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The Role of Web 2.0 Technologies in Empowering Librarians: The Case Study of University Libraries in Iran

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Abstract

The present study aims to investigate the impact of Web 2.0 technologies on empowering the librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries. This applied research was conducted using a survey method. The population of the study consisted of 135 librarians in the the Isfahan University of Medical Sciences and the University of Isfahan libraries in Iran. Due to the limited number of participants, data were collected from the whole population and sampling was not carried out. Two questionnaires for assessing the Web 2.0 Library Tools and empowerment of staff were utilized to collect data. The analysis of the data was performed using descriptive and inferential statistical tests such as Kolmogorov-Smirnov, Friedman, Pearson Correlation Coefficient, and Univariate Linear Regression in SPSS software version 22.

The results revealed a statistically significant positive relationship between the use of Web 2.0 technologies and the empowerment of librarians ($r=0.835$). Also, statistically significant positive relationships were found between the use of Web 2.0 technologies and different dimensions of empowerment (i.e. independence and freedom of work, professional development and progress, self-control, Job satisfaction, and responsibility), with professional development and progress dimension had the highest ($r=0.678$, $p=0.000$) and independence and freedom of work had the lowest correlation ($r=0.423$, $p=0.000$) with the use of Web 2.0 technologies. The use of Web 2.0 technologies has also a statistically significant positive relationship with the librarians' level of education ($r=0.863$, $p=0.000$) and their participation in training instructional courses on Web 2.0 and academic libraries ($r=0.749$, $p=0.000$).

Keywords: Web 2.0 technologies, empowerment, librarians, university libraries, Iran

Introduction

Today's organizations feel a lot of pressure due to factors such as limited resources, sudden changes, need for quality services and increasing global competition. Organizations need specialized, creative and highly motivated human resources if they want to be a leader in their business and economic affairs and not lag behind in competition. Human resources are the biggest assets of organizations. Many research have shown the relationship between the human capital and organization's productivity (Bartel et al., 2014). The use of human potential is a great advantage for any organization. Today's organizations use the potential human resources to advance their organization and facilitate achieving their goals. Employee empowerment has become very important and has been considered by many human resource management experts in recent years.

Organizations need the support of their employees to overcome the challenges ahead and continue their improvement. Employee empowerment tries to improving the productivity of organizations by utilizing their employees' capabilities. Employees possess latent power due to their knowledge, experience, and motivation, and empowerment is indeed the release of that power (Zhang & Mackling, 2010). Empowerment has a vague and unequal meaning, and like many humanities and social science concepts, there is no general agreement on its definition. Different people have looked at it from different angles and emphasized one of its characteristics. The full meaning of empowerment is realized when we consider it as a factor in creating new ways for individuals and groups to develop higher levels of competence and create more complete ways to influence the performance of organizations. An empowered work environment is one in which groups of people work together and participate in doing things together. In an empowered organization, people can rely on each other instead of working on their own (Scott & Jaffe, 2004). Empowerment means providing people with the freedom and information they need to do what they want to do successfully, rather than forcing them to do what we want them to do (Watten & Cameron, 2002).

According to Rapili, empowerment is a concept, a set of behaviors, and an organizational plan. As a concept, empowerment encompasses authorizing subordinates to make decisions as a set of behaviors, participating groups and individuals in determining their professional destiny,

and giving the workforce more opportunity for freedom, improvement and application of their skills, knowledge and potential power for the good of themselves and their organization (Zhang & Mackling, 2010). Today, in addition to using new technologies, the workforce capability and their commitment are being considered as other important competitive advantages of organizations the advantage that organizations have to surpass each other lies not only in the application of new technology, but also in the employees' high level of self-confidence and commitment to organizational goals (Khedri, 2015).

To this aim, organizations must identify the factors that can be effective in developing an empowered work environment. This factor has a tremendous impact on the performance of organizations. Today, many organizational activities are carried out using Information and Communication Technologies (ICTs), which accelerates the activities and enhances their accuracy and level of confidence. The use of these technologies in doing things has become so widespread that in their absence it is difficult to do many things, if not to say it is impossible, and the level of efficiency is significantly reduced (Seyed Javadin, 2005). Several incentives encourage organizations to empower their employees. The most important of them are:

- **Increased competition:** The pressure of global competition on companies, forcing them to change and transform, mean that what once seemed extraordinary and prominent may seem ordinary today. Barriers are constantly increasing, and if a company can not cross it, another competitor takes its place (Blanchard, Carlos, & Randolph, 2000).

- **The impact of technology in the workplace:** The rapid growth of technology has affected all aspects of organizations, and the changes in technology has changed the nature of jobs. As a result of this transformation, many jobs have been replaced by computers and people have to compete to attain jobs that were transformed. The remaining jobs require empowered employees with the necessary skills to cope with these changes (Abtahi & Abesi, 2007).

- **The need for highly skilled employees:** Nowadays, organizations need innovative staff who can use their abilities to enable the organization to survive in a competitive environment. Recently, organizations have realized that today's confidence and tomorrow's success depend more on the talent and knowledge of their staff. Employees are indeed the center of the rationality of any organization.

Nowadays, rapid technological changes have affected almost every aspect of libraries. Libraries, as organizations, due to having all the organizational conditions and criteria, need to use different technologies to achieve their goals. Given the important role of librarians as one of the important organizational resources, we need to lead them to new ICT technologies. Libraries must act in an empowered manner to carry out their mission. The ultimate capability

of libraries is achieved through the use of capable librarians to provide services to their community. One of the most important ways to empower librarians is to equip them with the important sources of information.

This age of information technology requires the development of competence, efficiency, effectiveness, and empowerment of librarians so that they would be able to fulfill their most important mission, which is to respond to the needs of clients and the user community. For this reason, information science experts and researchers acknowledge that since librarians only learn the basic skills and concepts of their profession while studying and do not acquire relevant skills and work experiences, it is necessary for the library and other information centers to enhance the ability of librarians through short-term and in-service training courses, and empower them with new information and skills related to their profession. The empowerment process also considers the contribution of information and knowledge necessary for the empowerment of employees in the organization. Empowerment is a permanent activity, and its importance is always increasing. Empowerment is the basis of business development today and is evolving in line with social changes, technological achievements, and the demands of a competitive environment (Abtahi & Abesi, 2007).

The present study investigates the impact of Web 2.0 technologies on empowering academic librarians in Iran. In this study, we study the following five components of empowerment among academic librarians:

- **Independence and freedom of work:** The degree of freedom that a person has in his work and can adjust and execute things at will; Accepting responsibility for success and failure of a particular task and having the ability to plan, quality control, and other related matters.
- **Job Satisfaction:** Experts believe that job satisfaction is a kind of attitude, and define it as “an individual’s overall attitude towards the job. Simply put, how does a person feel about his job and its various aspects” (Seyed Javadin, 2005). Individuals with high job satisfaction are more likely to show positive attitude towards their employment than those with low job satisfaction.
- **Accountability:** Accountability means the state of being responsible for the consequences of actions. Empowering team members can be influenced by responsibility for work results. Members must have equal responsibility for organizational results and success. Individuals are accountable to the work process only for the authority given to them. In a work environment where the authority and decision-making power is given to individuals and work achievement is entrusted to them, they can be accountable and take responsibility for work results.

- **Self-control (personal control):** It is a state within a person that makes him inclined to perform his duties without control of an external factor. Self-control allows the manager to monitor the progress of employees without hindering their creativity and excessive interference in their work (Stoner, Freeman & Gilbert, 1996).

- **Professional development:** The level of formal and educational facilities that an organization provides to empower its staff. (Daft, 1978).

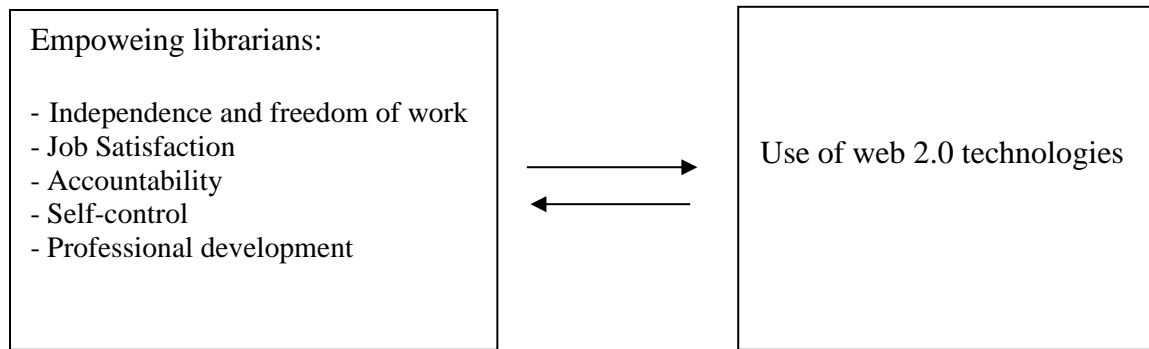


Figure 1. The conceptual framework of the study

Research Questions:

This research sought to answer the following six questions:

1. Which social media tools were used the most and the least by librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?
2. What were the most important barriers in the use of Web 2.0 tools among librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?
3. Is there a statistically significant relationship between the use of Web 2.0 technologies and the performance capability of librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?
4. Is there a statistically significant relationship between the use of Web 2.0 technologies and the empowerment components of librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?
5. Is there a statistically significant relationship between the use of Web 2.0 technologies and the number of in-service training courses taken by librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?
6. Is there a statistically significant relationship between the use of Web 2.0 technologies and the education level of librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?

Review of Literature

In this section, previous studies on the impact of Web 2.0 technologies on librarians' empowerment of librarians are being reviewed.

Tripathi and Kumar (2010) studied Web 2.0 adoption and use of 277 academic librarians in four universities in Australia, Canada, the UK, and the United States. 76% of studied librarians said that they use at-least one social media tool at work, while the other 24% reported that they do not use social media tools for their work. The most popular social media used by academic librarians was Instant Messaging (IM) software used by 73% of libraries to communicate with their clients and provide virtual reference services. Blogs were the second most popular tool used by 43% of libraries.

Arif and Mahmood (2012) examined the web 2.0 technology adoption among Pakistani librarians. The study was conducted using Survey Monkey which is a web-based survey software. Results showed that the lack of computer literacy and low access to computer and Internet facilities were the main important obstacles reported by librarians in utilizing social media tools in providing library services. Blogs, wikis, instant messaging, and social media were some of the most popular tools used by studied librarians. The results revealed no statistically significant difference between male and female librarians in utilizing Web 2.0 tools. Also, librarians who were more familiar with Web 2.0 tools were more likely than those who were less familiar to use those tools in their job. The researchers concluded that participation in training courses and workshops plays an important role in the acceptance and use of social media tools in libraries.

Anunobi and Ogbonna (2012) studied the competency and use of Web 2.0 tools among 100 professional librarians in Nigeria. The findings showed that Facebook was the most important social media tool used by studied librarians, followed by blogs, microblogs, Wikis and Youtube, respectively. Also, school librarians (37%) reported using social media tools more than librarians of special (33%), academic (20%) and public (16%) libraries. The results showed that librarians have a high level of knowledge about Web 2.0 tools, but lack of facilities, Internet access, motivation, and encouragement are the main reason for not using these tools.

Baro, Edewor & Sunday (2014) investigated the awareness and use of Web 2.0 tools among librarians of academic libraries in Africa. The results showed that librarians use various social media tools such as instant messaging apps, blogs, wikis, Facebook, and Twitter to communicate with their patrons and provide library services. However, some obstacles and

challenges in utilizing social media tools such as the lack of facilities, time constraints, low internet access and lack of skills were reported by librarians.

Yi (2014) studied the effectiveness and impact of Web 2.0 tools on resources and services of academic libraries. The results revealed that librarians have different understanding of the impact of using Web 2 tools on library services. Librarians' attitudes toward social media tools were depended on some variables such as their age, gender, level of education, job title, and participation in training workshops. Another finding of the study was that the number of years of work experience and the education level of librarians were not related with their use of social media tools.

Zinyeredzi & Zinn (2016) studied the use of Web 2.0 technologies among library and information science students at Cape West University in South Africa. The results revealed that 72% of students were active in social media tools like Skype, YouTube, WhatsApp, Twitter, and Facebook. Also, 80% of the students reported using social media for entertainment, while 96% used them for knowledge sharing, 96% for communication with professors, 97% for research and 76% for doing assignments.

Ahenkorah-Marfo & Akussah (2017) surveyed the opinions of 99 professional and novice librarians from the top 6 private universities of Ghana using a close-ended questionnaire based on the Likert scale. Findings indicated that 38% of respondents found Facebook very useful in providing library services, while only 6% of respondents said it not a useful tool. Librarians' lack of skills in using social media, poor Internet connection and support, and insufficient motivation were considered as obstacles of using social media tools in libraries. Some librarians were still more likely to provide library services in a traditional way.

Inguita and Dick (2017) studied the use of Web 2.0 tools in providing library services among academic librarians in Kenya and South Africa. Results showed that the majority of the librarians reported intermediate level of skills in using Web 2.0 technologies. The paper proposed that empowering librarians in using Web 2.0 technologies enables them to provide better services to their clients and increases the satisfaction of library users.

In another research, Santosh (2017) studied the barriers and motivational factors for adoption of social media platforms in university libraries. The data was collected from 120 academic librarians in India. The results showed that the use of Web 2.0 technologies in Indian university libraries is not in a good condition. Social media tools such as wiki, social cataloging tools, social bookmarking tools, and podcasts were not being used in any of the libraries considered for the study. When the respondents were asked about their familiarity with social media tools, 86% said that they are familiar with Facebook, while 85% reported being familiar with

Wikipedia and 80 were familiar with Youtube. Only 25% of librarians reported being familiar with social bookmarking tools. Technical supports and trainings as well as personal interest in using social media were the top motivating factors in utilizing social media tools in libraries. Conversely, accessibility of the Internet by users, lack of incentives, institutional support, technical support, and lack of training and resources were mentioned by librarians as the major barriers.

Howard et al. (2018) studied the social media habits and preferences of students at Purdue University in order to be able to provide them with better library services on the social web. Three-fourths of students (78%) were likely to follow the library on social media. Students also responded that they would like to follow updates from the university library on Facebook, Instagram and Twitter.

Akwang (2021) studied the perceptions of academic librarians in Nigeria about Web 2.0 technologies. The findings revealed that the majority of librarians believe that social media platforms are useful and can improve the library services. However, the adoption of these technologies were found to be low in Nigerian university libraries. High technology costs, budget constraints, poor Internet access, and inadequate training were reported by the librarians in using social media tools in libraries.

In another research, Rahmawati and Rahmi (2021) conducted a systematic literature review on promotion of library services through social media tools. The results revealed that nine social media categories were used in library promotion based on the available literature, include blogs, Facebook, Instagram, Twitter, YouTube, library websites, Line, Whatsapp and Telegram. Also, the most important obstacles that reported by the previous literature about promoting library services via social media were the lack of staff, the adaptation of librarians to use social media, minimal user response to promotional activities, and the lack of commitment to content production.

Methods

The applied research was conducted using descriptive survey method. The data was collected using two questionnaires. A questionnaire developed by Hosseini Shoar and Bahrami (2012) was utilized to assess the use of Web 2.0 technologies. This questionnaire has 64 questions and has been widely used in previous research on adoption of social media tools in Iranian academic libraries. To assess the empowerment of staff, a questionnaire developed and validated by Ghouchanian (2012) was administered. This questionnaire has 15 questions and assesses five dimensions of empowerment, namely independence and freedom of work, job satisfaction,

accountability, self-control, and professional development. The study population consisted of 135 librarians in two academic libraries in Isfahan province in Iran, namely the Isfahan University of Medical Sciences and the University of Isfahan. Due to the limited number of participants, data were collected from the whole population and sampling was not carried out. The content validity of the questionnaires was evaluated by five experts in the area of social media and academic libraries. To assess the face validity of the questionnaires, they were distributed to a small group of librarians and based on their comments, some changes were made in wording of statement and a few statements were removed because they were irrelevant to the research questions. The Cronbach's alpha was used to determine internal constancy of questionnaires. The overall Chronbach's alpha shown in Table 1 indicated high internal consistence and acceptable reliability of the questionnaires.

Table 1. Cronbach's alpha value of questionnaires

Questionnaire	Cronbach's alpha value
Web 2.0 technology tools	0.95
Empowerment of staff	0.90

Results

1. Which social media tools were used the most and the least by librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?

The results revealed that discussion groups were the most widely used social media tools among librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries (4.89), followed by social networking sites such as Twitter and Facebook (4.87), and Wikis (4.44). In contrast, podcasts and vodcasts (2.29) and blogs (2.38) were the least widely used social media tools (Table 2).

Table 2. The most widely used Web 2.0 tools mong librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries

Rank	Familiarity with Web 2.0 tools among academic librarians	Mean	SD
1	Discussion groups	4.89	0.656
2	Social networking sites such as Facebook and Twitter	4.87	0.855
3	Wikis	4.44	0.855
4	RSS feeds	3.89	0.864
5	Instant messagingapps	2.83	0.889
6	Blogs	2.38	0.931
7	Podcasts and vodcasts	2.29	0.895

2. What were the most important barriers in the use of Web 2.0 tools among librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?

Librarians were asked to indicate the barriers they encountered in using Web 2.0 tools for providing library services. The lack of awareness about users' feedback was reported by the studied librarians as the most important barrier in utilizing Web 2.0 technologies in libraries (median of 4.55), followed by the lack of practical training (3.86) and the lack of hardware and software equipment and infrastructure (3.73) (Table 3).

Table 3. The most important barriers in the use of Web 2.0 tools in libraries

Rank	Obstacles in using Web 2.0 tools among academic librarians	Mean	SD
1	Lack of awareness about users' feedback	4.55	0.982
2	Lack of practical training	3.86	0.794
3	Lack of hardware and software equipment and infrastructure	3.73	0.805
4	Limited budget and lack of financial support	3.64	0.878
5	Low availability of high speed internet connection	3.29	0.806
6	Lack of English language proficiency for using social media	3.23	0.963
7	Lack of knowledge of new tools and technologies	3.05	0.944

3. Is there a statistically significant relationship between the use of Web 2.0 technologies and the performance capability of librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?

To answer this question, a series of Pearson correlation tests were conducted between six dimensions of Web 2.0 technology tools and the level of librarians' performance capability. The results showed statistically significant positive relationships between all six dimensions of Web 2.0 technology tools and the performance level of librarians. In other words, the more academic librarians were familiar with Web 2.0 technologies ($r=0.508$, $p=0.000$) and the more they use Web 2.0 tools ($r=0.733$, $p=0.000$), the better was their performance in providing library services (Table 4)

Table 4. Correlation between the components of Web 2.0 technology tools and the level of librarians' performance capability

Component	Correlation coefficient	Significance level
Familiarity with Web 2.0 tools	0.508	0.000
Use of Web 2.0 tools	0.733	0.000
Adoption of Web 2.0 tools	0.499	0.000
Educational needs	0.696	0.000
The necessity of library Web 2.0 tools	0.653	0.000
Factors affecting the use of Web 2.0 tools	0.703	0.000

4. Is there a statistically significant relationship between the use of Web 2.0 technologies and the empowerment components of librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?

To answer this question, a series of Pearson correlation tests were conducted between five dimensions of empowerment and the use of Web 2.0 tools in academic libraries. The results showed statistically significant positive relationships between all five dimensions of Web 2.0 technology tools and the use of Web 2.0 tools. In other words, the more academic librarians used social media tools in their work, the more likely they were to report higher levels of independence and freedom of work ($r=0.423$, $p=0.000$), professional development ($r=0.678$, $p=0.000$), self-control ($r=0.504$, $p=0.000$), job satisfaction ($r=0.552$, $p=0.000$), and accountability ($r=0.479$, $p=0.000$) (Table 5).

Table 5. Correlation between the use of Web 2.0 technology and dimensions of librarians' empowerment

Component	Correlation coefficient	Significance level
Independence and freedom to work	0.423	0.000
Professional development	0.678	0.000
Self-control	0.504	0.000
Job satisfaction	0.552	0.000
Accountability	0.479	0.000

5. Is there a statistically significant relationship between the use of Web 2.0 technologies and the number of in-service training courses taken by librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?

To answer this question, a series of Pearson correlation tests were conducted between the use of Web 2.0 technologies and the number of in-service training courses taken by the librarians. The results revealed a statistically significant positive relationship between the variables. In other words, the more academic librarians participated in education programs, the more likely they were to use social media tools to provide library services to patrons ($r=0.749$, $p=0.000$) (Table 6).

Table 6. Correlation between the use of Web 2.0 technologies and the number of training courses participated

Variables	Correlation coefficient	Significance level
The use of Web 2.0 technologies and the number of training courses participated	0.749	0.000

6. Is there a statistically significant relationship between the use of Web 2.0 technologies and the education level of librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries?

To answer this question, a series of Pearson correlation tests were conducted between the use of Web 2.0 technologies and the educational level of librarians. The results revealed statistically significant positive relationships between the variables. In other words, the higher was the educational level of librarians, the more likely they were to use social media tools to provide library services to patrons ($r=0.863$, $p=0.000$) (Table 7).

Table 7. Correlation between the use of Web 2.0 technologies and the educational level of librarians

Variables	Correlation coefficient	Significance level
The use of Web 2.0 technologies and the educational level of librarians	0.863	0.000

Conclusion

This study contributes to the literature by providing a portrayal of academic librarians' knowledge and use of Web 2.0 tools in two university libraries in Iran. In this study, the relationship between the use of Web 2.0 technologies and empowerment of academic librarians of the Isfahan University of Medical Sciences and the University of Isfahan libraries were investigated. Results showed that the studied librarians have adopted social media tools in their professional lives. It was also found that librarians showed positive perceptions of Web 2.0 technologies and were familiar with thye advantages of using these tools in enhancing library services. The librarians were more familiar with discussion groups, social networking sites like and wikis that with other social media tools. In contrast, the adoption of instant messaging apps, blogs, podcasts and vodcasts was low among the studied librarians. Lack of awareness about users' feedback, lack of practical training and Lack of hardware and software equipment and infrastructure were indicated as the most important barriers in using Web 2.0 tools in libraries.

The findings revealed that librarians' familiarity with social media tools plays an important role in their empowerment. The more librarians know about Web 2.0 technologies, the more they are able to use these tools to provide library services. Results showed that the more librarians were familiar with Web 2.0 technologies and the more they use these tools, the better was their performance in providing library services. Moreover, all five dimensions of empowerment, namely the independence and freedom of work, professional development, self-

control, job satisfaction , and accountability were significantly related to the use of Web 2.0 tools. The results also revealed a significant association between the librarians' participation in training programs and also their level of education with the use of Web 2.0 technologies in providing library services.

The following recommendations are offered improve the adoption and use of Web 2.0 technologies in university librarians in Iran:

- Training programs on utilizing social media tools in marketing library services should be provided for librarians through in-service training programs. These skills can also be delivered to Library and Information Science students as part of their university program.
- University management should provide libraries with required human and financial resources and equip them with appropriate infrastructure, to be able to use Web 2.0 tools in providing library services.

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