

Article

A Study of Social Information Seeking (SIS) among LIS Research Scholars in Pakistan

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Abstract: Purpose: There is ample evidence that students and teachers often seek academic information using participatory online social sites (POSS). The purpose of this study is to explore the intent of social information seeking (SIS) among library & information science research students in Pakistan. The study also attempts to examine the relationship between change in information behaviour and information retrieval strategies while seeking information from online social spaces. The influence of online collaboration in the use of social media was also examined. Methodology: Quantitative research method was used to conduct this study. Data was collected from 123 research (MPhil & PhD) students currently enrolled in seven postgraduate library schools in Pakistan. The data was gathered using survey questionnaire (using 5-point Likert scale items), administered both in print format and online through Google Form. SPSS version 19 was used to analyse the data. Findings: Major findings of this study were that there is a strong positive correlation between SIS and change in the overall information behaviour of research students. Majority of participants responded that social websites help in reshaping the information behaviour in a collaborative environment thus contributing to upsurge the SIS practices among research students. The study also found that LIS research scholars in Pakistan prefer to consult interactive websites more than social media spaces for academic information. Gender has been an influencing variable in SIS practices, however, time spent and frequency of using POSS does not affect one's SIS practices. Originality: Social Information helps people to connect with each other and is comparatively a new concept in the field of Information Seeking Behaviour. This is the first study on SIS with respect to LIS research students in Pakistan.

Keywords: social information seeking; social information needs; social information retrieval; social searching; participatory web

1. Introduction

Social information has been the part of library and information science field since 1975 [1], however, the trends have been shifting from fundamental social theories to social aspect of information and communication technologies. Previous research on social information has been categorized by Widen [1] in three main phases from 1975 to 1989, then from 1990 to 1999 and the third phase took place since 2000 onward. In the third phase, the social information seeking (SIS) has emerged as field of study which focuses information not only from the user perspective but also from the perspective of social context and contents of social information. Social Information Seeking (SIS), however, is comparatively a new and emerging dimension of ISB that covers the seeking and acquiring information from social spaces on the Internet.

Social Information Seeking (SIS) in simple words refer to the communication and interaction (that mostly take place in the online environment between people) that influences human information seeking behaviour. It “involves studying situations, motivations and methods for people seeking and sharing information in participatory online social sites, such as Yahoo! Answers, Answerbag, WikiAnswers and Twitter as well as building systems for supporting such activities” [2].

Human information interaction is generally believed to be a complex and multifaceted activity influenced by cultural, environmental, social/political and technological aspects. Research in the information seeking behaviour has taken three facets into consideration so far i.e., psychological aspect, social aspect and in-context aspect of information. Psychological aspect, aiming at general phenomenon about people looking for information, has dominated the field so far; while, the use of in-context and social approach is of growing interest to researchers in other fields [3].

Connecting multiple users for information seeking continue, either to enhance existing information retrieval systems or to design the new ones. However, these systems are not yet adopted widely because of several known reasons and one of them is “wider visibility of collaborative systems” [4]. Shah [5] conceptualizes SIS in terms of five elements i.e., Information Behaviour, Information Retrieval, Social Networking, Social Media and Information Seeking. He further emphasizes that these elements must be in place for SIS to occur.

Participatory online social sites (including social networking and web 2.0 tools) are widely considered to improve collaborative learning among academia; however, there is a surprising lack of empirical research on social information in Pakistani higher education. Yet despite the importance of social interaction as a vehicle for information seeking, we know little about practices of social information seeking (SIS) and its impact on LIS research students in Pakistan. At the other hand, recent reports published on use of social media websites in Pakistan reveals that there are more than 30 million Facebook users as reported by Pakistan Telecommunication Authority on 15 November 2016 [6].

Library & Information Science education is undergoing a rapid change in Pakistan since 2005. LIS schools have introduced research degrees and number of research students has been enrolled in LIS research degree i.e., MPhil/MS and PhD. The data was gathered from 123 research students currently enrolled in 7 LIS schools in Pakistan in order to assess their state of affairs regarding SIS trends.

2. Research Objectives

Aim of the study is to examine the practices of social information seeking (SIS) and its impact on LIS research students. Data were collected from LIS research students to examine:

- change in information behaviour while seeking information from the online social spaces
- social network connectivity for seeking academic and research information
- information retrieval strategies in SIS
- the use of social media for seeking research and academic information; and
- effect of online collaboration during information seeking.

3. Review of Related Literature

Social information seeking is a way in which information communication and dealings among people influence their information seeking. Social information seeking include four different procedures of finding information; collaborative search, interactive browsing, information warns and personalized information.

Previous literature suggests that Social Information Seeking represents different aspects with emphasis on supporting contemporary information behaviour not only connected to humans but animals also acquire useful information through social interactions. Widen & Holmberg [1] divides literature on social information, according to broader perspectives, in three main categories i.e., user perspective, content perspective and context perspectives. This study, however, consider the user’s perspective of social information because the objectives are mainly concerned with it. Studies on social information from the users’ perspective focus on information needs and use. The social information includes both social cues (e.g., location of resource such as literary material) and public information (e.g., about the quality of literary material).

According to Wise, Alhabash and Park [7] emergence of social information seeking is directed in the form of online question-answering (QA) websites which appears to constitute a specific virtual society. On-line community services such as Questioning & Answering and Yahoo! Answers facilitate their followers to make queries and retorted by the community.

The use of Social Q&A “an approach for people to seek and share information in participatory online social sites” is increasing day by day and youth of all ages are now more likely to seek and share information on online social spaces [8] which not only recast information seeking patterns but also helps modify searching strategies. These services (gained popularity in the recent years) provide opportunity for users to acquire specific information and attain swift response to their academic, research, or everyday life questions [9]. Participatory online social sites (POSS) like Facebook, LinkedIn, Twitter, Pinterest, Instagram and Google+ play a basic role to search and share current information. These sites also offer information seekers the opportunity to learn about the mentality of diverse people and cultures; thus, availing an opportunity to modulate their own information seeking behaviour.

Liu and Jansen [10] pointed that “social information seeking activities are useful to understand user’s behaviours toward various features when they decide to interact and help others by responding to questions”. Online Q&A website not only help users to find prompt answers of their questions but also “added suggestions” is an advantageous tool to support users’ information behaviour. Morris, Teevan and Panovich [11] describes that the recent increase in reputation of social networking sites such as Facebook, MySpace and LinkedIn has hosted some new choices to find information online, posting a question to one’s network. Social networking tools can help people to deliver questions to their social network to make it easy for people to quickly access some context on the topic.

With reference to influence on participatory online social sites on information seeking, most researchers, for example [12–14] argued that virtual relationships offer increased learning and sharing opportunities. Whereas, several studies, such as [15,16] refers that web 2.0 and social media tools such as blogs and wikis are becoming more authentic sources for information seekers and that online social spaces are widely used platforms for multitask interactions. Studies [17,18] also show that video sharing receive 75% higher share rate while, image updates receive 98% higher engagement rate than other types of online information sharing.

Aguiar-Roca, Williams, & O’Dowd [19] found that information seeking process (when taken up collaboratively by group) yields more fruitful results as compared to information seeking activity done individually. This not only points to another emerging area of research i.e., Collaborative Information Seeking but also establishes that QA websites enhance collaboration among researchers. Thus, social information seeking becomes a stepping-stone for online collaboration to occur. Social information seeking activities facilitate the followers to make queries and retorted by community. It gained popularity in the recent years and is giving birth to new virtual communities worldwide. SIS is causing change in the information seeking behaviour of people at large and is considered a useful tool to understand users’ information seeking strategies. It not only involves cognitive experience but also influence intragroup interactions.

Hyldegård [20] found that people demonstrate collective cognitive experiences in participatory environment as an individual do in Kuhlthau’s IS model, thus concluded that intragroup interactions have strong influence on information seeking in the social spaces. Shah [21] argues by quoting Evans & Chi [22] that social interactions help in seeking and sharing information together. “They called this *social search*. Such social ties leading to social search can be extended to stronger ties leading to collaborative search”. Scholars prefer to use social media to search contents for research and academic purposes and to develop new knowledge [23]. At the other hand, Ganaie & Khazer [24] argues that traditional resources have still great importance in academic activities for students as compared to participatory online social sites. However, most of the researchers in social science agree today that “knowledge not only exists in individual minds but also in discourse and interactions between individuals” see for example [23,25,26].

Dillenbourg, Järvelä, & Fischer [27] while talking on the topic of computer-mediated collaborative learning reveals that the era of 1995–2005 emerged as an era of growth of scientific community that developed engineering expertise and originated the life cycle of social interactions. The later era (since 2005) is characterized by integrated environment that brought a paradigm shift social interaction and information seeking in the digital and physical spaces, where multiple information seeking activities are performed with multiple tools. Now people refer to broadly use of social mechanism to find information online for example, the use of engine indexed social media and social tagging [11].

Research on social networking shows that people spend more time on Social Browsing than on Social Searching [7]. It means that social browsing is becoming more important activity on social networking sites than social searching. Similarly, information seeking (particularly for a researcher) is a multifaceted goal-driven activity and the information seeking behaviour is largely affected by the degree to which the information adds in goal achievement. Hence, it depends on the importance of goal that a researcher deploys greater number of strategies to information retrieval.

The role of social connections in pursuing information seeking is central and influences the decision-making of information seekers. Social browsing is “casual access to social links” and knowledge available through social interactions [28].

Although, scholarly literature on the importance of SIS in the participatory online social sites (POSS) is numerous, however, the extent to which SIS practices have its impact on research LIS students remains unknown from the literature so far.

4. Material and Method

Data were collected using structure questionnaire administered to 200 research students currently enrolled in eight LIS schools in Pakistan, however, 123 complete responses for further analysis could be obtained. The questionnaire was administered via web link to the email addresses of the participants obtained from the respective departments.

The research instrument, comprised of 28 items, was partially adopted from the study conducted by Xu, et al. [14] and was divided into two sections. Section one comprised of 5 demographic questions, while section two comprised of 23 questions on participants’ viewpoint regarding SIS practices, use of POSS for seeking information, use of social media and group discussion forum, information seeking pattern on social web and perceived level of change in information behaviour.

Factors such as number of social ties, collaboration and gender difference were also checked for possible influence on SIS of the population under study.

Survey items were designed to examine a holistic view of participants’ social information seeking practices based on the five basic components of SIS i.e., information behaviour, information retrieval, social networking, social media and information seeking as proposed by Shah [2]. Respondents were requested to consider academics’ use of social media while answering the survey questions. Four questions on each of these 5 segments were asked, while 3 questions were on respondent’s viewpoint on how they perceive about SIS. Prior to conducting analysis, factor analysed for 20 items of the survey pertaining to 5 components of SIS corresponded to emphasis on Information Retrieval (IR), Information Behaviour (IB), Information Seeking (IS), Social Networking (SN) and Social Media (SM). The IR subscale (α 0.73) comprised 4 items and included a focus on perceived change in information retrieval practices. The IB subscale (α 0.76) contained 4 items and included perceived level of change in information seeking behaviour. The subscale IS (α 0.81) items assessing collaboration in information seeking, primary sources for academic information seeking and use of POSS. The subscale SN (α 0.85) focused on use of SNS for academic purposes and usage frequency for such reason. Finally, the subscale SM (α 0.82) included items to focus the respondent’s use of social media channels for academic and research purposes. Responses for these items ranged from 1 “never” to 5 “always” and scores were summed to obtain total score for each respondent and then averaged across four items to get aggregate for each individual variable. Items were coded to ensure that higher scores reflect greater levels of

SIS practice. The higher the total score, the higher the practice of academic information seeking of the survey participants from online social spaces.

All the participants of this survey had a good level of proficiency in using social web and were enrolled in research degree (i.e., MPhil/MS or PhD) in different universities around the country. Parametric and non-parametric tests were conducted to assess possible association between variables using IBM SPSS (Statistical Package for Social Science) version 19.0 [29].

5. Limitation

The study centres on the relationship and association between social information seeking and use of participatory online social sites, however, this study does not consider the direction and strength of this relationship. Moreover, perceived level of change in the information behaviour, as reported by researchers, was examined and not the actual level. It was made sure that respondents are active users of social networking sites and have authored at least one research paper. The response rate was 61%, which represents opinions of slightly more than half of the population; however, all respondents meet the above-mentioned criteria, so the result is constructively generalizable on the whole population of LIS research students in the country.

6. Results & Discussion

Data analysis and discussion of this study was guided to examine the SIS practices and its impact on LIS research students in Pakistan based on the five components of SIS proposed by Shah [2]. According to Shah [2] these five components must be in place for SIS to occur. Thus, these five components were individually examined in the participants to understand SIS practices of the research student in the field of library & information science.

6.1. Demographic Information and Primary Purpose of Social Information Seeking

Before making analyses of data to find answers of the research questions, author attempted to analyse whether the participants of this study are actively involved in social information seeking either through social web. The total number of participants of this study, as shown in Table 1 (below), was 123 research students currently enrolled at eight LIS schools in Pakistan (names of schools have been coded to keep privacy). Sixty-nine male and 54 female research students participated in this survey. Ninety participants belonged to urban area while 33 participants were from rural areas; whereas, course-wise participation is also shown in Figure 1.

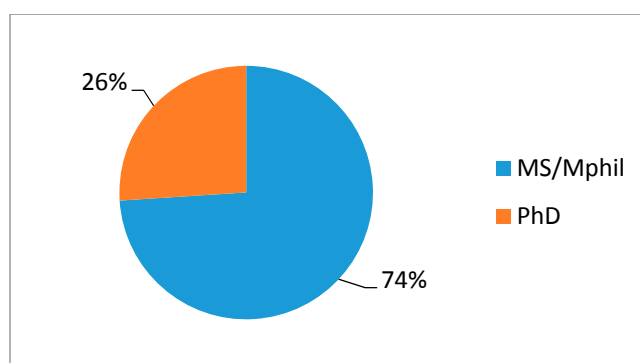
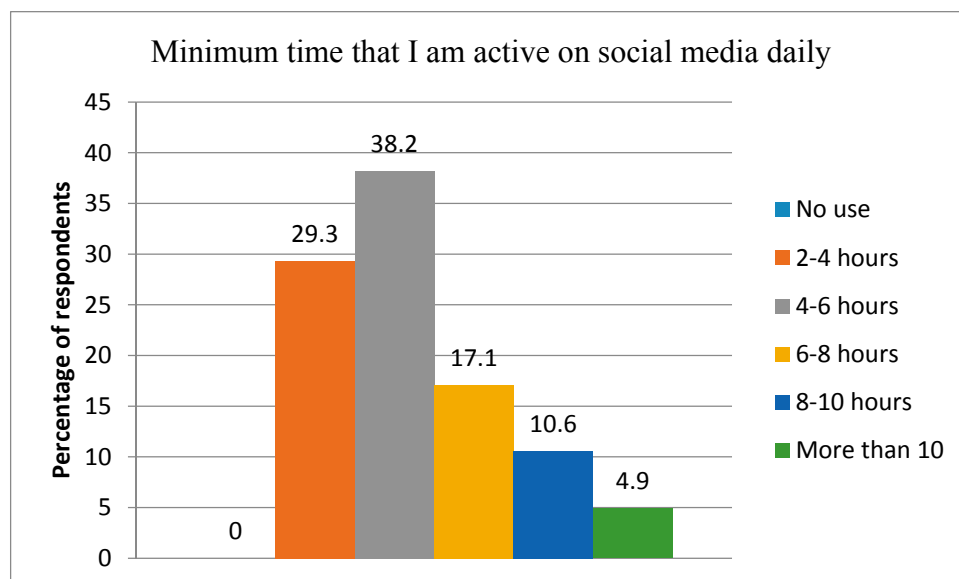


Figure 1. Course-wise participants of this survey.

Table 1. LIS schools and percentage of responses.

#	Code	Count	Percentage
1	UIP	19	15.45%
2	USK	18	14.63%
3	PSI	12	9.76%
4	KUK	8	6.50%
5	UPM	12	9.76%
6	USP	29	23.58%
7	SUJ	9	7.32%
8	PUP	16	13.01%
TOTAL		123	100%

All participants of this study had minimum of one research paper/thesis written at their credit and all of them are aware of the use of social web as shown in Figure 2 (below). Majority of the respondents (e.g., 38% and 29%) are active on social media for 2 to 6 h daily respectively. Collectively 27% (i.e., 17% and 10%) of the respondents report that they are active on social media for either 6 to 10 h, while remaining 5% have reported that they are always active (i.e., more than 10 h daily) on the social media.

**Figure 2.** Minimum time of being active at Social Media daily.

6.2. Social Information Seeking and Change in the Information Behaviour

During the last few years the perspectives has shifted further to define social information as an important part of information behaviour. This perspective considers all kinds of interactions both on individual and organizational levels. For example, research on Social Informatics focuses on relationships among people, information and systems. Participatory online social sites (POSS) are one of the major tools for such kind of growing aspect of everyday life where new social information contents are created. Previous studies such as [30–32] have evaluated POSS for everyday life information seeking (ELIS) which concludes that information is social and these websites play an important role in the ELIS of a common man.

Information behaviour refers to the totality of human behaviour in relation to use of information sources. In addition to that purposive seeking of information to satisfy some goal also refers to behaviour employed by the searcher. However, research community has different information practices and priorities related to academic and research needs. It is well-established that use of social media

changing human information behaviour and information seeking process. To examine this, relationship between the questions on practices of social information seeking and the information behaviour was examined. A Pearson product-moment correlation coefficient was computed (Table 2) to assess this relationship. There was a strong positive correlation found i.e., $r = 0.877$, $n = 123$, $p = 0.000$. Statistical results indicated that information behaviour of research students can be predicted by their use of social information seeking.

Table 2. Pearson product-moment correlation coefficient result.

		SIS	IB
Social Information Seeking	Pearson Correlation	1	0.877 **
	Sig. (2-tailed)		0.000
	N	123	123
Information Behaviour	Pearson Correlation	0.877 **	1
	Sig. (2-tailed)	0.000	
	N	123	123

** Correlation is significant at the 0.01 level (2-tailed).

6.3. Social Networking and SIS

Social ties play an important role in novel information acquisition, for example, research on homophily indicates that people likely to have social connections with those who have similar attributions such as sex, age, education, religion and race etc., People communicate, seek information in online networks more than they do in solitary communities. Yet online social networks have substantial number of friends, relatives, colleagues, neighbours, workmates etc. as compared to traditional physical sphere of a person which means that “instead of disappearing, people’s communities are transforming” [33]. Social networking allows seeking information and support on important decision from the people in their online networks. Pew research finds that social web supplement, rather than replaces, the communication people have with people who are very close to them.

Social researchers are eager to examine the role of weak versus strong social ties and its impact on social information seeking. Also, Johnson [34] and Steffes & Burgee [35] are of the point of view that the characteristics of relationship influence the decision to seek information from specific others.

Figure 3 reveals the association between number of online social connections of the participant and his/her attitude/intend of practicing social information seeking. Majority of the participants who have more than 300 online social connections have reported that they often seek information through social sites. It means that increase in number of online social ties increases the confidence of a research student to seek information on social sites.

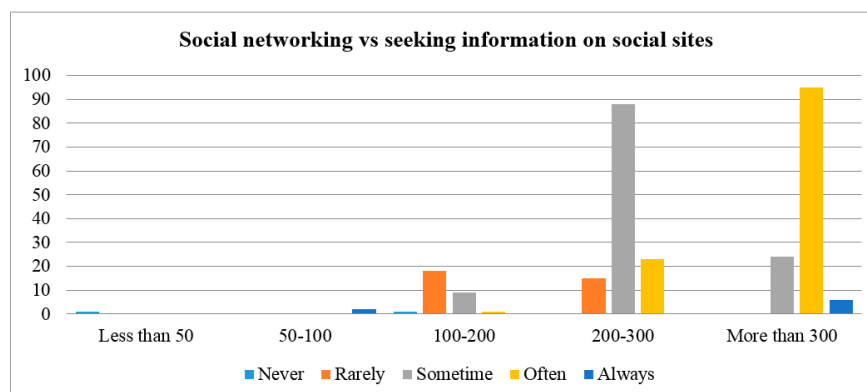


Figure 3. Number of online social connections versus SIS practices.

6.4. Information Retrieval in the SIS

Previous research studies indicated that information retrieval strategies are influenced by the socio-cultural environment. People can deploy efficient IR strategy if they are embedded in a community people with similar interests. In fact, before the advent of modern IR systems, people used to satisfy their information needs by social means such as asking friends, consult libraries, enquiring experts etc. The Social Web has transformed relationships into information retrieval process by connecting people online; thus, imposing a new research direction and a challenge to conventional IR systems by bringing up information retrieval for social media, called “social information retrieval”. Thus, online social networks have strong influence over change in the IR strategies on social web.

Aiming to examine opinion of the participants about how effective do they find the IR strategies while seeking information from the social web; one of the survey question was “SNS helps to clarify my directions to seek/search for academic information”.

Data analysis of the question on IR reveals that social information seeking causes a considerable change in the IR strategies of the research students. The two-tailed Fisher’s exact test was used to assess statistical significance because number of individuals within one cell was <5. The test revealed (Table 3) strong association between the variables of SIS and IR (i.e., $\chi^2 = 1.006$, $n = 123$, $p = 0.000$; Fisher’s Exact Test).

Table 3. Chi-Square Tests on variables of SIS and IR.

Seeking Information from Social Sites * Information Retrieval Cross Tabulation							
Count		Information Retrieval					Total
		Never	Rarely	Sometime	Often	Always	
Seeking Information from Social Sites	Never	0	1	0	0	0	1
	Rarely	1	7	5	2	0	15
	Sometime	1	3	19	6	1	30
	Often	0	1	9	57	4	71
	Always	0	0	0	3	3	6
Total		2	12	33	68	8	123
Chi-Square Tests							
	Value	df	Asymp. Sig. (2-Sided)	Exact Sig. (2-Sided)	Exact Sig. (1-Sided)	Point Probability	
Pearson Chi-Square	1.006×10^2 ^a	16	0.000				
Likelihood Ratio	82.201	16	0.000	0.000			
Fisher’s Exact Test	81.070			0.000			
Linear-by-Linear Association	55.981 ^b	1	0.000	0.000	0.000	0.000	
N of Valid Cases	123						

^a 19 cells (76.0%) have expected count less than 5. The minimum expected count is 0.02; ^b the standardized statistic is 7.482.

6.5. Social Media and SIS

The role of social networks, social interaction on the web and social media are clearly topics that have gained much attention during the last few years. More recently the studies on social media have focused the social contexts for information use which opened new research paradigm such as the use of social media generally and the Q&A sites specifically for academic and research purposes [36,37]. Keeping in view a major role of social media in SIS, the connection between the use of social media and the intent of social information seeking among LIS research students was examined.

Chi square test performed on the variables of *time spent* and participants’ response on the questions of social information seeking revealed no association. Table 4 reveals (16/123, $p = 0.243$; Fisher’s Exact Test) that there is not enough evidence to suggest an association between amount of *time spent* on social media and *social information seeking* practice of the research students. It means that increased time spent on social media does not necessarily means that it is used merely for SIS, there may be other purposes of using social media. However, Figure 4 shows that participants who spend 2–4 h

on social media *often* use it for seeking academic/research information. Figure 4 also visualizes the non-association of these variables.

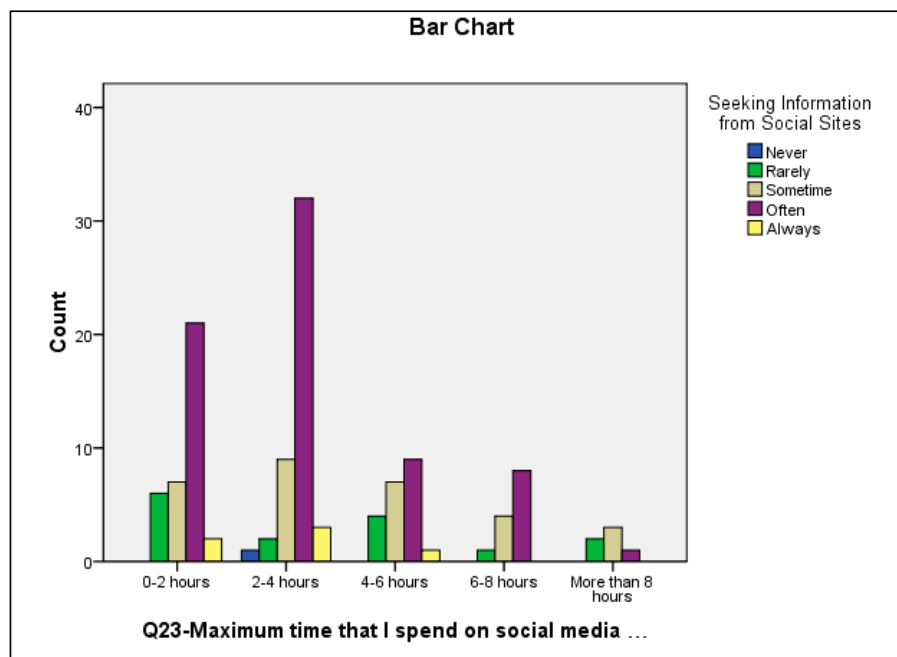


Figure 4. Time spent on social media and SIS.

Table 4. Relationship between *Time Spent on Social media* and SIS practices.

		Seeking Information from Social Sites					Total
		Never	Rarely	Sometime	Often	Always	
Q23—The maximum time that I use social media for seeking academic/research information	0–2 h	0	6	7	21	2	36
	2–4 h	1	2	9	32	3	47
	4–6 h	0	4	7	9	1	21
	6–8 h	0	1	4	8	0	13
	More than 8 h	0	2	3	1	0	6
Total		1	15	30	71	6	123
Fisher's Exact Test Result							
	Value	df	Asymp. Sig. (2-Sided)	Exact Sig. (2-Sided)	Exact Sig. (1-Sided)		
Pearson Chi-Square	15.914 ^a	16	0.459	0.000 ^b			
Likelihood Ratio	17.412	16	0.359	0.365			
Fisher's Exact Test	18.386			0.243			
Linear-by-Linear Association	2.727	1	0.099	0.000 ^b	0.000 ^b		
N of Valid Cases	123						

^a 17 cells (68.0%) have an expected count less than 5. The minimum expected count is 0.05; ^b Cannot be computed because there is insufficient memory.

The use of social media varies depending on the context of information seeking. Previous studies suggest that *gender* has also been an important variable that influences the use of social media, see [15,38,39]. However, little research exists on user variables that influence the use of social media for information seeking [40].

Because of small sample size, two-tailed Fisher's Exact Test (Table 5) was used to assess association between *gender* and *social information seeking*. The relation between these variables was not statistically significant (4/123, $P = 0.523$; Fisher's Exact Test), which means gender have no significant influence on social information seeking of individuals.

Table 5. Gender and Social Information Seeking Chi-Square Tests.

Gender * Seeking Information from Social Sites Cross Tabulation							
Total		Seeking Information from Social Sites					Total
		Never	Rarely	Sometime	Often	Always	
Gender	Male	1	9	13	42	4	69
	Female	0	6	17	29	2	54
Total		1	15	30	71	6	123
Fisher's Exact Test Result							
		Value	df	Asymp. Sig. (2-Sided)	Exact Sig. (2-Sided)	Exact Sig. (1-Sided)	Point Probability
Pearson Chi-Square		3.402 ^a	4	0.493	0.505		
Likelihood Ratio		3.765	4	0.439	0.523		
Fisher's Exact Test		3.329			0.503		
Linear-by-Linear Association		0.200 ^b	1	0.655	0.735	0.369	0.081
N of Valid Cases		123					

^a 4 cells (40.0%) have an expected count less than 5. The minimum expected count is 0.44; ^b the standardized statistic is -0.447.

6.6. Information Seeking in Collaborative Environment

Information seeking (in online social spaces) happens often in collaborative settings [31,41]. Information practices and activities such as collaborative information seeking, information sharing in groups, interactive information retrieval and social information processing takes place; which not only compliment an individuals' information behaviour and concepts but also helps improve social searching skills [42]. While searching for information, the social search makes use of social interactions which not only connect people with each other but also develops search behaviour/strategies. Respondents were asked whether they collaborate during information seeking on social websites or otherwise. Survey questions were, "*The primary source for academic information seeking for me is POSS and information seeking is better performed individually rather than in group?*" Again, due to small sample size, Fisher's Exact test (Table 6) was used to assess this relationship (44/123, $P = 0.002$; Fisher's Exact test), reveals that participants who prefer to consult online social spaces (as priority) for academic information seeking also participate in collaborative information seeking activities.

Table 6. Fisher’s Exact Test (consult POSS for IS & participate in CIS).

		Q9—Information Seeking is Better Performed Individually Rather Than in Group					Total		
		Never	Rarely	Sometime	Often	Always			
Q8—The primary source for academic information seeking for me is POSS	Never	4	4	4	2	0	14		
	Rarely	2	4	6	2	2	16		
	Sometime	3	10	5	12	1	31		
	Often	1	1	17	18	10	47		
	Always	2	1	3	6	3	15		
Total		12	20	35	40	16	123		
Fisher’ Exact Test Result									
	Value	df	Asymp. Sig. (2-Sided)	Monte Carlo Sig. (2-Sided)		Monte Carlo Sig. (1-Sided)		Sig.	
				Sig.	99% Confidence Interval		99% Confidence Interval		
					Lower Bound	Upper Bound	Lower Bound		Upper Bound
Pearson Chi-Square	36.885 ^a	16	0.002	0.002 ^b	0.001	0.003			
Likelihood Ratio	42.164	16	0.000	0.001 ^b	0.000	0.002			
Fisher’s Exact Test	37.904			0.000 ^b	0.000	0.000			
Linear-by-Linear Association	17.450 ^c	1	0.000	0.000 ^b	0.000	0.000	0.000	0.000 ^b	
N of Valid Cases	123								

^a 17 cells (68.0%) have expected count less than 5. The minimum expected count is 1.37; ^b Based on 10,000 sampled tables with starting seed 957002199; ^c the standardized statistic is 4.177.

7. Conclusions

Social information seeking incorporates different aspects of social context of information need, social ties (online social networking) and channel of communication (e.g., social media and web 2.0 tools). There are five elements that must be in place for SIS to occur and this study attempted to investigate all these elements individually in the Pakistani LIS graduates to assess their level of understanding and practice of SIS especially for research and academics.

Data analysis show that LIS research students in Pakistan make the utmost use of social spaces for information seeking especially for research and academic purposes. Collectively, 67% research students are active on social web for about 2 to 6 h while remaining of the participants were active around 6 to 10 h daily. Research community has different information practices and priorities related to academic and research needs and statistical results of this study indicated that information behaviour of research students can be predicted by their use of social information seeking. Results of the study reveals an association between number of online social connections of the participant and the SIS practice of the respondent. Increased number of social ties increases the confidence of a research student to seek information on social sites. Similarly, it is also concluded that change in the strategies/ways to retrieve information from the social websites depends on the social information seeking practices of the research students. Thus, SIS practices help to clarify directions in information retrieval strategies of the research students. The study further concludes that there is not enough evidence to suggest an association between amount of time spent on social media and social information seeking practice of the research students. Thus, time spent and usage frequency of social websites does not affect one's SIS practices and the use of social websites for information seeking varies depending on the context of information.

Collaborative information seeking practices are also advocated by those who always use participatory online social sites for information seeking. Online discussion groups have gained much popularity in the recent times worldwide. Our results revealed that majority of participants who are active in using online discussion groups strongly perceive that it helps in reshaping the information behaviour in collaborative environment thus contributing to overall increase in the SIS activities of a research student.

8. Future Research

No doubt, social web has strong influence on the information seeking behaviour of social science researchers, however, the direction and strength of this influence still to be discovered through more focused approach. Moreover, perceived level of change in the information behaviour is recorded which may be validated against the actual level of change in information seeking. At the other hand, social search instead of broad-based search is more effective in terms of seeking academic information promptly, however, further research is suggested to investigate about credibility, authenticity and privacy of academic information seeking using social web.

Conflicts of Interest: The authors declare no conflict of interest.

Appendix A

SOCIAL INFORMATION SEEKING

Dear Respondent, please respond to this questionnaire keeping in view your usage of Participatory Online Social Spaces (social media) relating to your academic/research needs,

1	Gender	MALE	O	FEMALE	O	
2	Marital Status	MARRIED	O	SINGLE	O	
3	Locality	RURAL	O	URBAN	O	
4	Approximate number of connections on favourite and most frequently used SNS	Less than 50	50–100	100–200	200–300	300 and more
	PLEASE RESPONDE TO THE FOLLOWING QUESTIONS	Never	Rarely	Sometimes	Often	Always
5	I have access to social group discussion to satisfy the urge of information seeking	O	O	O	O	O
6	Sharing academic/research information through social media is a first preference for me	O	O	O	O	O
7	Discussions on social media assist me in understanding others point of view	O	O	O	O	O
8	The primary source for academic information seeking for me is POSS	O	O	O	O	O
9	Information seeking is better performed individually rather than in group	O	O	O	O	O
10	Do you prefer to collaborate while seeking information in the online social spaces?	O	O	O	O	O
11	Information retrieved from social websites is more specific to individual needs	O	O	O	O	O
12	Information retrieved from social websites are easy to assess and evaluate	O	O	O	O	O
13	I prefer to use interactive (responsive/colourful) websites to search/browse for information	O	O	O	O	O
14	I like to answer questions related to academic or research needs posted by my social connections	O	O	O	O	O
15	I prefer to use social website to seek answers of my academic/research questions	O	O	O	O	O
16	Information retrieval is much easier on social web than broad-based search engines	O	O	O	O	O
17	Seeking information on online social spaces have changed the way I seek academic contents	O	O	O	O	O
18	Online social spaces help in brainstorming before I search for academic information	O	O	O	O	O
19	Asking academic questions on POSS is much helpful than searching on internet	O	O	O	O	O
20	SNS helps to clarify my directions to seek/search for academic information	O	O	O	O	O
21	Community-based information sources are more specific to individual needs	O	O	O	O	O
22	Social networking helps to clarify my directions to seek/search academic and research information	O	O	O	O	O
23	The maximum time that I use social media for seeking academic/research information	no use	2–4 h	4–6 h	6–8 h	8–10 h
24	I prefer to use social media for information seeking in my academic/research assignments	O	O	O	O	O
25	While doing social search, I felt being part of an online learning community	O	O	O	O	O
26	Online Social spaces can help achieving my research objectives	O	O	O	O	O
27	Acquired information from SNS in helpful to meet your academic and research needs.	O	O	O	O	O
28	Do you think that people increasingly use POSS to seek information for academic/research purposes?	O	O	O	O	O

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