COMPARISON OF WEB 2.0 ONLINE USAGE BY ACADEMIC AND SPECIAL LIBRARIES IN PAKISTAN

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ABSTRACT

The study aims to present a comparative analysis of Web 2.0 online usage by academic and special libraries in Pakistan. This study adopted quantitative approach and administered a structured questionnaire to collect data from librarians working in special and academic libraries of Pakistan. The researchers administered 156 questionnaires to library staff working in academic libraries and 150 working in special libraries in Pakistan using online data collection tool i.e. Google Docs. Out of 306 administered questionnaires, 202 responses were returned (98 from academic and 104 from special libraries) and analyzed with the help of SPSS (Statistical Package for Social Sciences). Findings of the study show that librarians of both academic and special libraries possess good knowledge of Web 2.0 tools. However, female librarians were less aware about Web 2.0 services as compared to their male counterpart. Academic librarians tend to demonstrate positive perception about usefulness of Web 2.0 applications in libraries as compared to librarians working in special libraries. The study founded that the qualification of respondents influences the usage frequency of Web 2.0 applications in special and academic libraries. Very few studies are available on the use of Web 2.0 applications in libraries of Pakistan. However, this study is the first attempt to make comparative analysis on how librarians, working in different types of libraries, perceive about use of Web 2.0 applications.

Key Words: Web 2.0, Academic and Special libraries, comparative analysis.

INTRODUCTION

Rapid technological advancement has mostly affected every walk of life including education sector especially libraries and information science professionals. Especially with the emergence of World Wide Web (www), academic and special libraries have overcome several barriers such as communication and distance between the libraries and users (Stuart, 2010). Web 2.0 technologies, (the second generation of World Wide Web) characterized by the changes from static web pages to dynamic web pages, user-generated contents, and development of social media has significant impact on higher education as well as on libraries all over the world (A. U. Rahman & Idrees, 2016). Web 2.0 facilitates modern and innovative resources for librarians to serve their users as quickly and effectively as possible with new ways (Bradley, 2007). For example, Web

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2.0 services like instant messaging, blogging, video streaming, and social tagging, enable librarians to create interaction among users; increase awareness about library services, and broaden their contact base (Chua & Goh, 2010). The concept of collaborative work and social networking enables interactive communication and gathering of knowledge through experience and practice on a global scale among the end users (Boateng, Mbarika, & Thomas, 2010).

Web 2.0 applications facilitate library users to be an important part of virtual community and allow users to contribute to the maintenance of catalogue, review resources, locate and disseminate relevant information with other patron and society (Farkas, 2007). Nowadays, Web 2.0 has moved library patron into both consumer and contributors to library services (Stephens, 2007). Academic libraries, as part of higher education system, support the provision of quality education by utilizing Web 2.0 services. In academic libraries, application of Web 2.0 tools contribute to improve the level of learning and research, and increase level of motivation by establishing virtual study environment among the students (Chua & Goh, 2010; Darwish & Lakhtaria, 2011). In academic libraries, Web 2.0 allow librarian to create, describe, post, search, collaborate, share and communicate online content about printed and non-printed materials of library in various forms with their library users (Macaskill & Owen, 2006; Virkus, 2008).

Web 2.0 facilitating modern and motivated resources for libraries and librarians to serve patrons quickly and effectively in virtual environment (Bradley, 2007). Chua and Goh (2010) pointed that e-services are becoming more indispensable for library users, that's why academic and special librarians are planning to adopt Web 2.0 services in their libraries to enhance possibilities of easy access to information. Usage of Web 2.0 application in library environment is known as Library 2.0. Really simple syndication (RSS) is one of the most popular Web 2.0 tools in academic and special libraries for publishing news, sharing information on library blogs, facilitating information literacy instruction and announcing information about new acquisitions, databases, and e-journals (Mahmood & Richardson, 2011). The use of Web 2.0 tools and technology further enhanced more with the introduction of Second Life concept in 2003. Second life is an online virtual world in electronic environment, growing very rapidly among various virtual world like Active Worlds, Whyville, HiPiHi and Entropia (Harinarayana & Raju, 2010). Second life in virtual world creates new ways of communication, collaboration and coordination by internet in three dimensional environments by Voice over Internet Protocol (VOIP) (Gajendra, Sun, & Ye, 2010).

Significant literature is available to understand the use of these modern applications in the libraries, and how it can elevate the quality of library services. However, majority of studies have focused on the use of these tools in the developed countries such as the USA, the UK and other European countries. Literature shows that little attention has been given to study the use of Web 2.0 tools in developing and third-world countries (Shafique & Riedling, 2013). Baro, Idiodi, and Godfrey (2013) argued that use of Web

2.0 applications in libraries is problematic especially in developing countries. In Pakistan, the internet was introduced in 1991 but web-based applications took fairly a long time to become useful for librarians. Shafique and Riedling (2013) stated that adoption rate of Web 2.0 applications for library services is still in its infancy in Pakistan. This study aims to assess and present a comparative analysis of the use of web 2.0 applications in special and academic libraries of Pakistan.

RESEARCH OBJECTIVES

1. To examine the difference in knowledge and awareness of Web 2.0 tools among librarians working in Pakistani academic and special libraries.
2. To compare perceived level of usefulness of Web 2.0 applications among academic and special librarians in Pakistan.
3. To determined difference in perceived level of usefulness of Web 2.0 applications among librarians based on their gender, qualification, and workplace environment.

LITERATURE REVIEW

Numerous research studies have been conducted in the context of developed and developing countries examining challenges in the implementation and use of the Web 2.0 technologies in libraries. As far as the case of developed countries is concerned, there is adequate technological infrastructure and less socio-economic issues that influences the awareness and adoption of Web 2.0 tools in libraries. However, there are numerous challenges yet, for instance, Anttiroiko and Savolainen (2011) founded that public libraries in developed countries need to align their core processes with the advanced tools of the Web 2.0 technologies particularly social media. In addition, Si, Shi, and Chen (2011) investigated the degree of awareness and use of Web 2.0 tools in university libraries of China and revealed that, there is less inclination of university libraries and librarians towards the complete use of Web 2.0 services. Only two third of the university libraries employ one and four Web 2.0 technologies. It shows that, despite the existence of infrastructure, entire Web 2.0 services are not implemented in libraries so far. That might be because of the fast-changing technology environment or lack of institutional support for integration of Web 2.0 tools. In other developed countries such as United States and United Kingdom, the libraries are making utmost use of social media tools to market the educational products and services. Developed countries tend to put great emphasis on the adoption of advanced tools of Web 2.0 technologies as compared to that in the developing countries. For instance, RSS feed and social bookmarks are combined to allow staff and users to tag the information on the websites and also, to provide updates of useful information about relevant subjects to all subscribers and librarians (Bradley, 2007). Abram (2011) explained several implications of Web 2.0 applications for libraries as well as future proofing. Integration of Library

2.0 is an extension of the use of Web 2.0 applications. Using the combination of various Web 2.0 applications, libraries have enhanced their websites features, learning experience of staff, and user's experience (Abram, 2011; Baro et al., 2013). Al-Kharousi, Jabur, Bouazza, and Al-Harrasi (2016) explained that there are internal and external organizational factors, which determine successful implementation of Web 2.0 technologies in academic libraries. These include a change in the organizational and management structure and lack of adequate training for the LIS professional. Other factors include low internet speed and lack of ICT in the organizations. Manuel, Dearnley, and Walton (2010) found that there are many factors which hinder the management of libraries in making effective use of Web 2.0 technologies. These factors include lack of adequate skills among LIS professionals, time pressure and lack of organizational resources.

Literature reveals that the use of Web 2.0 technologies in libraries is problematic in developing countries due to their socioeconomic situation. It is not an easy task to use Web 2.0 applications in libraries, but on the other hand, it is also indispensable for survival of library professionals (A. Rahman, Khan, & Kan, 2019).Another research study from developing country conducted by Gichora and Kwanya (2015) found that the lack of technological infrastructure, and cultural challenges affects the use of Web 2.0 technologies in academic libraries. Literature shows that the use of Web 2.0 applications is an issue in majority of developing countries such that Bangladesh, Pakistan, Kenya, Nigeria, and Africa (Azab, 2012).

Although, Pakistan is a developing country, yet the use of internet is on the rise and Web 2.0 applications especially the social media is becoming more popular among the youngsters. There is a fair amount of research on Web 2.0 in libraries in Pakistan since 2009 onwards. However, literatures show that there is no major development regarding capacity building of librarians except increased in the use of Web 2.0 applications. The IT infrastructure of Pakistani universities is also inadequate, suggesting multiple opportunities for capacity building of professional and academic staff including librarians. Ameen and Gorman (2009) conducted study on use of Web 2.0 in libraries and suggested that there is need of information literacy training for the library and information science (LIS) professionals to use Web 2.0 tools in libraries effectively. Arif and Mahmood (2012) depicted that major challenge in use of Web 2.0 technologies in Pakistani libraries is the lack of internet access to library professionals. In this regard, Warraich and Ameen (2010) investigated the problems faced by the LIS professionals, and concluded that LIS professional face many issues in use of Web 2.0 technologies such as the lack of training and technical skills among LIS professional due to which they cannot use the Web 2.0 technologies in libraries of Pakistan. Shafique (2011) also revealed that the LIS professionals in Pakistan are aware of the benefits of the Web 2.0 technologies, but there is a lack of training and vague perception about Web 2.0 applications such as RSS, IM etc. This study also suggested capacity building of LIS

professionals regarding use of these tools in libraries. Other challenges in the use of the Web 2.0 technologies by university librarians in developing counties include time constraints, lack of computer and internet facilities and inadequate technical knowledge. Rafiq and Ameen (2012) proclaimed that alongside the need of information literacy programs and training for librarians to use Web 2.0 applications, LIS professionals require digital leaning and integration of technology in the libraries of Pakistan in order to ensure that desired information is provided to end user efficiently. The major reason behind the dearth of use of the Web 2.0 technologies in Pakistani libraries is lack of professional librarians (Khan & Ahmed, 2013). Recently, a research study was conducted by Rahman et al., (2019)t o explored current status of affairs of using Web 2.0 applications by Pakistani librarians. The study reviewed that majority of library professionals have internet access, but the awareness and usage of Web 2.0 services is still in its infancy in university libraries. The study also suggested that LIS schools, library associations and university management with support of non-governmental organizations (NGOs) should arrange capacity building programs on regular basis to train LIS professionals in usage of Web 2.0 services in libraries.

These research findings are in the context of developing countries such as Pakistan where there is lack of ICT infrastructure in libraries predominantly which in turn is giving rise to other challenges in the implementation of the Web 2.0 technologies in libraries of Pakistan. However, the current study focuses on to make comparison between special and academic libraries regarding use of Web 2.0 applications in Pakistan.

MATERIALS AND METHODS

Based on extensive literature review, a structured questionnaire was developed and delivered to librarians working in academic and special libraries using Google forms. List of higher academic libraries was obtained from the official web site of Higher Education Commission (www.hec.gov.pk). Whereas, an exhaustive list of special libraries was compiled by the third author using during her M.Phill studies using different resources' e.g. websites, department of libraries in Pakistan including information obtained from National Library of Pakistan. Mostly participants of the special libraries were visited in-person to collect data. We administered 156 questionnaires in academic libraries (especially in the higher education sector) and 150 questionnaires in special libraries throughout Pakistan. In return, 202 completely filled questionnaires (98 from academic libraries and 104 from special libraries) were collected and analyzed through SPSS, version 25.

RESULTS AND DISCUSSIONS

Demographic Information

Out of the 202 respondents, 145 were male and 57 were female. Among the participants 104 librarians belonged to special libraries, while 98 library professionals responded from academic libraries in Pakistan. Among the participating librarians, majority was graduated, and 80 library professionals were in the age of 31-40 years (Table 1).

TABLE NO.1: *DEMOGRAPHIC INFORMATION OF RESPONDENTS*

	Frequency	**Percentage**
Gender		
Male	145	71.8
Female	57	28.2
Qualification		
Undergraduate (14 years)	6	3.0
Graduate (16 years)	171	84.7
Postgraduate (18 years)	25	12.4
Age		
25-30 of years	63	31.2
31-40 of years	80	39.6
41-50 of years	24	11.9
51-60 of years	35	17.3
Library Type		
Special	104	51.5
Academic	98	48.5

Note: N=202

Comparison of Knowledge and awareness of Web 2.0 tools

Web 2.0 plays very important contribution in dispensation of information and knowledge to users in academic and special libraries. To find out difference about the knowledge and awareness of Web 2.0 applications among academic and special librarians, this segment was divided in following two portions.

- Difference in knowledge and awareness of Web 2.0, based on type of library
- Since working environment in different types of libraries differ, therefore, it is well established that soft skills of workforce also differ. We intended to explore if librarians working in academic libraries have difference in use of web 2.0 application than those working in special libraries. In this regard, Independent sample t-test was applied to examine if librarians working in special libraries differ from librarians working in academic libraries regarding awareness and knowledge of

web 2.0 applications across the country, as shown in Table 2 and 3.

TABLE NO.2:   *DIFFERENCE IN KNOWLEDGE AND AWARENESS OF WEB 2.0, BASED ON TYPE OF LIBRARY (N=202)*

	LIBRARY TYPE	N	Mean	Std. Deviation	Std. Error Mean
Mean score in knowledge of Web 2.0	Special	104	1.4179	.35921	.03522
	Academic	98	1.6312	.34747	.03510

Results shows that librarians who are working in special libraries have slightly lower mean score about knowledge and awareness of Web 2.0 applications (1.41 ± 0.36) than those who are working in academic libraries (1.63 ± 0.34), t(200) = -4.2, *p* = 0.000. Hence, librarians of academic libraries have slightly higher level of understanding, awareness and knowledge regarding web 2.0 applications as compared librarians working in special libraries. This may be the cause that academic librarians are more associated to researchers and other students and facilitating the right information to the right users through online services.

TABLE No.3:   *INDEPENDENT SAMPLE T-TEST ON TYPES OF LIBRARIES AND KNOWLEDGE OF WEB 2.0 APPS (N=202)*

		Mean score in knowledge of Web 2.0	
		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	0.063	
	Sig.	0.802	
	t	-4.285	-4.29
Independent Samples Test	df	200	199.86
	Sig. (2-tailed)	0.000	0.000
t-test for Equality of Means	Mean Difference	-0.21331	-0.21331
	Std. Error Difference	0.04978	0.04973
95% Confidence Interval of the Difference	Lower	-0.31146	-0.31137
	Upper	-0.11516	-0.11526

Differences in Knowledge and Awareness of Web 2.0, Based on Gender

We have examined whether there is a difference among male and female librarians regarding knowledge and awareness of Web 2.0 application in libraries. Independent sample t-test was applied to observe if there's any difference between male and female respondents regarding knowledge and awareness of web 2.0 applications. Findings reveal that that female participants had lower mean score of knowledge and awareness about web 2.0 applications (1.41 ± 0.35) than and male librarians (1.56 ± 0.36), $t(200) = 2.203$, $p = 0.013$. Hence, female librarians have overall slightly less understanding of web 2.0 applications as compared to their male counterparts, as shown in Table 4. This difference may be the cause that in Pakistani society, peoples are less intended towards female education as compare to male education. Second reason may that in Pakistan female have low opportunities to adopt modern technologies as compare to their counterpart.

Table No.4:   *Difference in knowledge and awareness of Web 2.0, based on gender (N=202)*

	GENDER	N	Mean	Std. Deviation	Std. Error Mean
Mean score in knowledge of Web 2.0	Male	145	1.5615	.36752	.03052
	Female	57	1.4192	.35401	.04689

Comparison between academic and special librarians regarding perceived level of usefulness of Web 2.0 application.

Web 2.0 applications make easy to communicate worldwide, to share information quickly and to bond the massed with outside environment (Baro et al., 2013). But usefulness of Web 2.0 applications in libraries varies from one place to another (Arif & Mahmood, 2012). That is why, librarians were asked about the perceived level of usefulness of Web 2.0 application in special and academic libraries of Pakistan. For this purpose, another independent sample t-test was applied to examine if librarians working in special libraries differ from librarians working in academic libraries regarding perception of usefulness of web 2.0 applications in libraries across the country as given in Table 5 and 6.

Table No.5:   *Mean Score on perceiving usefulness of Web 2.0 applications (N=202)*

	LIBRARY TYPE	N	Mean	Std. Deviation	Std. Error Mean
Mean score of perceiving usefulness of Web 2.0 apps (1-SD, 5-SA)	Special	104	1.9515	.75087	.07363
	Academic	98	3.7593	.51115	.05163

Table No. 6:   *Perceived usefulness of Web 2.0 apps (1-SD, 5-SA)*

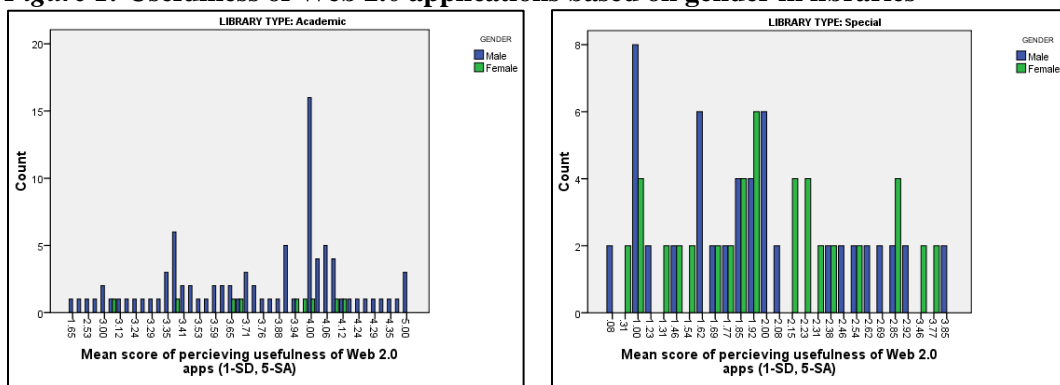| Mean score of perceiving usefulness of Web 2.0 apps (1-SD, 5-SA)		Equal variances assumed	Equal variances not assumed
Levene's Test for Equality of Variances	F	8.143	
	Sig.	0.005	
	t	-19.883	-20.102
Independent Samples Test	df	200	182.38
	Sig. (2-tailed)	0.000	0.000
t-test for Equality of Means	Mean Difference	-1.80777	-1.80777
	Std. Error Difference	0.09092	0.08993
95% Confidence Interval of the Difference	Lower	-1.98705	-1.9852
	Upper	-1.62848	-1.63033

Usefulness of web 2.0 applications in academic and special libraries, based on gender, qualification, and work experience

Use of Web 2.0 applications in libraries is very important to communicate large quantity of information among unrestricted users, to attract potential users and to enhance the library resources and services (Casey & Savastinuk, 2006). This section discusses the librarian's perception about usefulness of Web 2.0 applications, based on gender, qualification and work experience.

- **Gender**

  Figures (1) shows mean score of 22 questions about perceived usefulness of web 2.0 applications on Likert 5-point rating scale of 1=strongly disagreed, and 5=strongly agreed. Results generated separately for responses from academic and special libraries based on gender. As shown in both figures, majority of male participants from academic libraries fall into mean score of 4.00 and above out of 5 which is close to agreement on usefulness of web 2.0 applications. Thus this study shows that male librarians of academic libraries are strongly agreed about usefulness of Web 2.0 application as compare to female librarians of special libraries.

Figure 1: Usefulness of Web 2.0 applications based on gender in libraries

- **Qualification**

    Figure (2) shows mean score of questions on perceived level of usefulness of web 2.0 applications of librarians working in academic and special libraries based on their qualification. Results revealed that majority of librarians from academic libraries have higher mean score (i.e. 4.06/5.00) which shows that academic librarians have positive perception and are more qualified about the usefulness of web 2.0 applications in their libraries as compare to their counterpart in special libraries.
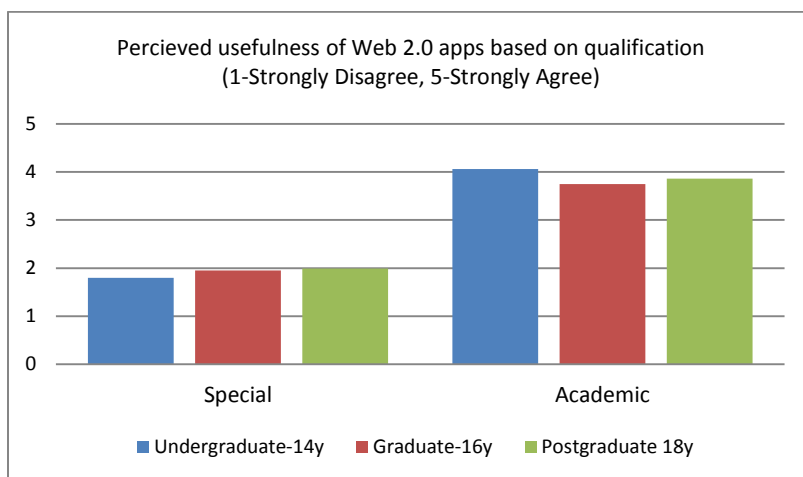
Figure 2:   Usefulness of Web 2.0 applications based on qualification in libraries
   **5.4.3 Work Experience**

Figure (3) reveals mean score of questions on perceived level of usefulness of web 2.0 applications of librarians working in academic and special libraries based on their work experience. The result shows that usefulness of Web 2.0 applications in perception of academic librarians increasing according to their work experience, as compare to librarians working in special libraries.

Figure 3: **Usefulness of Web 2.0 application based on work experiences in libraries**
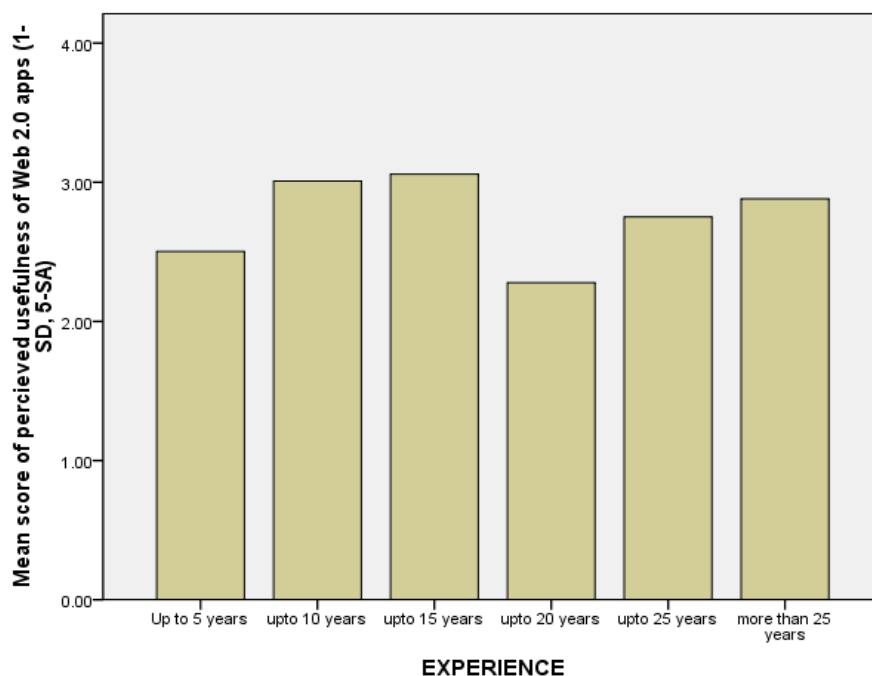
Qualification Influence on usage frequency of Web 2.0 tools among librarians
Qualification is must for development and grooming in every discipline. To know about the qualification influence on usage frequency of Web 2.0 application among academic and special librarians, respondent's perception were inquired, using 5 point Likert type scale, rating for 1= never and 5 = daily. Finding shows in figure 5 that qualification of librarians has direct influence on usage frequency of web 2.0 applications in libraries. Librarians with postgraduate qualification have higher mean score in frequency usage of web 2.0 applications in libraries.

Figure 4:   **Qualification wise mean score of usage frequency of Web 2.0**

Qualification-wise mean score of usage frequency of Web 2.0 applications

Undergraduate	Graduate	Postgraduate	other
2.2	2.3	3.31	2.46
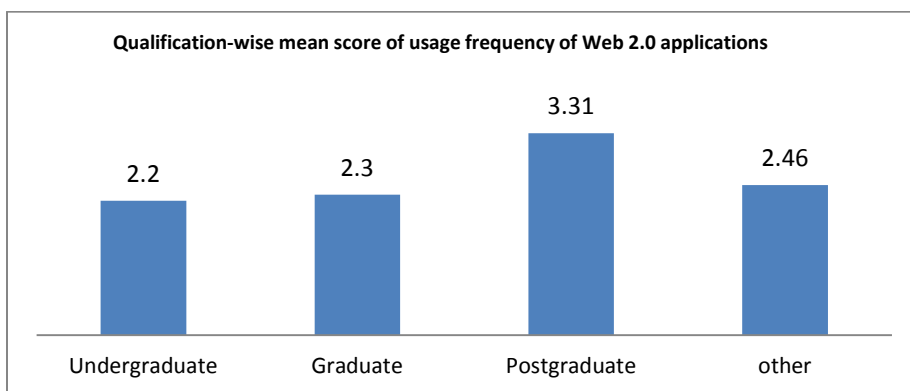
CONCLUSION

The usage of information and communication technologies in libraries has changed the library environment and converted the traditional libraries to virtual libraries. Creating a virtual environment for library users to ensure easy access to needed information in the presence of information explosion is very a good transformation.

Results of the study show that library professionals have variant attitudes towards awareness and knowledge of Web 2.0 technologies in academic and special libraries of Pakistan. In special libraries, librarians have less knowledge and awareness of Web 2.0 services as compared to librarians working in academic libraries of Pakistan. In case of gender differences, female librarians have low understanding and awareness of Web 2.0 technologies as compare to male librarians. Similarly, perception about usefulness Web 2.0 applications in libraries was also investigated. Results indicated that Web 2.0 usages in libraries are more useful as viewed by academic librarians in contrast with special librarians. Gender and qualification has been influential factors regarding perception of usefulness of Web 2.0 applications among the librarians of academic and special libraries. Analysis of gender difference revealed that male librarians perceived Web 2.0 applications more useful in libraries as compare to female librarians. Academic library professionals were more qualified and had positive perception regarding useful usage of Web 2.0 services in libraries. The results also show that qualification has significant influence on usage frequency of Web 2.0 application is libraries of Pakistan.

RECOMMENDATIONS

Usage of Web technologies in libraries plays very pivotal roles in dissemination of information and communication among librarians and library users. LIS professionals in Pakistan must be proactive to used entire Web 2.0 applications for effective sharing of

information, online reference services and marketing of library services to facilitate the user in virtual environment. Based on findings of the study, following recommendations may help librarians to plan and integrate Web 2.0 services in libraries.

1. LIS schools in Pakistan should revamped traditional teaching methods and courses related to usage of Web 2.0 services in libraries should be incorporated at bachelor and master level.
2. LIS schools, library associations and higher management authority should organize workshops, seminars, lecturers and capacity building training for working librarians about usage of Web 2.0 applications in libraries.
3. Training workshops should for female librarians individually to enhance their professional development skills regarding usage of Web 2.0 tools in libraries.

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