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Research Paper

Why do mobile messaging tools in libraries

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Abstract

Background and Objectives: This study has aimed to investigate the level of familiarity of librarians and users of the Central Library of Islamic Azad University, Science and Research Branch of Tehran with Web 2.0 services, especially mobile instant messaging applications. Another goal of this study was to provide practical solutions for using applications in order to provide library services.

Methodology: This study was an applied research and was conducted with a survey-based approach. The population consisted of librarians and users of the Central Library of Islamic Azad University, Science and Research Branch in Tehran. A digital questionnaire was prepared for data collection, and data analysis was performed using SPSS software.

Findings: The findings indicated that librarians and library users were more familiar with Web 2.0 applications than with Librarian 2.0 and Library 2.0. The frequency of librarians' and users' responsiveness to the use of mobile instant applications was quite high, 0.35 and 0.40, respectively. In both groups, the use of mobile messaging applications was moderate. Library users also agreed on providing a variety of virtual social media services in the library.

Discussion: The analyses of this study on services offered by libraries using mobile instant messaging applications would make libraries adopt new technologies and move towards changes in the new era.

Introduction

The concept of Library 2.0 was originated from the Web 2.0 infrastructure philosophy (Mishra, 2008). According to Maness (2006) and Thanuskodi (2012, p. 78), in Library 2.0, the collaboration, interactions and use of multimedia technologies for web-based library services are pivotal and the appeal of either Library 2.0 or Web 2.0 is on their level of integration and interoperability that has been designed for the user interface of the library portal. Library 2.0 requires Librarian 2.0 which is a set of skills that a librarian is required to have in order to know to create value using those skills (the more general meaning of value creation is entrepreneurship), to compete with cutting edge information technologies through the internet, and to guide clients to access the latest information in their own field of expertise (Heidari, 2015).

Under the protection of Web 2.0, libraries have provided ground for accessing high quality scientific information at any time and place. However, despite the contents that academic libraries have provided in the university's website, they are not visited that much because of two main reasons: 1. Technical difficulties of information organization. 2. Mass production of information outside the library's website. These conditions have forced libraries to use applications so that they will have more visits and therefore more use of resources. In this context, it is necessary to use mobile messaging applications in libraries, applications that are widely used to search information and today libraries cannot ignore them (Torres et al., 2016). The use of these applications has dramatically changed the role of librarians and their information literacy. An instant messenger is a technology for telecommunication over the Internet for real-time text messaging and chat. With the advent of wireless networks and mobile technologies such as 3G and 4G, access to the Internet via mobile phones has been significantly increased. As a result, these applications have evolved in mobile phones as mobile instant messaging applications such as WhatsApp, Telegram, Imo, etc., and have grown rapidly in terms of either types or numbers of users (Yoon et al., 2015, p. 139). Given the various features mentioned in Table 1, these applications allow users to choose between a varieties of options. Since libraries are interested in providing resources for the users anytime and anyplace, the use of mobile devices is a golden opportunity for libraries, particularly for reference librarians, to offer their services on a mobile platform.

***Table 1.** Features of Telegram, WhatsApp, Line and Imo (Maleki, 2015)*

Features	Telegram	WhatsApp	Line	Imo
Date	2013	2009	2011	2014
Price	Free	Free	Free	Free
Voice call	No	Yes	Yes	Yes
Video call	No	Yes	No	Yes
File sharing	All files	Photo, song and video	Photo and video	Photo and video
Voice messaging	Yes	Yes	Yes	Yes
Search in text messages	Yes	Yes	Yes	yes
Group and super group	Yes	Yes	No	Yes
Backup of messages	Yes	Yes (through Google Drive)	Yes	No
Number of users[2]	Over 100 million active users per month (more than 45 million Iranian users)	More than one billion active users per month	218 million users per month	Over 200 million active users[1]
Rank in Iran[3]		47	14	
Secret chat	Yes	No	No	No
Channel	Yes	No	Yes	No
Security	It only uses encryption in secret chats. It is weaker than competitors	End-to-End Encryption – after Signal, it is the second secure messaging tool[4]		It encodes chats and calls
App compatibility	Telegram applications are available on a variety of platforms, and they work completely independently	To use WhatsApp apps on other platforms, the mobile app must be active and running.		

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1 https://imo.im/careers
2 http://vincos.it/social-media-statistics/
3 http://www.alexa.com/topsites/countries/IR
4 http://www.bestook.com/blog

The Central Library of Islamic Azad University, Science and Research Branch of Tehran has been inaugurated since 2013, aiming to establish the largest academic library throughout Middle East. The digital database of the library provides more than 50 million articles and 3 million electronic books from authentic science databases for 18,500 students in the branch. In spite of the significant amount of sources, there is not any effective step toward understanding, and benefiting from, virtual social media, tools that feature new horizons in the area of libraries. Therefore, opportunities that provide modern information technology, including mobile messaging tools, provide knowledge sharing, and create appropriate environments for engagement with students and professors have often been unknown or limited in this library. In the current situation, there is no way to share information and exchange resources of the organization in the web, and the library is still managed in a traditional way. Therefore, the visibility of academic and scientific activities on the web is immensely low.

This study is aimed to evaluate the familiarity of librarians and users of the Central Library of Islamic Azad University, Science and Research Branch of Tehran with Web 2.0, Library 2.0 and Librarian 2.0 and the use of mobile messaging applications, including Telegram, WhatsApp, Line, and Imo in the target library. Another goal of this study is to provide practical solutions for using the applications to provide library services. Moreover, the analysis of the use of these applications in providing library services from the perspectives of librarians and users is another goal of this study. Accordingly, the researcher seeks to answer the following questions:

1. To what extent are librarians and users of Central Library of Islamic Azad University, Science and Research Branch of Tehran familiar with the concepts of Web 2.0, Library 2.0 and Librarian 2.0?
2. How much do librarians and users of the Central Library of Islamic Azad University, Science and Research Branch of Tehran use mobile messenger applications?
3. For what purpose can virtual social media be used in the library, from the perspectives of librarians and users of the Central Library of Islamic Azad University, Science and Research Branch of Tehran?

It is hoped that the results of this paper will serve as the first step for making these applications more widely available in order to provide a variety of library services, particularly in academic libraries.

Methodology

In essence, this study is an applied research using a survey-based approach. The library method has been used to collect data and provide a relevant literature. In order for the basic information to be collected from librarians and users, two digital questionnaires, both made by the researcher (librarians, users) were developed using library resources at the national and international levels. The questionnaires consisted of twenty checkpoints; eleven questions in a five-letter Likert scale, eight multiple-choice questions, and one open-ended question. For questions about the Likert spectrum, five grades were considered as grades from one to five. The validity of the questionnaires were confirmed according to the researcher's observations, as well as consultation with the relevant professors. To determine face (structural and content) validity, the views of several experts and scholars in this field were evaluated and, if necessary, resolved and corrected. Cronbach's Alpha coefficient was used to measure the reliability of the questionnaires, with 0.84 for the user's questionnaire and 0.95 for the librarian's questionnaire. The population of this study consisted of 21 librarians working in the Central Library of Tehran Science and Research Branch and over 18500 library users (either students or faculty members). Due to the limited number of librarians, all were selected as the target population. Of twenty-eight librarians, seventeen librarians responded to the questionnaires. The users' questionnaires were distributed randomly among the population. According to Krejcie-Morgan model, with a = 0.05, the sample size was estimated to be 377. All 377 questionnaires were completed and analyzed. Data were analyzed by SPSS software. Descriptive statistics such as frequency distribution tables, frequency percentage and mean were used for data analysis and answering the research questions.

Literature Review

Literature review reveals that the study of the application mobile versions in library websites had been initiated by their application in the Massachusetts Institute of Technology and Stanford University since 2008. Studies on the use of mobile version of the university library websites have all been focused on the design and delivery of services in terms of applicability, accessibility, and identification process (Arroyo, 2015; Abarca et al., 2012; Seeholzer & Salem, 2011). Mobile messaging applications have provided students and researchers with education and research and numerous studies have been done in this regard (Kroski, 2008; Chipunza, 2013; Barhoumi, 2015; so, 2016). However, these applications are used less than before in libraries. Aldrich (2010) has examined the use of mobile services to provide services in 111 libraries of the Association of Research Libraries (ARL). In a study titled "mobile connections to libraries devices," Rainie (2012) explored the use of this tool in the library. Along these studies, the impact of linguistic and cultural indicators on the use of mobile devices in China and Spain has been studied due to the high rate of applying mobile services (Li, 2013; Merlo, 2012). Xu et al. (2015) examined the use of WeChat application in more than 39 Chinese academic libraries. The results showed that about a third of libraries applied WeChat as a marketing tool to promote collections and services for users. Liu and Briggs (2015) examined the mobile services of top 100 American universities through a questionnaire and the library's website visit. Later, in a more comprehensive study, Torres-Pérez et al. (2016) studied library services provided through mobile phones in the world's best academic libraries. In another study, Ansari (2016) explored the use of WhatsApp in Iranian libraries. In this study, he described the benefits and impacts of using this application in libraries. In their study, Asnafi et al. (2017) studied the use of Telegram and various types of sources shared by Iranian academic libraries.

The reviews showed that there was no study on the use of mobile messenger applications (Telegram, WhatsApp, Imo and Line) among librarians and users in academic libraries in Iran in a single study.

Considering the widespread use of some applications such as Telegram, WhatsApp, Imo and Line in Iran, the present study seeks to investigate their use among users and librarians of the Central Library of University of Science and Research[1] branch of Tehran and to evaluate the use of these applications in a variety of library services based on the perspectives of users and librarians in the target library.

Results

The statistics of the population shows that librarians were composed of 52.9% women and 47.1% men among whom 5.9% were in the age group of below 30, 52.9% were between 31 and 40, 29.4% were between 41 and 50, and 11.8% were 51 years of age and above. Based on the observations, 17.6% had a diploma, 5.9% had a bachelor's degree and 79.5% had a master's degree. 76.5% have been educated in knowledge and information science, 17.6% in humanities and 5.9% in other fields. Some 5.9% of the librarians who responded to the questionnaires were in the reference department, 52.9% were in the lending department, 23.5% were in the library's department of technical services, 11.8% were in the management department, and 5.9% were in the other departments. Library users who were 18500, including students and faculty members, were randomly selected based on Morgan's table and 377 completed questionnaires were examined. Studies showed that the users' population was composed of 50.9% women and 49.1% men. Of these, 23.1% were undergraduate students, 57.3% were postgraduate students, 16.4% were Ph.D. students, 1.9% were faculty members, and 1.3% were from other groups. 1.9% had been educated in knowledge and information science,

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1. The applications used in this study are Telegram, WhatsApp, Imo and Line. These four applications were selected with reference to various sources based on the popularity of various types of mobile applications in Iran and with regard to the types of services provided by them (Table 1). See the following sources for more details:
https://www.engadget.com/2016/09/30/12-most-used-messaging-apps
https://financialtribune.com/articles/sci-tech/39700/top-10-android-apps-in-iran
http://gadgetnews.ir/محبوب-ترین-شبکه-های-اجتماعی-در-ایران

22.0% in humanities and arts, 11.4% in business and management, 44.6% in engineering, medicine and technology, and 20.2% in other disciplines.

Findings

Question 1: Familiarity with the concepts of Web 2.0, Library 2.0, and Librarian 2.0

Some 35.3 % of librarians claimed no familiarity with Web 2.0 and 41.2% stated they were not familiar with Library 2.0 and Librarian 2.0. Moreover, 53.6% of users said that they were not familiar with Web 2.0 and 61.5% were not familiar with Library 2.0 and Librarian 2.0. The mean comparison of both variables studied separately among librarians and users shows that the population's unfamiliarity with Library 2.0 and Librarian 2.0 is more than that of Web 2.0.
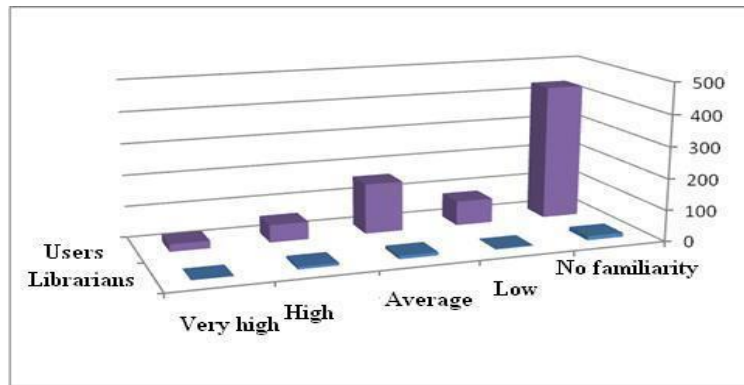

Fig.1. Comparative descriptive analysis of familiarity with Web 2.0, Library 2.0, and Librarian 2.0 among users and librarians

Fig.1 shows the greatest options selected by librarians and users. As shown in Fig.1, "no familiarity" was more frequently claimed by users and librarians.

Question 2: The use of mobile messenger applications

According to the analyses, the following results were obtained. It should be noted that the percentages in each question is based on the means obtained from each question. Librarians stated that 35.3% of them used Telegram on average and 29.4% of them did not use WhatsAPP or used on average, 35.3% did not use Line, and 41.2% used Imo less frequently. According to Fig. 3, the frequency of librarians' responsiveness to use mobile messenger networks was average (35.0%). Also, the use of mobile messenger applications was average (2.49%). In addition, 39.5% of users stated that they used Telegram very frequently, and 51.5% and 78.8% did not use WhatsAPP and Line, respectively, with 27.9% using Imo less frequently. Therefore, according to Fig. 4, the frequency of users' responsiveness to apply mobile messenger networks was very high (40.0%). The use of mobile messenger applications was average (2.49%).
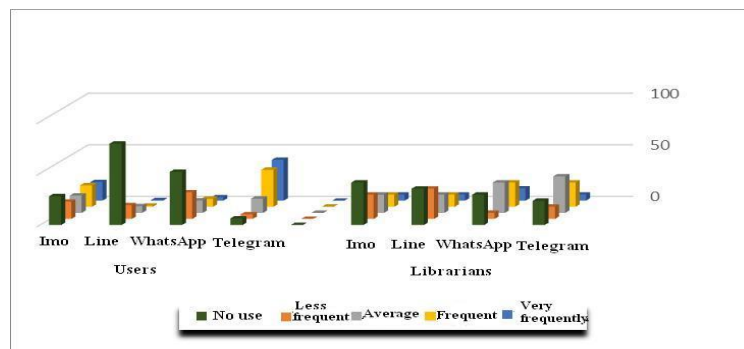

Fig.2. Comparative descriptive analysis of the usage of mobile instant messaging applications among users and librarians
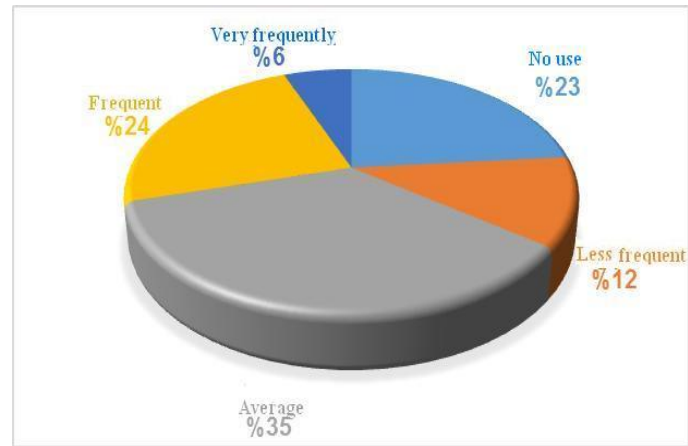
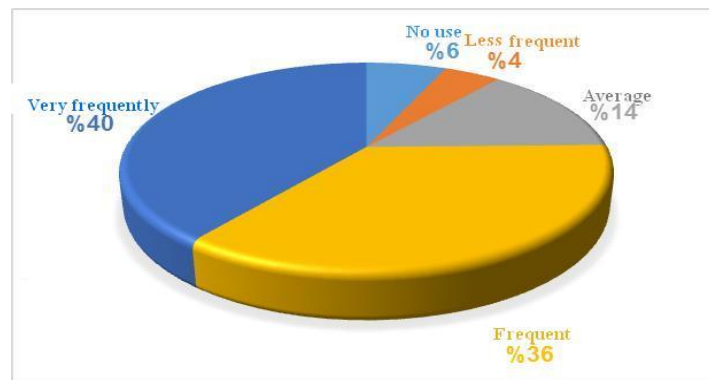**Fig.3.** *The percentage of using mobile social messenger networks among librarians*

Fig.4. *The percentage of using mobile social messenger networks among users*

Question 3: *The use of virtual social media in library*

Items applied in the study can be divided into five categories, and librarians and users were asked to refer to their items of interest:

➢ Providing public, university, and library news

➢ Sharing useful links

➢ Providing a list of books, magazines, databases and other new library sources

➢ Creating discussion and chat groups and collaborative research works among library users

➢ Having Access to library site via social networks

Of 17 librarians in the study, 15 answered this question. Some 23.5% of librarians agreed on using virtual social media in the library for the first four services, including the provision of public news as well as university and library news, sharing useful links, providing a list of books, magazines, databases and other new library sources, and creating discussion and chat groups as well as collaborative and research works among library users simultaneously. Some 21.8% of the users agreed to the simultaneous use of virtual social media to provide all the services mentioned in this question.

Discussion

According to the findings, librarians and users are not familiar with Library 2.0 and Librarian 2.0 more than Web 2.0. These findings are consistent with the results of Esfandiari and Hosseini (2011), Abde Khoda and Mohammadi (2011), Bigdeli et al. (2013), Latifi et al (2013), Rashidi (2016), Chen (2012) and Chaib (2010). They found that the use of Web-2.0 and social media capabilities in academic libraries are low and medium, respectively. As a result, the acquisition of these new skills and attitudes and adaptation to this

environment are vital for the librarians and users. Pollack and Brown (1998) noted that learning during their careers should be constant; librarians should use formal and informal learning methods to keep updated with constant changes. Also, the population used mobile messaging applications on average. According to Fig. 2, from among these tools, WhatsApp and Telegram were mostly used among the librarians and users. Asnafi et al. (2017) and Ansari (2016) explored the use of WhatsApp and Telegram in academic libraries.

Based on the results of the third question, virtual media was applicable to all services listed in the library. Mobile messaging applications allow the library to serve its users in a better way, emphasizing the participation and creativity of the users, and allowing them to use the available resources in the best way. With the help of such tools, libraries become a place to generate knowledge and allow their users to consume on their own. Therefore, it is essential to use them in libraries. Based on the obtained results and the differences between the mobile tools mentioned in Table (1), in the following, the services offered in the target library (according to the services mentioned in the third question) using the mobile messaging applications are discussed. The following is based on the main tasks of libraries, i.e. information communication, knowledge distribution, knowledge organization, and information gathering.

Information communication

For information services using mobile messaging apps, librarians can interact online with colleagues, users, and faculty members.

- To announce the availability of new sources by the library's Telegram channel: Channels are the ways to widely disseminate content to a wider audience. They can have unlimited members. All Telegram users can access public channels by searching and they can join them if they wish. To do this, the library can use several channels to share various new resources, including magazine channels, reference resource channels, and specialized book channels. Therefore, it is very useful and suitable for informing librarians and library users about current news and issues of the library (current awareness service (CAS)) and new sources. Since Telegram has a search feature in the messages, it enables users to search for the shared resources and be informed of them. Moreover, it does not require them to go to the library in person. In his study, Ansari (2016) addressed current awareness services using WhatsApp tool.

- To inform members of useful links, especially in the field of Iranian Library and Information Association through the library's Telegram channel: Today, there are many channels and groups among librarians and students of the discipline. However, if these channels are created by the library, users of various academic disciplines become more aware of the services provided by these associations and their affiliated groups, particularly those by the department of knowledge and information science. Since Telegram is better than WhatsApp in terms of its capabilities and user experience, and its popularity among Iranian users has made it a comfortable choice for everyone[1] (based on Fig.2, this situation is also evident among the target library users), library officials can use this application to provide most of their services.

- To provide customized reference services for library users and selective dissemination of information services through the WhatsApp. These services are similar to current awareness services. However, in a customized way, the library can provide services through WhatsApp to a group of users who have the same information needs. Ansari (2016) discussed these services using WhatsApp. According to McGlaun (2014), WhatsApp users are increasing in number. As outlined in Table 1, the new WhatsApp features such as voice conversation and end-to-end encryption can attract librarians' attention to utilize this tool for sharing important library files for more security

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1. According to a new infography released by Institute of Cyberspace, Telegram is the most popular social network in Iran with 15 billion messages exchanged every day. Iranians have launched more than 170,000 Telegram channels, including 11,000 channels with more than 5,000 members. Each Iranian user has an average of 10 channels and he/she reads more than 100 items per day.

- Online discussions and virtual reference services by the experts using Imo and Line: According to Ansari (2016), this service is possible using WhatsApp.

Knowledge distribution

Knowledge distribution is a critical part of the profession that should be considered in the digital design of the library. Since customer satisfaction is achieveable by providing the right information at the right time and place, librarians should therefore strive to apply Web 2.0.

- Librarians can use Telegram and WhatsApp to share files of books and articles and images of their new collections, workshops, and conferences organized on campus.
- Electronic library educational videos and other related videos, such as conferences and workshops, can be shared via Telegram, WhatsApp, and Line.
- By creating a training channel in Telegram, the library can educate users of a variety of scientific social networks such as Academia, ResearchGate, LinkedIn etc. to share scientific resources.
- Document lending services are available in the library to share content gathered, using WhatsApp. As Ansari (2016) also pointed out, users can be informed about the return of their required source and borrow it with a message via the WhatsApp from the library.
- One can share the library's access link via Telegram and WhatsApp so that the library information can be shared.

Knowledge organization

The necessity of knowledge-based activities and the need for systematic knowledge organization on the one hand, and the massive amount of information, especially on the Web, and the need to change or design powerful technological tools for organizing it on the other hand, have made traditional tools lose their efficiency in organizing knowledge in the Web environment and increase the capabilities of technological tools in sharing knowledge. Semantic Web is a proper platform for organizing knowledge and ontologies are useful tools for analyzing, categorizing and linking semantic concepts. These tools are designed for a wider use by web users (Kaffashan & Fatahi, 2011). Social applications help professionals organize knowledge to access useful information that is accessible through social networks.

- By applying Telegram and WhatsApp over certain time periods, librarians can help introduce social apps to find useful information. A tool is a kind of social bookmarking by which librarians can create a guide for users and help them search for appropriate labels and find research links (Del.icio.us, Etc.). A reference tool enables users to organize reference links and share them (Connotea). According to LibraryThing, this tool is a social network containing a book list for librarians. The Amazon list, the Library of Congress, and the world's top 200 libraries are available for selection and ordering. This is also possible using the Line tool in the form of educational videos.

Information gathering

One of the goals of the library is information gathering. Using Web 2.0 applications, this is now supported by tools such as blogs and wikis (Moradi, 2011, P.114). According to the author, this is also applicable using mobile messaging tools.

- Librarians can gather library-related criticisms or audio and video files by creating groups in Telegram, WhatsApp and Imo. The introduction of wikis in Telegram and WhatsApp is also useful for this purpose. Wikis are organized based on their topics and can be used in libraries as manuals, resource lists and educational resources. They can also be used by faculty members to improve and extend the thematic guide in each field (Moradi, 2011, p. 114).

Conclusion

Attempts have been made to explore the impact of Information Communication Technology (ICT) on the entire gamut of the library and information sector and to conceptualize the transformation of conventional libraries into Web 2.0, Library 2.0 and Librarian 2.0, which will bring a changing scenario to the information industry. On the other hand, libraries are always trying to move toward their main goal, which is the rapid availability of resources and information. In this regard, the provision of modern library services will help them achieve this goal. Meanwhile, library service by the means of mobile messenger applications has a special place. These tools are able to plan for users' information needs, save time and money, and ultimately bring about satisfaction. As noted earlier, although information communication services, knowledge distribution, knowledge organization and information gathering are faster, cheaper and more modern in libraries under the support of mobile messaging tools, the use of these tools, along with their many advantages, is a challenge to librarians. These challenges include the amount of time spent on these tools by librarians to meet users' needs, Other aspects of the challenge include the pressure on librarians to provide a quick response to the network, the variety of skills required by librarians to work with these tools, dealing with expert and non-expert individuals, coordinating library activities to prevent repetition of services, and the copyright issues that library hosts them through these tools. Therefore, the value added services of libraries using mobile messaging tools require detailed planning and appropriate policies on the part of the library management to reduce the challenges. Most Iranian libraries, including the target library, spend most of their time, manpower, and expenses on providing resources. While they do not pay much attention to ways to make the resources more efficient and easy to use, they do not exchange their users and do not welcome several modern technologies. One of these factors is some cumbersome policies and programs that exist in most libraries. Managers and librarians lack of familiarity with modern technologies has also contributed to this issue. Therefore, it is time to keep pace with the widespread and rapid changes in technology. While some libraries in the world, like Miami University's Library which has attempted to use technology since 2013, have taken advanced applications such as augmented reality technologies to provide services in their libraries, it is better for Iranian libraries to embrace it rather than resist the change and turn threats into opportunities. Finally, the presented study can turn academic libraries into dynamic, user-oriented, collaborative and interactive environments via developing the concept of Library 2.0 and suggesting that the librarians use these tools with various approaches.

Suggestions Derived from the Results
1. Based on the results in that familiarity with various types of Web 2.0 tools among librarians and users are lower than average, it is suggested that the library encourage users to use the new web tools by holding theoretical and practical workshops.
2. Given the low participation of faculty members (only 1.9% of the questionnaires were filled by the faculty), it is suggested that library management organize specialized workshops for this group in order to train them to use these tools for more interactions with their students.
3. During the research, the author noted the very limited association of the Department of Knowledge and Information Science with the central library. Therefore, it is suggested that the professors of the group take the responsibility for holding Web 2.0 workshops to prevent the holding of such workshops by non-specialists.
4. During the research, the author realized that library management and a number of key library officials have non-librarianship degrees. Therefore, it is suggested that specialized meetings be held in the field of library and its communication with Web 2.0 tools. So it can be a useful step to take to increase their awareness of this issue.

Executive Suggestions for Future Research
1. Research on capabilities of social networks to understand the needs of educated people rather than limiting them. This research provides the academic community with the occasion to plan for a better use of these tools in terms of recognizing the interests of virtual social networking users.
2. Research on the use of mobile messaging tools for exchanging and interacting with students and faculty members on the one hand, and librarians on the other hand, and examining its technical infrastructure for more cost-effectiveness and accessibility.
3. Research on the level of information literacy of the managers of university libraries about new information and communication technologies related to their performance in implementing these technologies in the library in order to develop a black-out check to create a template for professional and expert executives for academic libraries.
4. Research on role of the department of Knowledge and Information Science in universities (As custodians of the use of information and communication technologies in libraries) in support of scientific virtual activities in libraries.

Conflict of Interest
No conflict of interests has been reported by the authors.

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