The Changing Role of Librarians in the Digital World: Adoption of Web 2.0 Technologies in Pakistani Libraries

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Abstract

The aim of this study was to explore the adoption of Web 2.0 technologies in Pakistani libraries. The population of the study comprised library professionals serving in academic, special and public libraries in the four provinces of the country including Azad Jammu & Kashmir territory. The survey was conducted through survey monkey and e-mail discussion groups in the country. A total of 210 library professionals responded the survey. The survey was administered during April-June, 2009.

The findings revealed that Internet skill was the main factor towards adoption of Web 2.0 technologies in the libraries. More than half, 116, respondents employed Web 2.0 technologies to provide library services. The maximum usage of Web 2.0 technology was instant messaging followed by social networking. About half of the respondents used blogs, electronic groups and Wikis. Forty-five respondents used RSS while only 3 used podcasting services.

Lack of computer literacy, unavailability of computers and Internet facility were main hindrances toward adoption of Web 2.0 technologies in the libraries. The training programs could enable a librarian to cope the Web 2.0 technologies.

Limitation of the Study: Due to poor response from the library professionals serving in the libraries of three provinces; Sind, NWFP & Baluchistan, of the country, the results of this study cannot be generalized.

Practical Implications: This study will create awareness among LIS professional toward use of advanced technology in their professional environment. The findings of this study will contribute for successful adoption of Web 2.0 in the libraries.

Originality/Value: This is the first study on Web 2.0 technologies adoption in Pakistani libraries.

Keywords: Communications technologies, Web 2.0, RSS, Blogs, Wikis, Social Networking, Podcasting, Online groups, Instant messaging, Libraries, Pakistan.

Introduction

For centuries, social and technological changings have been affecting every profession. During the last two decades rapid technological development has affected library services as well. Specifically for the last five years, Web 2.0 technologies have significant impact on the higher education sector as well on the libraries all over world. Tim O'Reilly invented the term Web 2.0 in 2004. O'Reilly (2006) defined Web 2.0 as:

> Web 2.0 is the business revolution in the computer industry caused by the move to the internet as platform, and an attempt to understand the rules for success on that new platform. Chief among those rules is this: Build applications that harness network effects to get better the more people use them.

To know about the term Web 2.0, it is better to start from its priciples which includes community, conversation,participation, sense of expence, and sharing (Collins, 2007):

> Community: Open conversation can lead to a sense of community and belonging within social sites.
> Conversation: User participation discussion and feedback are welcomed and encouraged.
> Participation: New information is created via collaboration between users. Everyone can create content; idea and knowledge for freely and are remixed and reused.
> Experience: Engagement with other users and the community as a whole is rewarding and provides some type of fulfillment.
> Sharing: Users can post about as much or as little of their lives as possible (p. 253).

Many Web 2.0 technologies like blogs, microblogs, wikis, syndication of content through RSS, social bookmarking, media sharing, networking sites and other social software artifacts were incorporated in teaching and learning process in higher education. These technologies provide many unique and powerful information sharing and collaborative features in teaching as well as with colleagues, administrative and libraries' staff (Grosseck, 2009).

The traditional role of informational professionals was to provide access to collection in the libraries. To provide services in emerging environment, libraries adopted Web 2.0 technologies with new nomenclature 'Library 2.0'. First time Michael Casey (2006) coined the term "Library 2.0". The concept of Library 2.0 means to take ideas and concepts from Web 2.0 and adopt them in library environment (Needleman, 2007). With the induction of Web portals, wikis, blogs and instant messaging, the methods of information and knowledge sharing have been changed. These emerging tools require new skills to manage information (Philips, 2001). The Web 2.0 environment helps library patrons to access information, develop insight and generate knowledge. To meet the growing needs of the patrons, Heinrichs and Lim (2009) suggested that libraries needed to hire skilled librarians to provide expanded services to create and disseminate knowledge in the digital age.

Review of the literature

Technological advancement compelled libraries to adopt interactive online media for their survival (Maxymuk, 2007). The increasing trend of social networking sites' usage affected the traditional approach to organize information on the Internet (Tonta, 2008). Web 2.0 provided innovative and interesting resources for librarians to serve their users as quickly and effectively as possible with new ways (Bradely, 2007). In the similar way, Keralapura (2009) stressed that information technology influenced the functions of libraries and changed the information seeking behavior of readers. Being self-motivated and service minded, this was the responsibility of librarians to incorporate IT based resources and services to satisfy the customers in a better way.

During the survey of 60 universities, Chu (2009) explored that 'where electronic services are becoming more and more popular, an increasing number of academic libraries are applying or planning to apply Web 2.0 technologies like wikis'. The study also highlighted the three most

commonly reported difficulties; low participation rate of users, difficulty in promoting the new technology, and users' lack of knowledge towards usage of wikis (p. 170).

Trend to adopt/use of Web 2.0 in libraries has been started for last five years. In 2009, Aharony explored that whether librarins working in school, public and academic libraries were familiar with the technologies of Web 2.0 as well as they used them in the libraries. According to the findings of the study, personality charactaristcs (resistance to change, cognitive appraisal, empowerment and extroversion or introversion), computer expertise, motivation, importance and capacity towards studying and integrating different applications of Web 2.0 in the future, influenced librarians' use of Web 2.0. The individual differences with respect to technology acceptance were existed. It was disclosed that library manager as compared to librarians were more inclined to incorporate Web 2.0 technologies to offer new services in the libraries. However the "librarians were quite exposed to these changes. They understood that in order to survive, remain relevant, attract new patrons, and be professional, they should master the newest technological applications and apply them in their changing work environment (p. 34)"

To explore the extent of Web 2.0 technologies applications, Xu, Ouyang, and Chu, (2009) surveyed of 81 academic libraries' website in the New York State. They found that 34 (42%) libraries incorporated one or more Web 2.0 applications for various purposes. The maximum usage of the Web 2.0 technologies was blogs while the least adopted technology named podcasting in the libraries. Based on the study's findings, they proposed a conceptual model Academic Library 2.0 which was comprised Web 2.0, User 2.0, Librarian 2.0 and Information 2.0. According the model, users can be served in better way only if they are considered essential part of libraries' operations and services. Linh (2008) conducted a similar research in Australia by conducting a survey of 47 Australian and New Zealand universities. Of the total 47, 32 university libraries (26 in Australia and six in New Zealand) used web 2.0 technologies. The findings of the study showed that "at least two-thirds of Australasian university libraries deployed one or more Web 2.0 technologies. Only four Web 2.0 technologies were used for specific purposes and with some basic features (p. 630)".

Application of Web 2.0 Technologies in Pakistani Context

In Pakistan, libraries are far away from Web 2.0 technologies. The review of literature reveals that not a single comprehensive study was conducted towards adoption of Web 2.0 technologies in the libraries. A limited literature existed with respect to usage of Web 2.0 technologies for example usage of social networks and blogging in the country. Shaheen (2008) conducted a survey of 420 students studying in three public sector universities based in twin cities; Rawalpindi/Islamabad of the country. In his study, the usage of social networks and political activism on Internet, he described how students communicated among themselves when the then President, General Pervez Musharaf, of Pakistan declared emergency in the country on November 03, 2007. Along with other communication channels, he found that the youth used social networks like Facebook, Orkut, MySpace, Classmates.com and MSN Spaces to promote freedom of speech and political awareness against the imposition of state of emergency in the country.

In another case study titled 'Blogging in Pakistan: Election 2008 as case study' by Zeb (2008) survayed LIS professionals, bloggers and conducted four interviews of information professsionals as well as journalists. Thiryt LIS professionals and 13 bloggers responded the survey. He found that even after removing state emergency, which was imposed in 2007, the

people of Pakistan were facing problems to communicate during the general election 2008 in the country. Due to lack of interest, restriced access to the Internet and unfamiliarity of the old age generation towards ICT's usage, mostly the young people used blogs as communication channel during the general election. The interwees expressed that more Urdu, national language of the country, blogs should be created. In addition, 'most of the respondents described blogging as an effective tool to spread democratic thought in Pakistan (p. 56)'. From the findings of these two mentioned studies, it can be concluded that Web 2.0 technologies are being used in the country other than library setting.

Objectives of the study

The chief objective of this study was to explore the adoption of Web 2.0 technologies in Pakistani libraries. The study also identified purposes of Web 2.0 technologies uses.

Research Methodology

Data Collection

In order to determine the adoption of Web 2.0 technologies in Pakistani libraries, a survey was conducted during April-June, 2009. The participants of this study comprised library professionals serving in the libraries, academic, special and public libraries, all over the country. The survey was administered through the survey monkey and email discussion groups, PLAGPK (2706 members) & LIBCOP (723 members); the main source of online communication among LIS community in the country. Due to poor response, data were also collected personally through printed questionnaire during different LIS events in the country. After e-reminders, follow up phone calls and personal interaction, 210 library professionals responded the survey. The data of 192 completely filled questionnaires were analyzed by using Statistical Package for Social Sciences (SPSS) 15 for Windows.

Instrument

On the basis of literature reviewed, a questionnaire was designed and pre-tested on five librarians. The corrections were made in the final questionnaire. The tool consisted of demographic variables, frequency of Internet usage, skill level using Internet. Perceptions with respect to usage/adoption of Web 2.0 technologies were determined by using five-point Likert type scale. Additionally, space was also provided to get suggestions about the adoption of Web 2.0 technologies in the libraries.

Data Analysis

Table 1 shows that majority of the respondents (123 out of 192) were serving in the academic libraries; university, college & school, while 41 responded from the special libraries. Twenty-two responded the survey who were not serving in academic, special and public libraries. Only 06 library professionals serving in the public libraries responded the survey.

Table 1. Place of work

Place of Work	Frequency	Percentage
University Library	89	46.4
College Library	30	15.6
School Library	4	2.1
Special Library	41	21.4
Public Library	6	3.1
Other	22	11.5
Total	192	100.0

Respondents' profile (Table 2) shows that 146 (76%) were male and 46 (24%) were female. In response to experience, more than half respondents (109) fell in the category 1-10 years experience, 42 in 11-15 years while 41 had the experience of 16 and above. The analysis shows that the maximum respondents (151) replied the survey fell in the Internet age. The analysis across the designation exposes that mainstream of the library professionals were serving as librarians/assistant librarians followed by senior and management positions. The management positions comprised chief librarians as well as director library where as senior positions were designated as deputy, manager and specialist positions. The respondents working on the paraprofessionals positions named as cataloguer, assistant and assistant, were small in number. Only one respondent designated as library consultant responded the survey. The data analysis of experience and designation shows that majority of the mid career respondents designated as assistant librarians/manager/director, librarians or senior librarians were using Web 2.0 technologies as compare to senior level positions.

Table 2. Respondents' Profile

Variable	Value	Frequency	Percentage
Gender	Male	146	76
	Female	46	24
Professional Experience (years)	1-5	67	34.9
	6-10	42	21.9
	11-15	42	21.9
	16 and above	41	21.4
Designation	Chief Librarian	10	5.2
	Director Library	3	1.6
	Deputy Director	1	.5
	Deputy Librarian	5	2.6
	Manager	1	.5
	Reference Specialist	2	1
	Senior Librarian	12	6.3
	Librarian	94	49
	Assistant Librarian	36	18.8
	Assistant Director	4	2.1
	Assistant Manager	3	1.6
	Archive Officer	1	.5
	Research Officer	1	.5
	Library Consultant	1	.5
	Cataloguer/Classifier	7	3.6
	Junior Cataloguer	3	1.6
	Junior Librarian	3	1.6
	Library Assistant	4	2.1
	Reference Assistant	1	.5

Geographical distribution of the respondents reveled that more than half of the respondents (53.6%) were serving in the libraries located in the capital of the country while 65 (33.9%) were serving in the province of Punjab. Fourteen responded from Sind province, 05 from North West Frontier Province (NWFP) while 05 respondents from Azad Jammu & Kashmir (AJ&K) replied the survey. Not a single library professional serving in the libraries of Baluchistan province responded the survey. The analysis exposes that the library professionals serving in the capital and Punjab province responded the survey while the response from the other provinces including AJ&K was very poor (Figure 1).

Figure 1 Area Wise Response
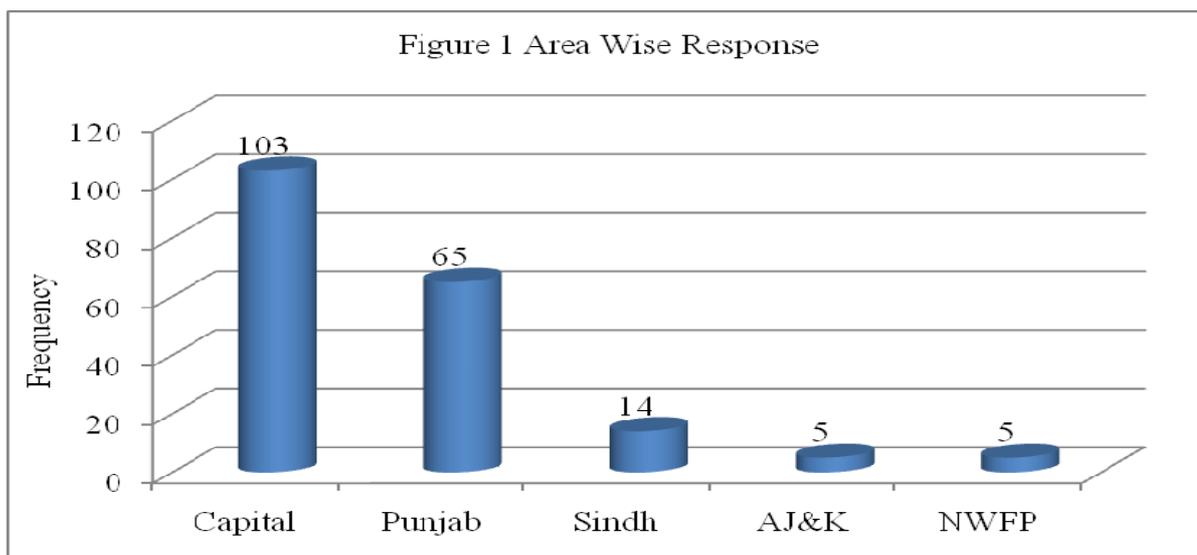
In response to a question 'are Web 2.0 technologies easy to use', majority of the respondents, 154, replied 'yes' whereas as 76 respondents employed the technologies to provide library services, 77 used for personal communication while 39 (20.3%) respondents used the technologies for personal use as well as to provide library services. Although all the professionals were the Internet users but 38 respondents were unable to use the technologies easily. The figure 2 shows that the maximum usage (113) of Web 2.0 technologies was instant messaging followed by social networking (You Tube, Facebook etc.), electronic groups and blogs. Eighty two used wikis and 45 employed RSS. Only three library professionals used podcasting. The usage of Web 2.0 technology reveled that the respondents were using these technologies in different capacities.

Figure 2 Web 2.0 Technologies Usage
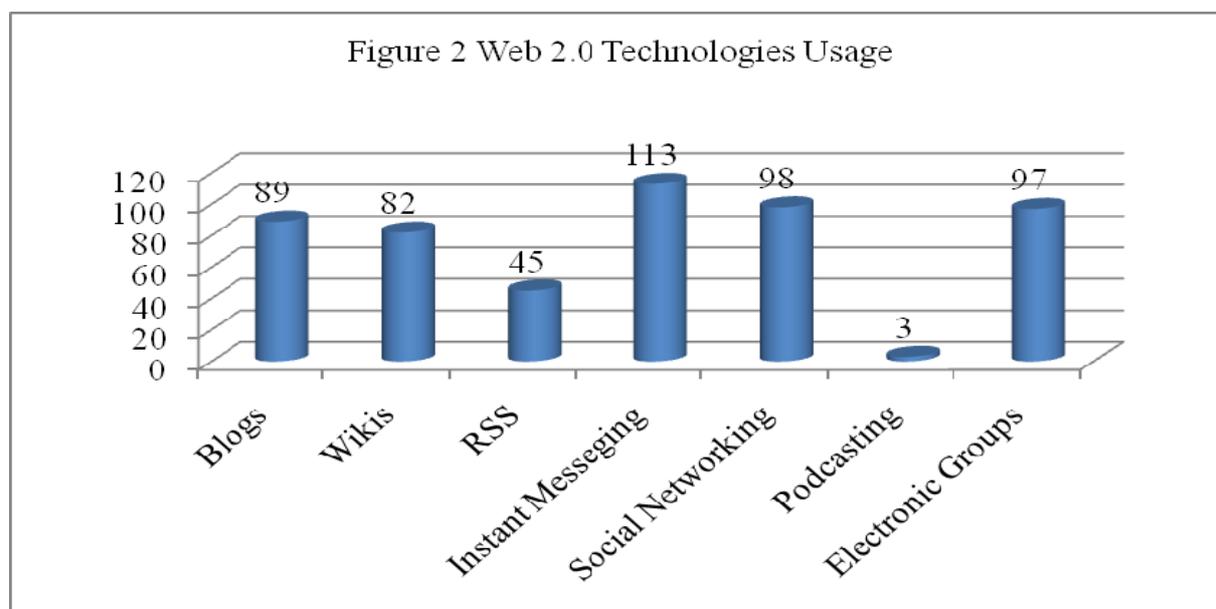
The frequency of Web 2.0 technologies use shows that the respondents read blogs, added/posted messages to online groups and provided reference service through instant messaging on monthly basis. They used RSS and added/posted messages occasionally. They edited entries in wikis rare. The mode value, 5.00, of all the statements showed that the respondents were less inclined towards adoption of Web 2.0 technologies in the libraries (Table 3).

Table 3. Descriptive Statistics of Frequency of Web 2.0 Technologies use

Rank	Statement	Mean	Mode	SD
1.	I edit entries in wikis	4.55	5.00	1.08
2.	I use RSS	4.11	5.00	1.39
3.	I add messages to blogs	4.04	5.00	1.43
4.	I participate in social network	3.60	5.00	1.64
5.	I read blogs	3.49	5.00	1.68
6.	I read Wikis	3.47	5.00	1.69
7.	I add messages to online groups	3.43	5.00	1.57
8.	I provide reference service through instant messaging	3.19	5.00	1.78

Note: 1= Daily, 2=Weekly, 3= Monthly, 4=Occasionally, 5=Rare

Opinions of the Respondents by Gender

The Levene's Test (t=-.681, Sig.=.058) shows that there was no significant difference between the opinion of male and female towards use of Web 2.0 technologies (Table 4).

Table 4. t-Test regarding Web 2.0 use by Gender

Statement	N	Gender	Mean	t	Sig.
Web 2.0 use	146	Male	3.71	-.681	.058
	46	Female	3.83		

Note: The mean difference is significant at the .05 level.

Opinions of Respondents by Ease of use

The Levene's Test (t=-3.22, Sig. = .086) reveals that there was no significant difference between the opinion of Web 2.0 users toward ease of use of Web 2.0 technologies (Table 5).

Table 5. t-Test regarding Ease of Web 2.0 use

Statement	N	Web 2.0 are easy to use	Mean	t	Sig.
Web 2.0 use	154	Yes	3.16	-.255	.086
	38	No	2.42		

Note: The mean difference is significant at the .05 level.

ANOVA results in table 6 shows that there was significant difference between the users of Web 2.0 technologies having different skills level of using Internet.

Table 6. ANOVA Table for Web 2.0 Technologies Usage/adoption in the Libraries with Respect to Skill Level of Internet Use

Statement	Mean			F	Sig.
	Beginner	Intermediate	Excellent		
Web 2.0 use	4.16	4.07	3.40	10.93	.000

Note: The mean difference is significant at the .05 level.

The Post hoc Tamhane's T2 test reveals significant difference existed between skill levels of beginner and excellent as well as intermediate and excellent of Internet users towards adoption of Web 2.0 technologies in the libraries.

The analysis of variance reveals that there was no significant difference among different types of libraries towards adoption of Web 2.0 technologies (Table 7).

Table 7. ANOVA Table for Web 2.0 Technologies Usage/adoption with Respect to Type of Libraries

Statement	Mean						F	Sig.
	University Library	College Library	School Library	Special Library	Public Library	Other		
Web 2.0 use	3.71	3.86	4.37	3.66	3.63	3.74	.406	.844

Note: The mean difference is significant at the .05 level.

The respondents were asked question 'do you need training to use Web 2.0 technologies in the library'. In response to the question, majority of the respondents, 148 out 192, replied that they needed training to use Web 2.0 technologies in the libraries.

The last question of the survey asked the respondents to provide suggestions/recommendations to adopt Web 2.0 technologies in Pakistani libraries. The respondents (88; 45.8%) provided suggestions to adopt Web 2.0 technologies in the libraries. They pointed that there was less awareness about Web 2.0 technologies among the library professionals especially in the paraprofessional staff of the libraries. Lack of computer literacy, unavailability of computer and Internet facility are main hindrances toward using Web 2.0 technologies in library setting. The library professionals suggested that the training programs could enable a librarian to cope the Web 2.0 technologies. One of the respondents also mentioned that the training about Web 3.0 technologies should be provided.

Conclusion

The literature reviewed for this study reveals that Web 2.0 technologies are being used all over the world in library setting. In Pakistan, not a single comprehensive study regarding adoption of Web 2.0 technologies was conducted so for. In this study, majority of the respondents were serving in the academic libraries. The mid career professionals designated as assistant librarians/manager/director, librarians or senior librarians responded more as compare to senior level professionals. The young respondents having excellent skills of Internet usage were more inclined toward adoption of Web 2.0 technologies in the libraries. Although all the library professionals were using Internet but the respondents (38; 19.8%) were unable to use Web 2.0 technologies easily. The frequency of Web 2.0 technologies use revealed that the respondents were less inclined toward adoption of Web 2.0 technologies in the libraries.

Lack of computer literacy, unavailability of computers and Internet facility were found big hindrances toward adoption of Web 2.0 technologies in the libraries. The training programs could enable a librarian to cope the Web 2.0 technologies. Due to poor response from the library professionals serving in the libraries of three provinces; Sind, NWFP & Baluchistan, of the country, the findings of this study can not be generalized.

Recommendations

Based on the findings of this study, the following recommendations should be considered to adopt Web 2.0 technologies in the libraries:

1. Junior and mid career LIS professionals in the country should be encouraged toward adoption of Web 2.0 technologies.
2. ICT infrastructure in the libraries should be upgraded.
3. Training programmes on technical aspects and implementation of Web 2.0 technologies should be arranged on regular basis.
4. To explore the factors affecting toward adoption of Web 2.0 technologies in the libraries, a comprehensive study should be conducted on the country level.

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