postgraduate students are expected to become more familiar with benefits of Web 2.0. Therefore, in order for librarians to be able to capture job opportunities and roles affected by Web 2.0 technologies, their level of familiarity and use of these technologies needs to be identified so that they can make the necessary arrangements using the results. Thus, the present study aims to investigate the level of familiarity and application of postgraduate librarianship students from MSRT and MOHME with Web 2.0, identify the best and most commonly used Web 2.0 tools and compare them between the two research communities.

Research method

This applied research is of descriptive-correlational type and was conducted through survey. The statistical population of the present study included 197 postgraduate medical librarianship, information science and scientometrics students who were selected by random stratified sampling method from MSRT (Tehran, Shahid Beheshti, Tarbiat Modares, Allameh Tabatabai, Al Zahra, Shahed) and MOHME (TUMS, SBUMS, IUMS) universities.The data collection tool, which was aimed at answering the questions and proving the assumptions of the present research, is a researcher-made questionnaire designed by studying resources and reviewing the texts according to theoretical backgrounds. To assess content validity, the original questionnaire was distributed in print and electronic format between several professors and experts in the field of library and information science. Then, Cronbach's alpha formula was used to determine the internal consistency of the questionnaire. For this purpose, the link of questionnaire was sent to 20 students. Cronbach's alpha coefficient was 1.8 and 7.9 for familiarity and application of Web 2.0 technologies, respectively, which confirmed the reliability of the questionnaire. In this questionnaire, the level of awareness and use of most common Web 2.0 tools was measured in seven groups including blogs, wikis, social networks, labeling and markup sites, video, image, and movie sharing sites, RSS, and instant messengers. Students' comments on the best web 2.0 tools for learning and training were asked in the form of an open question. The questionnaire was distributed to 197 students in May and June 2018 in in person and electronic format, and 193 questionnaires were answered. To evaluate the research questions, a five-point Likert scale was employed and descriptive statistics (frequency, frequency rate, mean, and standard deviation) and inferential statistics (independent t-test, analysis of variance, Pearson correlation, regression, Chi-square and Fisher's) were used for data analysis and significance level determination, respectively.

Results

The demographic data of the statistical sample from research participants show that most respondents were women (78.4%), aged 26-30 (38.5%), postgraduate students (81.7%) and without work experience (33%) (Table 1).

Table 1. Demographic characteristics of the sample under study

General features		Community distribution	
		Frequency	**Percent**
Gender	Female	152	78.4
	Male	42	21.6
	Total	194	100
Age	20-25	48	24.6
	26-30	75	38.5
	31-35	40	20.5
	36-40	21	10.8
	≥41	11	5.6
	Gross Total	195	100

Education level	MSc	161	81.7
	PhD	36	18.3
	Total	194	100
Previous course	Medical librarianship	29	15.3
	Librarianship/information science	144	75.8
	Unrelated courses	17	8.9
	Total	190	100
Work record in library	No record	64	33
	<1 year	51	26.3
	1-5	39	20.1
	6-10	21	10.8
	11-15	11	5.7
	≥16	8	4.1
	Total	194	100
Current job status	Library	55	28.5
	Outside library	51	26.4
	Unemployed	87	45.1
	Total	193	100

The findings of this research showed that students in the studied universities were most familiar with wikis (mean of 4.26 and SD of 0.77) and least familiar with labeling and markup sites (mean of 2.85 and SD of 1.17). In comparison between the two research communities, the highest rate of acquaintance was related to MSRT students with wikis (mean of 4.22 and SD of 0.81) and their least acquaintance with labeling and markup sites (mean of 2.77 and SD of 1.19). The highest acquaintance rate of MOHME students was related to social networks (mean of 4.46 and SD of 0.69) and their least familiarity was with instant messengers (mean of 3.09 and SD of 1.36 (Fig. 1, Table 2).

Table 2. Frequency distribution of familiarity with Web 2.0 technologies in research community

Web 2.0 technologies	University	Mean	SD
Blog	MSRT	3.97	0.93
	MOHME	4.22	0.69
	Total	4.03	0.88
Wikis	MSRT	4.22	0.81
	MOHME	4.41	0.65
	Total	4.26	0.77
RSS	MSRT	3.03	1.24
	MOHME	3.7	1.05
	Total	3.2	1.23
Social networks	MSRT	4.13	0.96
	MOHME	4.46	0.69
	Total	4.21	0.91
Video, image and audio sharing sites	MSRT	3.36	1.06
	MOHME	3.65	1.05
	Total	3.43	1.06
	MSRT	2.77	1.19

Bookmarking and Tagging	MOHME	3.11	1.05
	Total	2.85	1.17
Instant messaging	MSRT	3.1	1.35
	MOHME	3.09	1.36
	Total	3.1	1.34

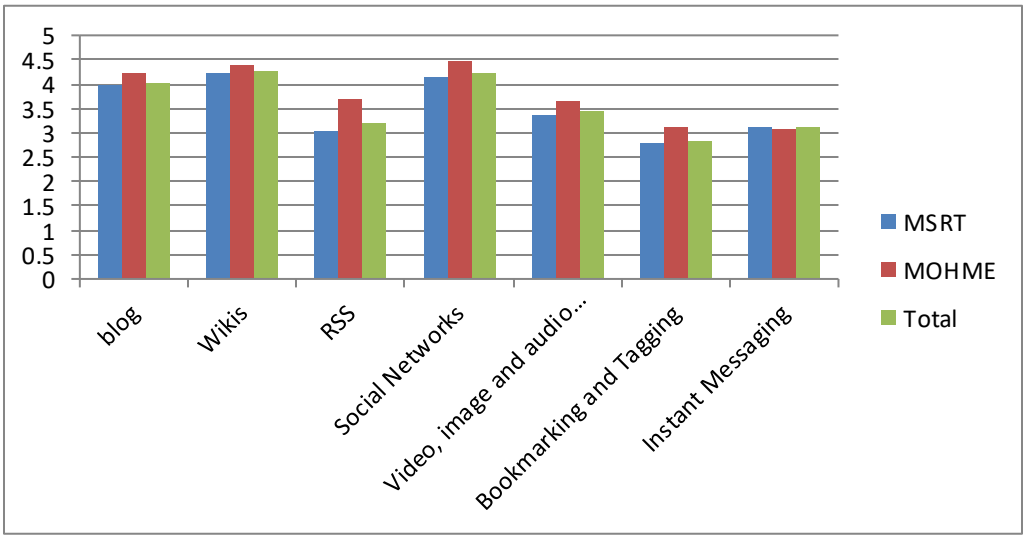

Diagram 1. Frequency distribution of familiarity with Web 2.0 tools

The difference in the rate of familiarity with each of the Web 2.0 tools and mean familiarity of students from MSRT and MOHME were assessed by independent t-test. The results showed that in general, the level of familiarity with web 2.0 technologies was higher in MOHME students than MSRT students and indicated a significant difference (P=0.22) (Table 3).

Table 3. Mean familiarity with Web 2.0 technologies in research community and independent t-test

Web 2.0 technologies	MSRT		MOHME		Test result
	SD	Mean	SD	Mean	
Blog	0.93	3.97	0.69	4.22	P=0.103
Wikis	0.81	4.22	0.65	4.41	P=0.135
RSS	1.24	3.03	1.05	3.7	**P=0.001**
Social networks	0.96	4.13	0.69	4.46	**P=0.036**
Video, audio and image sharing site	1.06	3.36	1.05	3.65	P=0.105
Bookmarking and Tagging	1.19	2.77	1.05	3.11	P=0.089
Instant messaging	1.35	3.1	1.36	3.09	P=0.962
Total	5.3	24.61	4.66	26.63	**P=0.022**

Overall, the findings indicate that students in universities under study have the highest use of social networks (mean of 4.15 and SD of 0.97) and the lowest use of labeling and markup sites (mean of 2.63 and SD of 1.2). In comparison of the two research communities, the highest use of MSRT students was related to social networks (mean of 4.9 and SD of 1.01) followed by wikis (mean of 4.08 and SD of 0.83). MOHME students largely used social networks (mean of 4.34 and SD of 0.83). Also, the analysis of the results showed that the use of Web 2.0 technologies was generally higher among MOHME students than MSRT students, which did not show a significant difference in this regard (P=0.897) (Table 4, diagram 2).

Table 4. The mean of Web 2.0 technologies use rate in research population and independent t-test

Web 2.0 technologies	MSRT		MOHME		Independent t-test result
	SD	Mean	SD	Mean	

Blogs	1.01	3.67	0.84	3.52	P=0.371
Wikis	0.87	4.08	0.83	4.05	P=0795
RSS	1.15	2.74	0.95	3.14	P=0.038
Social networks	1.01	4.09	0.83	4.34	P=0.141
Video, audio and image sharing site	1.13	3.19	1.05	3.09	P=0.602
Bookmarking and Tagging	1.2	2.63	1.06	2.61	P=0.941
Instant messaging	1.41	2.98	1.31	2.82	P=0.507
Web 2.0 technologies application	5.38	23.45	4.56	23.56	P=0897

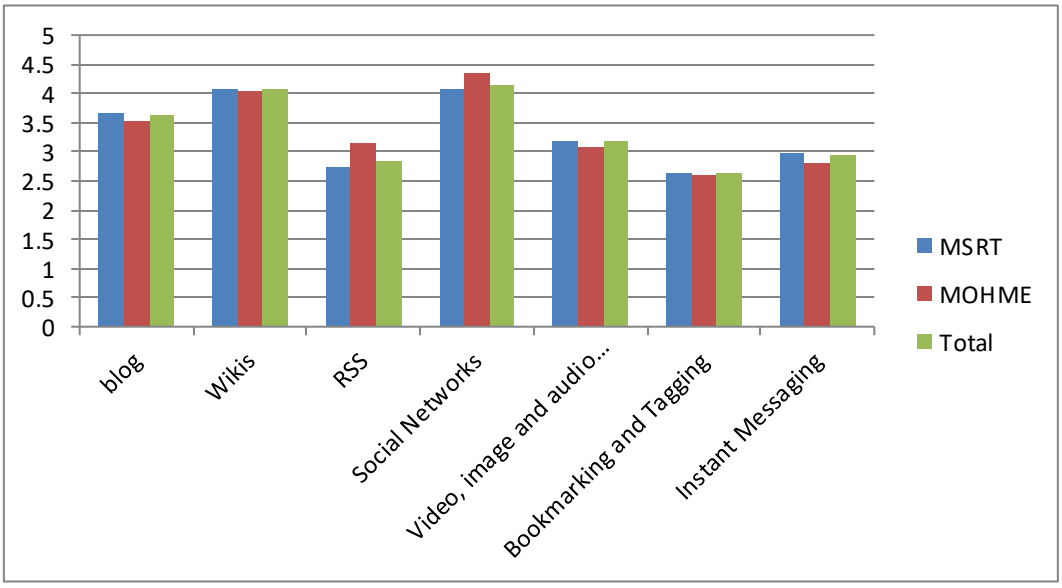

Diagram 2. Frequency distribution of using Web 2.0 tools

In terms of determining the best Web 2.0 tools from the viewpoint of postgraduate LIS students of MOHME and MSRT universities in Tehran, the results show that the best tools were social networks (61.4%) and the worst tool was RSS (4.3%). The best tools from the viewpoint of MSRT students are social networking (52.4%) and the worst are RSS (2.4%). From the standpoint of MOHME students, the best tools are social networking (75%) and the worst RSS and instant messengers (7.1%). The results of chi-square test showed that the studied universities did not have significant differences and were homogeneous. It is worth noting that labeling and markup sites were removed from the Table because they were not chosen by the students.

Discussion

Based on the findings of this study, postgraduate students in library and information science at universities affiliated to MSRT have the highest degree of familiarity with wikis and the least familiarity with labeling and markup sites. It is also noticeable that MSRT students have the most acquaintance with wikis and MOHME students with social networks separately, and show least acquaintance with labeling and mark up sites and instant messengers, respectively. The familiarity level of students studying in MSRT and MOHME affiliated universities with the majority of Web 2.0 technologies is moderate to high. These results were consistent with those of "Qaraei, Raddad & Taja'fari" and "Kerani & Rashidi" (14, 15), but not with "Ebrahimzadeh & Nakheshneh" research. In the latter research, academic librarians of Tabriz University had the highest familiarity with blogs (mean of 3.08) and the least familiarity with wikis (mean od 2.5), and their overall familiarity with web 2.0 technologies was less than average and low (13), which did not match the results of "Bahrami & Naghshineh". Their findings showed that librarians of central libraries in Iranian universities had the highest acquaintance with blog technology (mean of 2.32) but the least acquaintance among the studied technologies was related to social cataloging sites (mean of 5.61). The average total awareness of librarians with Web 2.0 technologies was moderate to low (12). The results of this study were not consistent with those of "Esfandiari Moghadam & Hosseini Sha'ar", in which the familiarity level of librarians working in Hamedan University libraries with Web 2.0 features and facilities was in a moderate level (44.6%), most of them infrequently used these features (3), and the results were inconsistent with Mohammadi & Abdokhoda study who showed that nearly 34% of the librarians of medical universities from Tehran were familiar with the new generation of web sites. 60% of librarians were aware of blog, Google Earth, and Google Map and had 36% familiarity with RSS, wikis and LIB2. The lowest level of familiarity was observed in podcast tools, social networks, and videocast (25%). Generally, the familiarity of librarians with Web 2.0 technologies was in a low level (16).

The findings of this study showed that the students of universities affiliated to MOHME had the highest familiarity with social networks, which was in line with results of "Eze" research examining the awareness and use of Web 2.0 tools in librarianship students of University of Nigeria, Nsukka (UNN), in which the students were most familiar with social networks like Facebook and Youtube (97.7%) (17) and their research was consistent with the results of "Baro, Edewor & Sunday". In the latter study, 89.3% of librarians from academic libraries in Africa were familiar with social networks such as Facebook and Twitter, followed by Weblogs (77.1%) and wikis (74.3%) (18). Matingwina's research indicated that students had excellent knowledge of Web 2.0 technologies, so that 71% of them were familiar with Web 2.0 tools. The highest acquaintance was related to social networks, instant messengers, wikis and blogs and the least familiarity with social bookmarking, Mashup, audio sharing and RSS (6).

Based on our findings, postgraduate students in library and information science at universities affiliated to MSRT and MOHME mostly use social networks in the field of education and learning and have the least use of labeling and markup sites, which are consistent with the findings of Eze, Boateng & Quan, Baro, Majhi & Maharana. In the study of "Eze", social networks such as Facebook, video sharing sites such as YouTube, and wikis were the most commonly used tools among librarianship students (17). Boateng & Quan concluded that the academic libraries' use of social networks such as Facebook, Twitter and SNN was in a high level but their use of wikis was in a low level (34%) (19). Baro also stated that librarians of African academic libraries had the highest utilization of social networks (Facebook), instant messengers, blogs, Twitter and wikis (18). The findings of "Majhi and Maharana" showed that 98% of students of their research used

social networks and 91% used wikis (20). Nevertheless, the results of the present study were not consistent with those of "Ebrahimzadeh & Naqshineh", "Esfandiari Moghaddam & Hosseini Shahr", "Qaraee, Iraj Raddad, Masoumeh Tazafari" and "Hariri & Mohammadpour". In "Ebrahimzadeh & Naghshine" research, the blog was recognized as the most widely used Web 2.0 tool among academic librarians in Tabriz (13). "Esfandiari & Hosseini Sha'ar" found that the highest ability of librarians from Hamedan University libraries was to use email and blog (3). "Qarei et al." showed that the blog was the most widely used tool among the students of Payame Noor University (14). Hariri & Mohammadipour also concluded that 88.2% of librarianship students of state universities of Tehran had a positive tendency to use Web 2.0 technologies and that wikis and blog were the most commonly used information tools (21). Review of AlKindi, Al-Suqri, Al-Sarmi, Zinyeredzi & Zinn, Matingwina, Arif & Mahmood","Dukhani et al.","Rashidi and Kerani ", "Mohammadi & Abdekhoda" also showed similar differences in results with those of the present research (6, 15, 16, 22-25).

Another outcome of this study was the existence of a significant relationship between the degree of familiarity and use of LIS students from state universities of MSRT and MOHME with respect to Web 2.0 technologies, which was consistent with the results of "Esfandiari Moqaddam & Hosseini Sha'ar" (3).

Conclusion

The highest acquaintance level of MSRT and MOHME students was with wikis and they extensively used social networks. In comparison of the two research communities, the level of familiarity and use of MSRT students was higher for wikis and social networks, and for MOHME students, social networks were the most familiar and widely used Web 2.0 tools in education and learning. Based on the obtained results and examination of previous research on acquaintance and use of Web 2.0 technologies over the past few years, it can be concluded that the degree of familiarity and use of various types of Web 2.0 tools has changed over time with regard to the capabilities and facilities of Web 2.0 tools as well as users' requirements. In a majority of researches conducted in the country, the level of familiarity and application of users with blogs has been more than the other tools. It may be argued that some Web 2.0 tools have had the highest points because they present several features and capabilities together in a single tool and in this respect overlap in part of their facilities with some of the tools having the lowest points. Therefore, it can be claimed that the social networks were the best tools from the viewpoint of our research community because they simultaneously offered several services to the user.

According to our findings, we can conclude that the overall familiarity and use of Web 2.0 technologies by both MSRT and MOHME students was in a relatively good level given the obtained means. It may be argued that the higher the familiarity of students with Web 2.0 tools, the higher their application of the tools. In contrast, MOHME students were rather more familiar with Web 2.0 technologies and used them to a higher extent than MSRT students, and the difference was significant in terms of familiarity with Web 2.0 technologies. Due to the important role and potentials of Web 2.0 technologies in healthcare sector and targeted educational planning of medical librarianship groups, this conclusion can be of importance in the context of introducing postgraduate LIS students to Web 2.0 technologies in education and learning. Obviously, it is expected to provide equal opportunities for all students in education and training in order to promote the use of Web 2.0 technologies during their study period by including relevant lectures

in student courses and their application as educational tools. In this way, the students gain self-confidence and the required skills in their study period and will be ready to provide the best services in their future jobs.

Acknowledgment

This paper is derived from an MSc thesis in medical librarianship and information sciences, which was approved by Tehran University of Medical Sciences with No. IR.TUMS.SPH.REC.1397.085 on 27/07/2018

References

1. Aharony N. The influence of LIS students' personality characteristics on their perceptions towards Web 2.0 use. Journal of Librarianship and Information Science. 2009;41(4):pp.227-422.
2. Aharony N. Web 2.0 use by librarians. Library & information science research. 2009;31(1):pp.29-37.
3. Isfandyari-Moghaddam A, Hosseini-Shoar M. Factors affecting Web 2.0 adoption: a case study. Program. 2014;48(1):pp.2-15
4. O'Reilly T. What is web 2.0? design patterns and business models for the next generation of software. 2007. [cited 2016 Agust 5]. Avalaible from: https://mpra.ub.uni-muenchen.de/4578/.
5. Bigdeli Z, mousavian sst, shahini s. Job Expectancy of LIS Students after Graduation. Social Develeopment. 2017;11(4):pp.155-82.
6. Matingwina T. Knowledge, attitudes and practices of University students on Web 2.0 tools: Implications for academic libraries in Zimbabwe. Zimbabwe Journal of Science & Technology. 2014;9:pp.59-72
7. Venkatesh V, Rabah J, Fusaro M, Couture A, Varela W, Alexander K. Factors Impacting University Instructors' and Students' Perceptions of Course Effectiveness and Technology Integration in the Age of Web 2.0. McGill Journal of Education. 2016;51(1):pp.533-61.
8. Haghani F, Daei A. Web 2.0 in Medical Education: A Literature Review. Iranian Journal of Medical Education. 2017;17(36):pp.348-58.
9. Redecker C. Review of learning 2.0 practices: study on the impact of web 2.0 innovations of education and training in Europe. 2009; pp.1018-5593.
10. Wenger E. Communities of practice: Learning, meaning, and identity: Cambridge university press; 1998.
11. Sarrafzadeh M, Hazeri A, Alavi S. Knowledge and Use of Web 2.0 by LIS Academics in Iran. Journal of Information Processing and Management. 2012;1(28):pp.21-38.
12. bahrami v, sanatjoo A. Barriers to the use of web2.0 technologies in Iran university libraries. Journal of Library and Information Research. 2014;4(2):pp.71-92.
13. Ebrahimzadeh S, naghshineh n. A Survey on Scope and Familiarity with Web 2.0 by Academic Librarians of Tabriz City. Quarterly Journal of Knowledge Studies. 2016;8(29):pp.1-14.
14. gharaee r, radad I, Tagfari m. Analysis of the approach of graduate students in librarianship and information science to Web 2.0 facilities: Case study of Ferdowsi University and Payame Noor University of Mashhad. Global Media Journal. 2015;10(1):pp.107-24 .
15. Korani A, Rashidi E. The study of effect of organizational intelligence on health promotion organizational in public libraries in Kermansha. Sciences and Teqniques of Information Management. 2015;(1):pp.119-43.

16. Abdekhoda H, Mohammadi L. Evaluation of medical librarian' knowledg about new web technologies and their application in library servises. Health Information Management 2011;3(8):pp.354-62.
17. Eze EM. Awareness and use of Web 2.0 tools by LIS Students at University of Nigeria, Nsukka, Enugu State, Nigeria. Library Philosophy and Practice (e-journal) [Internet]. 2016. Available from: http://digitalcommons.unl.edu/libphilprac/1355.
18. Baro EE, Edewor N, Sunday G. Web 2.0 tools: a survey ofawareness and use by librarians in university libraries in Africa. The Electronic Library. 2013;32(6):pp.864-86.
19. Boateng F, Liu YQ. Web 2.0 applications' usage andtrends in top US academic libraries. Library Hi Tech. 2014;32(1):pp.120-38.
20. Majhi S, Maharana B. Familiarity of Web2. 0 and its application in learning: A case study of two Indian Universities. International Journal of Library and Information Science. 2011;3(6):pp.120-9
21. Hariri N, Mohammadpour L. The Relationship between Personality Characteristics and Using Web Technologies. national Studies of librarianship and Information Organization. 2011;28(3):pp.177-95.
22. AlKindi SS, Al-Suqri MN, Al-Sarmi AHZ. The Use of Online Tools by Information Professionals in Medical Libraries in Oman. Developing Country Studies 2014;4(16):pp.68-79.
23. Arif M, Mahmood K. The changing role of librarians in the digital world: adoption of Web 2.0 technologies by Pakistani librarians. The Electronic Library. 2012;30(4):pp.469-79
24. Zinyeredzi C. The use of Web 2.0 technologies by Library and Information Science students at the University of the Western Cape in South Africa: University of the Western Cape; 2016.
25. Dokhani F, Asnafi AR, Hariri N, Nooshinfard F. Determining the Status of Using Web 2.0 Tools Based on Altmetrics Implementation: Case Study Central Library of Islamic Azad University, Science and Research Branch of Tehran. Iranian Journal of Information Management. 2017;7-8(3):pp.77-105.