Information Needs and Seeking Behavior of Science & Technology Teachers of the University of the Punjab, Lahore

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Abstract

The paper focuses on enquiring the information needs and Information seeking behavior of Science and Technology (S&T) teachers of the University of the Punjab (PU). Their preferences regarding various formats of information sources (printed and electronic) and importance of formal and informal sources have been explored through quantitative survey. Self-completion questionnaire was used to reach whole population of institutions/colleges/departments of all Science and Technology faculties. Findings reveal: both libraries and e-resources are playing important role in meeting respondents' information needs; direct access to e-sources has slightly decreased the number of their visits to departmental and central libraries; and faculty spend comparatively more time on searching web sources than print sources.

Keywords: Information needs; Information seeking behavior; Scientists and Technologists; University of the Punjab, Pakistan

Introduction

The overwhelming growth of S&T research literature since World War II has been a matter of concern for both scientists and library professionals. The post World War II era is rightly called

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"the Scientist's World" due to proliferation in the production of literature in S&T. Different theories and schematic models have been presented by several scholars of different fields including Library Science, Information Science and Communication Studies etc. Leckie, Pettigrew, and Sylvain (1996), Wilson (2005), Ellis (1993), Ellis and Haugan (1997), Ellis, Cox and Hall (1993), Erdelez, (1997). Kuhlthau, (2005), Dervin (1992,) Fidel and Petersen (2004), Goldbold (2006), Case (2007) and many others may be referred as experts who made efforts to present and revise the models and theories on the information needs and seeking behavior (INSB). Before the emergence of IT, such studies were mostly descriptive in nature and focusing on printed sources. The emergence of digital information sources and internet has changed the modes of accessing, searching, retrieving and consuming information. This growth poses various challenges along with promising opportunities. The globalization has promoted extensive collaborative research activities across the borders. Hence, it makes imperative to study INSB in a changed scenario.

Review of local literature shows that exploring of INSB has not been a well recognized and explored area. Anwar (2007) reports that only fourteen research projects were submitted in University of the Punjab (PU) during 1975 to 1982 by master's students. Out of those, two were on the topic of the information needs of the university teachers of University of Engineering &Technology (Bokhari, 1976) and PU (Mujahid, 1977). These studies emphasized on conducting further research on the information needs of the engineers and scientists of Pakistan. No records of such studies could be found in other universities of Pakistan.

However, lately the importance of this area for research has been realized and two master level research studies, one in PU (Shahzad, 2007), other in Islamia University Bahawalpur (Nazali, 2001) and one PhD research in Karachi University (Ansari, 2007) have been conducted.

Given the importance to enquiring the INSB of faculties of S&T this study was perused. Furthermore, it needs to be added that Higher Education Commission (HEC, 2000) aimed to promote higher education specifically in the field of S&T. To obtain this objective, HEC started different collaborative programs spending huge amounts of human and financial resources to provide access to the e-journals from leading American scientific societies and US-based academic publishers. Subscription to a number of e-databases, abstracting services and initiative of digital library are major steps in this regards (Pakistan, HEC, 2007). Present library and information services to the Community of PU consist: a central library, institutional library units, HEC National Digital Library with access to renowned S&T databases. This networked learning environment demands that S&T teachers and researchers make effective use of these resources for their teaching and research. Therefore, exploration of the ISB of this community is need of the day.

Objectives

The objectives of the paper are to:

- Find out the types of information needs of S&T faculty members
- Explore their ISB: Choice pattern of resources for meeting information needs
- Impact of on-campus digital developments on respondents' use of libraries, print and e-sources.

Research Methodology

The study is based on the partial data collected for principal researcher's M.Phil thesis entitled "Information needs and seeking behavior of Science and Technology teachers of PU" during 2007. Quantitative design of research, based on a self-completion structured questionnaire survey was used (Appendix

A). Surveyed population consisted of whole full time S&T teachers working in the 25 institutions/colleges/departments of all four S&T faculties viz Sciences, Life Science, Engineering & Technology and Pharmacy (Appendix B). Total response rate was 71% (156 out of 220 existed members).

Likert categorical scale and multiple choice questions were used to obtain the respondents' opinion. The collected data were analyzed largely in quantitative manner. Data were analyzed and interpreted following descriptive statistics mean values and frequency measures. Statistical error (8%) in data was found using following formula:

% Error in data = $\left(\sqrt{N} \middle/ N \right) \times 100$

N = 156 (Total population)

Analysis of Data and Discussion

The results of data analysis have been reported in the following section.

An overview of respondents' demographic and academic career

First section of the questionnaire dealt with the personal information about the respondents. Respondents' demographic, academic career, research activities and current publication profile is described below.

Data reveal that a significant number of teachers 93(60%) were lecturers. The ratio of other respondents by designation was as follows: assistant professor 30(19%), associate professor 19(12%), and professors 14(9%) respectively. Grouping by age shows that 45 (29%) were below 30 years in age followed by 39 (25%) in 31-35 years group. The ratio of response' by age group 36-40 and 51-55 years was the same 18 (12%), whereas, only 6 (3.8%) were 56 years and above. Male and female respondents' ratio was 113 (72%) and 43 (28%) respectively. Sixty two (41%)

respondents had a master's degree, 53 (34%) had a PhD and 39 (25%) had an M.Phil. degree. Sixty seven (43%) had less than 5 years of experience. Thirty two (21%) were in range of 5-10, while, 19 (12%) had 16-20 years experience. Less than 10% had experience of 11-15, 21-25 and above.

The data about their membership and involvement in collaborative activities at national and international level show that a significant number 89 (60%) of them were member of some national organization or laboratory; however, only 13(9%) had international membership and only 23(15%) had both memberships. Twenty-four(16%) were not member of any organization/laboratory Sixty-five (42%) were engaged in collaborative professional activities at local/national/international level.

Ranking of information needs by their importance

The type of information needs such as academic, research, leisure and others play major role in the choice of information sources. Therefore, respondents were asked about the importance of various needs. The Table 1 illustrates that libraries and online sources were recognized as 'very important' for all mentioned purposes. 'To update information' and 'to guide students their research' were considered equally 'very important' ($μ= 3.25$) need. 'For preparing/supplementing lectures and 'to publish a paper/book' were their second and third 'very important' purposes to consult libraries and online resources

Importance of different resources in search of relevant information

Quality and quantity of information sources have been mounted due to modern ICTs developments and networking environment. Scientists and technologists not only depend on their institutional libraries/information centers resources but also they use other libraries (Rehman & Binwal, 2000). All over the world they have to rely on both traditional and online resources at local, national and international level. Keeping in view the emerging

information paradigm, respondents' views were asked about the importance of formal sources in both traditional and online forms as well as informal sources for Relevant Information (Table 2).

Respondents considered 'general web resources' (μ=3.29) 'very important' for seeking relevant information. Academic libraries (departmental and PUL)' (μ=3.20) and 'HEC digital library' (μ= 3.05) were their second and third very important choice for this purpose.

Table 1. Importance of different information needs for seeking information resources (N=156)

Rank	Type of Needs	N	Mean (μ)	Std. Dev
1-2	To update information	152	3.25	0.878
1-2	To guide students in their Research	152	3.25	0.840
3	For preparing/Supplementing lectures	153	3.08	0.881
4	To publish a paper/book	150	3.02	1.052
5	For general awareness	148	2.98	0.993
6	To participate in seminars/conferences/workshops	152	2.67	1.072
7	For promotional opportunities	149	2.66	1.083
8	To confirm and refute an issue/theory	149	2.60	1.090
9	Others _____			

Extremely imp. = 4; Very imp. = 3; Imp. = 2; Somewhat imp. = 1; Not imp. = 0

Data analysis shows the impact of ICT on the choice of information resources by respondents. It appeared that seeking 'general web resources' were their top priority. Surprisingly, international university libraries/centers were preferred than other national university libraries/centers in Pakistan. Personal library was considered important than colleagues and personal contacts

and other national university libraries/centers. Though consulting 'public libraries' was their last choice, they considered it an important resource for meeting information needs.

Notably, none of the information resources was considered extremely important to get relevant information.

Table 2. Importance of traditional/online resource for relevant information (N=156)

Rank	Resources	N	Mean(μ)	Std. Dev.
1	General web resources	150	3.29	0.763
2	Academic libraries (departmental & and PUL)	154	3.20	0.881
3	HEC digital library	152	3.05	0.989
4	International university libraries/centers	152	2.73	1.196
5	Personal library	149	2.42	1.060
6-7	Colleagues/personnel contacts	148	2.28	1.010
6-7	Others national universities libraries/ centers	150	2.28	0.763
8	Public libraries	152	2.05	1.198
9	Others			

Extremely imp. = 4; Very imp. = 3; Imp. = 2; Somewhat imp. = 1; Not imp. = 0

Preferred means to get information

Respondents were asked to provide opinion about their preferred means to get the needed information. The analysis (Table 3) presents that 'searching general web sources' was the first choice of more than half (52%) respondents to get needed information. Their second and third choice was 'physically go to the library' (27%) and 'searching HEC subscribed databases (15%). The responses showed their least interest in consulting 'catalogue/OPAC' (1%) and 'librarian' (2%) for needed information.

Table 3. Preference of sources used to get information (N=156)

Rank	Sources	Frequency	Percent
1	Searching general web sources	81	52
2	Physically go to the library	42	27
3	Searching HEC subscribed Databases	24	15
4	Send an assistant or student to the library	4	3
5	Call the librarian/library staff	3	2
6	Access the library catalogue/OPAC	2	1
7	Others		

Impact of ICT on the visits to libraries on campus

The e-access to online databases also influences the use of libraries as reported in the literature e.g. Zawawi & Majid, (2002). This impact on respondents' visits to departmental as well as PUL was enquired.

Table 4. Impact of E-access on the visits to departmental and PUL (N=156)

Rank	Visits	N	Mean(μ)	Std.Dev.
1	Departmental Library	154	2.29	1.009
2	University Library	145	1.85	1.002

Decreased significantly=1; Decreased slightly=2; Not changed=3; Increased slightly=4; Increased significantly=5

Data analysis regarding the impact of e-access on respondents' visits to departmental and PU main library show (Table 4) that in the presence of e-access to online databases,

there visits to 'departmental library' and 'university library' were slightly decreased (μ= 2.29; μ=1.85)'. Comparative analysis of mean values illustrates that frequency of visits to departmental library has decreased less than visits to PUL.

Time spent on searching of information sources

Respondents were also enquired about the time consumption on searching web and print sources (Table 5). The mean value indicates that they used to spend 11-20 h/w for both 'searching web sources' and 'print sources' to meet their information needs. Mean values show that they spent comparatively more time on searching web sources than print sources.

Table 5. Time spent in hour/week (h/w) on searching of information sources

Rank	Sources	N	Mean(μ)	Std.Dev.
1.	Searching web sources	151	1.79	0.947
2.	Searching print sources	142	1.55	0.830

Less than 10 h/w =1; 11-20 h/w =2; 21-30 h/w= 3; 31-40 h/w= 4; 41& above h/w = 5

Findings and Conclusions

The study reveals that S&T faculty members like to attend conferences and workshops. They showed less interest in getting membership of national/international organizations/laboratories; however, there seems emerging trend of collaborative research activities in these disciplines.

- Their information needs are associated more with the teaching activities followed by research activities.
- General web resources, university libraries and HEC digital library are respectively considered very important resources in search of relevant information. University libraries both PU main library and departmental along with

        direct access to e-resources play very important role in meeting respondents' information needs.

- The respondents consider international university libraries/centers more important relevant resources for getting information rather than national university libraries/centers.
- They consider the libraries and online sources very important to meet their different teaching and research purposes such as; to update their information, to guide students in their research work, to prepare/supplement lectures and to publish a paper/book. However, participating in seminars/conferences/workshops, confirming or refuting theories and promotional opportunities are considered some what less important purposes.
- They prefer to begin search with general web sources followed by physically going to the library. Then comes searching HEC subscribed databases. It appears that due to lack of awareness regarding the HEC sources they are underutilized.
- They comparatively spend more time on searching web sources than print sources.

The study reveals the impact of ICT on respondents' choice pattern regarding information resources as their visits to departmental and PU libraries have been slightly decreases. An important fact is that to meet their information needs they prefer more general web sources than HEC subscribed sources.

Nevertheless, both academic libraries and e-resources are significantly meeting respondents' information needs under the digitally transforming environment of the S&T faculties at PU. Digital access infrastructure has been quite well established and working with the exited traditional information system. However, there is need for information literacy workshops for the academic community to enable them make extensive use of all types of information sources, specifically HEC databases.

<u>Appendix A.</u>
Questionnaire

Information Needs and Seeking Behaviour of Science and Technology Teachers of the University of the Punjab, Lahore.

Be sure that data supplied by you will be treated as confidential and will be used for research purpose only. Please feel free in supplying the information.

Personal Information

Faculty:_____

Academic Rank (position)

Lecturer ☐ Assistant Professor ☐ Associate Professor ☐

Professor ☐ Any other, (Please specify) _____

Qualification (highest degree)

Master ☐ M. Phil. ☐ PhD ☐

Age group: (Tick the appropriate)

Below 30 ☐ 31-35 ☐ 36-40 ☐ -------41-45 ☐

46-50 ☐ 51-55 ☐ 56 and above ☐

Gender: Male ☐ Female ☐

Experience (Years)

Less than 5 ☐ 5-10 ☐ 11-15 ☐ 16-20 ☐

21-25 ☐ 26 and above ☐

Research and Publication Record

Are you a member of any national/international organization or laboratory?

National ☐ International ☐ Both ☐None ☐

Are you presently engaged in any collaborative activity at national/ international level?

Yes ☐ No ☐

Q3. How important are the following resources while searching information on your relevant field?

Sr #	Resources	Extremely Important	Very Important	Important	Somewhat Important	Not Important
6.1	Academic libraries(PUL & departmental library)					
6.2	Public libraries					
6.3	HEC digital library					
6.4	General web sources					
6.5	Others national universities libraries/centers					
6.6	International universities libraries/centers					
6.7	Personal library					
6.8	Colleagues/pers onnel contacts					
6.9	Others(Please specify)					

Q4.   How important do you consider using libraries/online sources for the following purposes?

Sr #	Purposes	Extremely Important	Very Important	Important	Somewhat Important	Not Important
7.1	General awareness					
7.2	Preparing/supplementing lectures					
7.3	To guide students in their research					
7.4	To participate in seminars/conferences/ workshops					
7.5	To confirm and refute an issue/theory					
7.6	To publish a paper/book					
7.7	To update information					
7.8	Promotional opportunities					
7.9	Others(Please specify)					

Q 5.   In the presence of electronic access to on line databases, Have your visits to the libraries decreased?

Sr.#		Decreased Significantly	Decreased Slightly	Not changed	Increased slightly	Increased Significantly
9.1	Departmental Library					
9.2	Punjab University Library					

Q.6. How many hours do you spend for the following print and electronic sources per week?

Sr #	Information Sources	Less than 10	11-20	21-30	31-40	41 & above
10.1	Searching web sources					
10.2	Searching web sources					

Appendix B

List of Faculties with Institution/Colleges/Departments Surveyed

Faculty of Life Sciences

1. Institute of Biochemistry & Biotechnology
2. Department of Botany
3. Department of Zoology
4. Department of Micro Biology & Molecular Genetics 5. Institute of Mycology & Plant Pathology
6. Department of Psychology & Applied Psychology
7. Centre for Clinical Psychology

Faculty of Sciences

1. Department of Physics
2. Institute of Chemistry
3. Institute of Geology
4. Centre for High Energy Physics
5. Centre for Geographic Information System (GIS) 6. Department of Space Science
7. Department of Geography
8. Centre for Clinical Psychology 9. Department of Mathematics
10. College of Statistical and Actuarial Sciences
11. Centre for Solid State Physics
12. College of Earth and Environmental Sciences
13. Punjab University College of Information technology

Faculty of Pharmacy

1.   University College of Pharmacy

Faculty of Engineering & Technology

1.   Institute of Chemical Engineering & Technology
2.   Institute of Quality & Technology Management
3.   College of Engineering and Emerging Technologies
4.   Department of Metallurgy and Material Engineering

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