Information Seeking Behaviour of Social Science Research Scholars in the Electronic Information Age: A Study of Guru Nanak Dev University

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Abstract

The paper aims to explore information seeking behaviour of the social science research scholars of Guru Nanak Dev University in the electronic information age. A well-structured questionnaire was designed to elicit the opinions of the scholars. The results of the study showed that scholars seek information mainly for research purpose, keep themselves up to date by reading e-journals, prefer to read journal articles in both formats - print as well as electronic, consider convenience as the most important reason for using e-resources. The major problems faced while accessing e-resources are slow access speed, lack of technical skills and retrieval of too much information. On the basis of the findings, some suggestions are put forth to make the use of e-resources and e-services more effective.

Keywords: Information, Information seeking behaviour, Social science research scholars, Electronic information age, User study.

Introduction

Scholarly information behaviour today is governed to a significant extent by the existence of a wide variety of electronic information sources, from the online databases that emerged more than thirty years ago, to electronic journals and the World Wide Web. In academia, the use of libraries as places in which to search for information is being replaced, to an increasing degree, by access to these information resources from the scholar's office desk, from the desk at home, or, with the increasing pervasiveness of wireless connectivity, from the airport lounge. With this increasing mobility comes a challenge for the developers of information services to develop systems that support the user in his or her search (Wilson, 2004).

The availability of information in the electronic media has created an opportunity for global access to information….The way in which

users search for information to support research, teaching and creative activities is changing as new technologies and information delivery systems emerge (Varghese, 2008).

Electronic media has an impact on information seeking habits of the research scholars. They are progressively adopting new technologies for their scholarly information needs. Hence, need was felt to explore information seeking behaviour of the social science research scholars of Guru Nanak Dev University to know how they harness the benefits of information and communication technologies in order to satisfy their information needs while carrying out research.

Information seeking behaviour and electronic information environment

Information seeking behavior is the purposive seeking for information as a consequence of a need to satisfy some goal. In the course of seeking, the individual may interact with manual information systems (such as a newspaper or a library), or with computer-based systems (such as the World Wide Web) (Wilson, 2000). The understanding of information needs and information-seeking behavior of various professional groups is essential as it helps in the planning, implementation and operation of information system and services in the given work settings (Devadason & Lingam, 1997).

Access to information is vital in responding quickly and effectively to the challenges and complexities of the research environment. Consequently information has become an integrated element to support research…. (Zawawi & Majid, 2001). Therefore, information professionals must articulate and act upon a vision of making adequate amount of information available to the researchers so that their information needs can be met effectively (Creth, 1993).

The rapid advancement of information and communication technology (ICT) has brought a revolutionary change in information scenario giving rise to a number of options to the users' community to handle varied information sources conveniently and effortlessly as a result of which e-resources have become the lively substance to the modern library's reserves in satisfying varied needs of students, teachers and researchers with minimum risk and time (Swain & Panda, 2009).

The advent and applications of information and communication technologies (ICTs) have given birth to the new formats of information resources and new channels of communicating information. These have changed the connotation of libraries and have given birth to the concepts of digital and hybrid libraries. At the same time, these have influenced the information needs and information gathering habits of users. The internet, especially World Wide Web has emerged as a globally accepted source of information (Singh & Rani, 2013). Today's researchers are using a wide variety of sources of information. Internet search engines, e-print servers, author Web sites, full text databases, electronic journals, and print resources are all used to some degree by most users (Tenopir et al., 2003). They are the first to accept and adapt the changes brought by technological developments in their information activities. New technology has made information easily available to them in different formats. Electronic library, now-a-days, is considered a boon to the researchers as it provides an easy and faster access to information.

Review of literature

Majid et al (2000) in their study revealed that the scientists preferred to use journals and review articles as primary sources of information. Informal communication with professional colleagues was important to the scientists for exchanging current research information. Gleeson (2001)'s study revealed that scientists' mostly preferred information sources were e-journals followed by print journals, online databases and colleagues' personal contacts. They integrated e-journals into their information seeking routine and considered these as an important source of information for their research activities. Davis

(2004)'s study revealed that there had been a shift in information searching behaviour of the scientists formally to journals and informally to e-mail communication, from pre-print sources to the use of online resources like bibliographic databases. To find relevant literature, scientists depended on citations. Baer (2005) in his survey indicated that respondents used e-journals to find information to produce a product or to produce knowledge. The findings of the study by Jamali & Nicholas (2006) showed that Ph. D students highly relied on electronic journals and used libraries less. Raza & Upadhyay (2006)'s study revealed that a majority of the researchers (80.76%) used e-journals for research followed by to keep knowledge up to date (38.46%). Barik et al (2007) in their study revealed that electronic resources were the primary sources of accessing information and among these electronic journals were the most preferred sources. Jadav & Mali (2008)'s study revealed that more students used the internet and library resources for academic purposes i.e. for research. Gowda & Shivalingaiah (2010) in their survey indicated that majority of the researchers of various disciplines preferred research supervisor for their literature search followed by website databases. The findings of the study by Kumar & Prakash (2010) revealed that a majority of the research scholars (97%) used e-resources for their 'research work'. Tiyagi & Kumar (2011)'s survey showed that all the respondents (100%) considered e-journals, online databases, internet facility and CD-ROM databases as the preferred sources for accessing information. Egberongbe (2011) in his study revealed that a majority of the research scholars (80%) preferred to use e-journals followed by e-mail (52%) and www (65.6%). Khan (2012)'s study revealed that majority of the research scholars (46.67%) preferred to use journals in 'both electronic and print form'. Sethi (2012) in his study showed that 92.18% of the respondents preferred to use e-resources compared to print documents. Majority of the respondents (71.87%) used these with an aim to keep themselves up to date. Singh & Rani (2013) in their study showed that 82.35% of the faculty members sought information to keep themselves up to date followed by research (56.47%). 74.47% of the faculty members liked to use both print and e-resources to access information followed by e-resources (14.11%). 37.64% spent 6 to 10 hours per week for gathering information, 29.41% up to 5 hours and 5.88% more than 20 hours weekly.

However, the present study intends to examine the patterns of information seeking behaviour of social science research scholars of Guru Nanak Dev University that still remains unexplored.

Scope of the study

The present study is undertaken to determine information seeking behaviour of social science research scholars of Guru Nanak Dev University in an electronic environment.

Guru Nanak Dev University Library

Guru Nanak Dev University library which made its modest beginning in 1970 with 12000 books only has now come to acquire a rich collection of more than 4 lac documents. The library is a member of INFLIBNET UGC Infonet Digital Library Consortium which is providing access to 7500+ e-journals and 11 databases covering all disciplines. The library is also subscribing to 233 e-journals through INDEST and is a member of DELNET. There is the availability of campus-wide networking in the University. All the users can access e-journals/e-resources from their respective departments as well as in the Library's Internet Lab.

Objectives of the study

The objectives of the study are as under:

1. To determine the purpose of information seeking of social science research scholars.
2. To determine different types of sources and methods of information seeking adopted by the research scholars.

3. To examine the impact of e-resources and e-services on information gathering habits of the research scholars and their visits to the library.
4. To ascertain the problems faced by the scholars while accessing and using e-resources.
5. To suggest measures to improve the e-resources and e-services of the library6.

Research methodology

For the purpose of collection of required data the following research tools have been employed. The details of each are as follows:

(i) Questionnaire: A well-structured questionnaire was designed for the social science research scholars to assess their information seeking behaviour. It included questions on various aspects of information seeking behaviour of the scholars in electronic environment i.e purpose of information seeking, preferred formal and informal sources of information, methods of information seeking, problems faced while using e-resources/e-services and adequacy of e-resources.

(ii) Interview: There were no formal interviews conducted for the study as most of the questions were asked in the questionnaire itself. However informal interviews were conducted with users whenever the need was felt.

(iii) Sample and data collection: In all 84 questionnaires were distributed to all the social science research scholars out of which, 68 duly filled in questionnaires with a response rate of 80.9% were received back. Department-wise distribution of respondents is depicted in Table & Figure 1.

Table 1. Department-wise distribution of respondents

Department	Total no. of research scholars	No. of responses	Percentage
Economics	31	25	80.6
History	12	09	75.0
Library Science	02	02	100.0
Political Science	09	07	77.7
Psychology	12	10	83.3
Sociology	18	15	83.3
Total	84	68	80.9

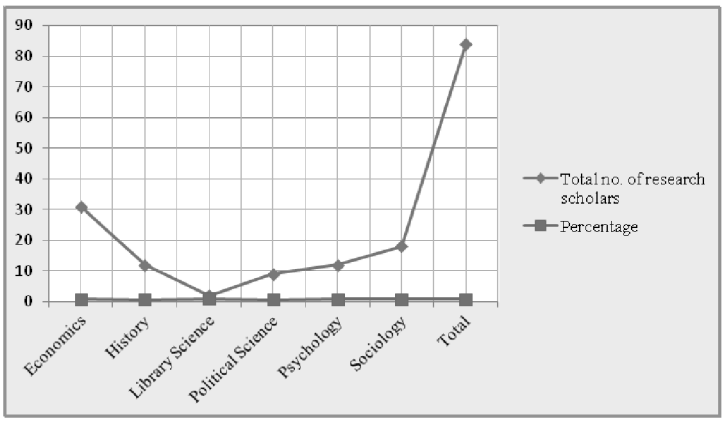

Figure 1. Department-wise distribution of respondents

Data analysis and interpretation

The data collected through questionnaires was organized, tabulated, analysed and interpreted by using simple statistical techniques. The results of the analysis are presented in the succeeding sections.

Purpose of information seeking

Table 2. Purpose of information seeking

Purpose	No of responses	Percentage
Research	68	100.0
Preparing class lectures/notes	28	41.1
Updating knowledge	64	94.1
Writing research paper and its presentation	53	77.9
Reading/thinking purpose (creativity)	60	88.2
Others	01	01.4

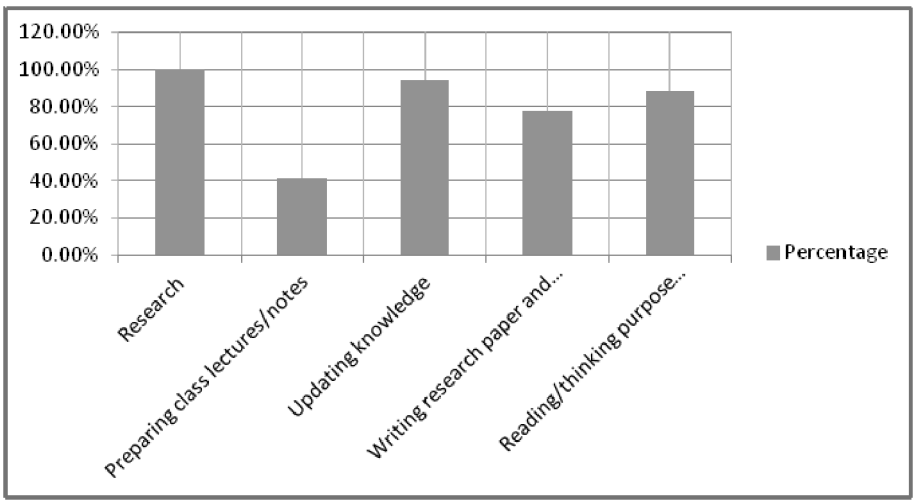

Figure 2. Purpose of information seeking

Table & Figure 2 exhibit that of all the purposes which motivates the researchers most to seek information is 'research' (100%) followed by 'updating knowledge' (94.1%), 'reading/ thinking purpose' (88.2%), 'writing research paper and its presentation' (77.9%) and 'preparing class lectures/notes' (41.1%). One respondent has also reported that he sought information to sharpen his talent. Similar results were reported by Raza & Upadhya's study of 2006, Jadav & Mali's study of 2008 and Kumar & Prakash's study of 2010. The studies revealed that a majority of the research scholars used e-resources for their research work followed by to keep knowledge up to date.

Information seeking through formal channels

Table 3. Information seeking through formal channels

Formal channels	No. of responses	Percentage
Books	63	92.06
E-books	48	70.5
Journals	65	95.5
E-journals	64	94.1
Databases	37	54.4
Online databases	35	51.4
Reference sources	38	55.8
Review articles	47	69.1
Theses/ Research reports	40	58.8
Bibliographies	34	50.0
Indexing/ Abstracting sources	20	29.4
OPACs	44	64.7
Internet sources	56	82.3

Table 3 indicates preferred formal sources for seeking information. The most preferred formal sources in order of preference are 'journals' (95.5%) 'e-journals' (94.1%), 'books' (92.06%), 'internet sources' (82.3%), 'e-books' (70.5%), 'review articles' (69.1%), 'OPACs' (64.7%), 'theses/research reports (58.8%) 'reference sources' (55.8%), 'databases' (54.4%), 'online databases' (51.4%) and 'bibliographies' (50.0%). The least preference is shown to indexing/abstracting sources. It is evident from the analysis that research scholars still consider books as one of the most important formal sources of information in the electronic era.

Identical results were shown by Majid et al (2000), Gleeson (2001), Baer (2005) and Tiyagi & Kumar (2011) who in their studies found that scientists' mostly preferred information sources were journals, e-journals, review articles, internet sources, online databases and CD-ROM databases.

Information seeking through informal channels

Table 4. Information seeking through informal channels

Informal channels	No. of responses	Percentage
Communication with colleagues within university	62	91.1
Communication with professionals outside university	50	73.5
Attending conferences	56	82.3
E-mail discussion	35	51.4
Consulting supervisor	63	92.6
Seminar/ Conference proceedings	48	70.5
Consulting librarian/ Library staff	37	54.4

Table 4 exhibits information about informal sources preferred for research. The highest priority is given to 'consulting supervisor' (92.6%). The other informal sources emphasized by the research scholars in order of preference are 'communication with colleagues within university' (91.1%), 'attending conferences' (82.3%), 'communication with professionals outside university' (73.5%), 'seminar/conference proceedings' (70.5%), 'consulting librarian/library staff' (54.4%) and 'e-mail discussion' (51.4%).

The findings are similar to the findings of the study by Gowda & Shivalingaiah (2010) who revealed that majority of the researchers preferred research supervisor for their literature search followed by website databases. Majid et al (2000)'s study also showed that informal communication with professional colleagues was important to the scientists for exchanging current research information.

Methods of information seeking

Table 5. Methods of information seeking

Methods	No. of responses	Percentage
Follow up references	53	77.9
Subject specific bibliographic services	28	41.1
E-mail alert services	43	63.2
Seek in library(goal oriented)	47	69.1
Book reviews	41	60.2
Follow hyperlinks	53	77.9
General search engines	43	63.2
Hints from others	42	61.7

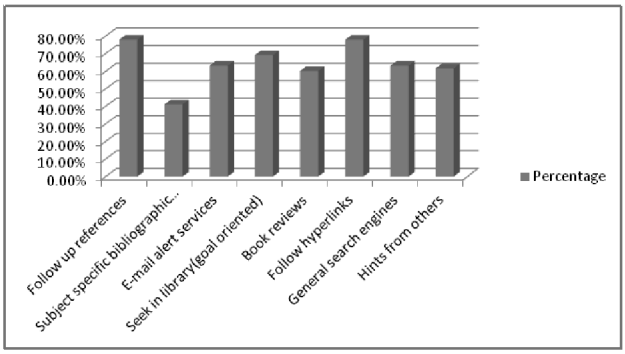

Figure 3. Methods of information seeking

Table 5 and Figure 3 provide information about the preferred methods of information seeking. The top most priority is given to 'follow up references' and 'follow hyperlinks' (77.9% each). The other methods in order of preference are 'seek in library' (69.1%), 'e-mail alert services' (63.2%), 'general search engines' (63.2%),' hints from others' (61.7%), 'book reviews' (60.2%) and 'subject specific bibliographic services' (41.1%).

Methods of gathering up-to-date information

Table 6. Methods of gathering up-to-date information

Methods	No. of responses	Percentage
Read e-journals	63	92.6
Read e-reviews	35	51.4
Connect sites	53	77.9
Discussion with professionals	52	76.4

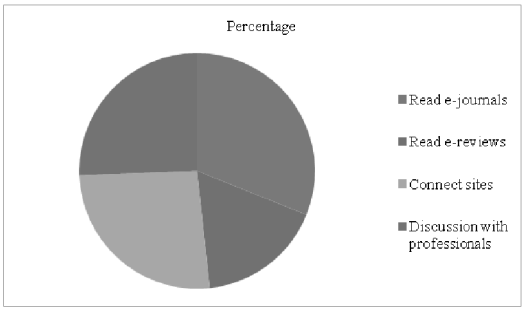

Figure 4. Methods of gathering up-to-date information

The studies by Baer (2005), Egberongbe (2011) and Sethi (2012) showed that a majority of the research scholars preferred to use e-journals/e-resources followed by e-mail and WWW to keep themselves up to date.

Hours spent for gathering information per week

Table 7. Hours spent for gathering information per week

Hours	No. of responses	Percentage
1-10 hours	06	08.8
11-20 hours	24	35.2
21-30 hours	28	41.1
31-40 hours	05	07.3
>40 hours	05	07.3
Total	68	100.0

Table 7 reveals that most of the researchers (41.1%) spend 21-30 hours per week for gathering information followed by 35.2% who spend 11-12 hours.

In contrast to the above findings Singh & Rani (2013)'s study showed that most of the faculty members (37.64%) spent 6 to 10 hours per week for gathering information.

Methods to know about journal articles

Table 8. Methods to know about journal articles

Methods	No. of responses	Percentage
Citations given at the end of articles	48	70.5
Browsing through old volumes	53	77.9
Personal conversation	43	63.2
Retrospective search for indexes/abstracting tools	40	58.8
Others	02	02.9

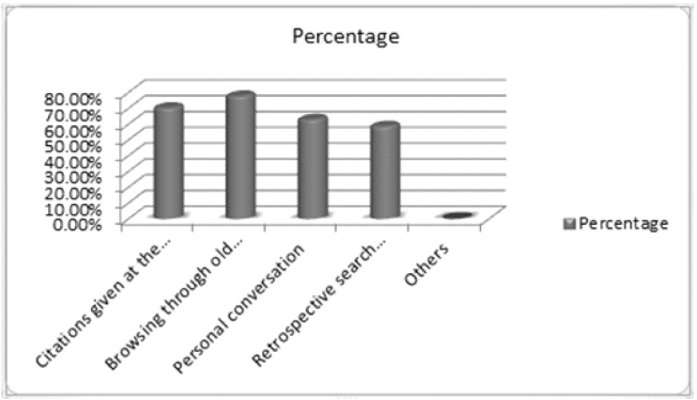

Figure 5. Methods to know about journal articles

Table 8 and Figure 5 provide information about preferred methods to know about journal articles. 'Browsing through old volumes' (77.9%) is the most preferred way to search an article followed by 'citations given at the end of articles' (70.5%), 'personal conversation' (63.2%) and retrospective search for indexes/ abstracting tools' (58.8%). Two researchers have also indicated that they search articles through search engines. Davis's study of 2004 also revealed that scientists depended on citations to find relevant literature.

Methods to acquire journal articles

Table 9. Methods to acquire journal articles

Methods	No. of responses	Percentage
Library subscription to online journals	61	89.7
Library subscription to print journals	56	82.3
Personal subscription to online journals	27	39.7
Personal subscription to print journals	25	36.7
Interlibrary loan	09	13.2
Request to author	16	23.5
Others	01	01.4

Table 9 shows preferred methods to acquire journal articles by the research scholars. The most preferred method is 'library subscription to online journals' (89.7%), followed by 'library subscription to print journals' (82.3%). Some of the researchers also acquire journal articles through personal subscription to online and print journals (39.7% and 36.7% respectively). Some of the researchers (23.5%) also request the author to get the articles.

Preferred format to read journal articles

Table 10. Preferred format to read journal articles

Format	No. of responses	Percentage
Print	22	32.3
Electronic	02	02.9
Both	44	64.7
Total	68	100.0

Table 10 reveals that a majority of the researchers (64.7%) prefer to read journal articles in both the formats print as well as electronic followed by print format only (32.3).

The present study shows an increase of 18% in the percentage of those who prefer to use journals in both the formats. While Khan (2012)'s study put it 46.67%, the present study puts it at 64.7%

Factors responsible for publication of articles

Table 11. Factors responsible for publication of articles

Factors	No. of responses	Percentage
Reputed journal in the field	65	95.5
Speed/frequency of publication	34	50.0
Charges for articles	25	36.7
Editorial board	17	25.0
Distribution	15	22.05
Impact factor	26	38.2

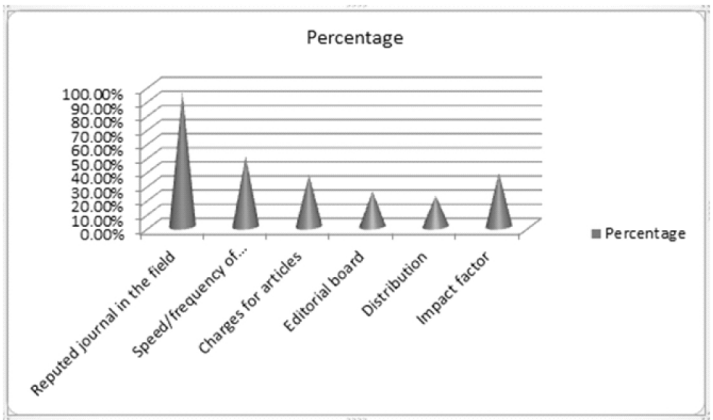

Figure 6. Factors responsible for publication of articles

Table 11 and Figure 6 provide information about the factors which determine the choice of journals for publishing articles. The highest preference is given to 'reputed journal in the field' (95.5%) followed by 'speed/frequency of publication' (50.0%), 'impact factor' (38.2%), 'charges for articles (36.7%), 'editorial board' (25.0%) and 'distribution' (22.05%).

Use of e-resources and e-services provided by the library

Table 12. Use of e–resources and e-services provided by the library

Use e-resources and e-services	No. of responses	Percentage
Yes	68	100
No	-	-

Table 12 reveals that all the respondents make use of e-resources and e-services of the library.

Impact of e-resources and e-services on information gathering habits and library's visits

Table 12.1. Impact of e-resources and e-services

Impact	Affected information gathering habits		Affected visits to the library	
	No. of responses	Percentage	No. of responses	Percentage
Substantially	38	55.8	31	45.5
Moderately	25	36.7	28	41.2
Not at all	05	7.5	09	13.2
Total	68	100.0	68	100.0

Table 12.1 shows that use of e-resources and e-services have affected substantially the scholars' information gathering habits and visits to the library. Their visits to the library have decreased.

Jamali & Nicholas (2006)'s study also showed identical results. The study revealed that Ph. D students highly relied on electronic journals and used libraries less.

Impact of e-resources and e-services on the use of information for research

Table 12.2. Impact of e-resources and e-services on the use of information for research

Use of information for research has become	No. of responses	Percentage
Easy	64	94.1
Difficult	04	05.9
More difficult	-	-
Total	68	100.0

Table 12.2 shows that 94.1% of the researchers find that due to e-resources and e-services, use of information for research has become 'easy'. Only 5.9% of the scholars think that these have made use of information 'difficult'.

Information-seeking practices relevant to research

Table 13. Information-seeking practices relevant to research

Information seeking practices	No. of responses	Percentage
Reading e-mail alerts	38	55.8
Discussion forums	17	25.0
Reading online books	54	79.4
Searching electronic databases	42	61.7
Scanning bibliographies and citations	24	35.2
Browsing online library catalogues	25	36.7
Accessing multimedia information	24	35.2

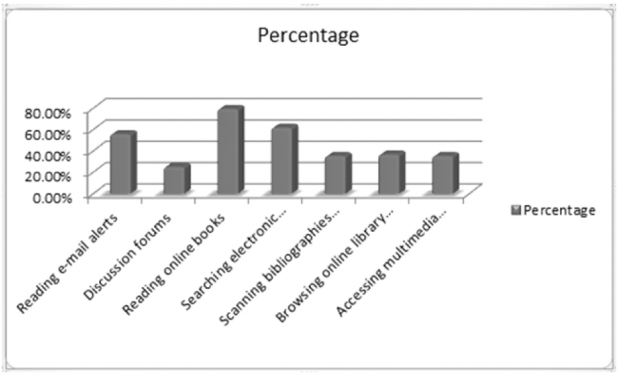

Figure 7. Information-seeking practices relevant to research

Table 13 and Figure 7 depict information seeking practices relevant to research. 'Reading online books' is the most frequently used practice for research (79.4%), followed by 'searching electronic databases' (61.7%), 'reading e-mail alerts' (55.8%), 'browsing online library catalogues' (36.7%), 'scanning bibliographies and citations' (35.2%),' accessing multimedia information' (35.2%) and discussion forums (25.0%).

Reasons to use e-resources and e-services

Table 14. Reasons to use e-resources and e-services

Reasons	No. of responses	Percentage
Convenience	63	92.6
Timeliness	52	76.4
Remote access	48	70.5
Multi-user access	40	58.8
Currency of information	51	75.0
Available from desktop	45	66.1
Easy/faster access	53	77.9
Others	01	01.4

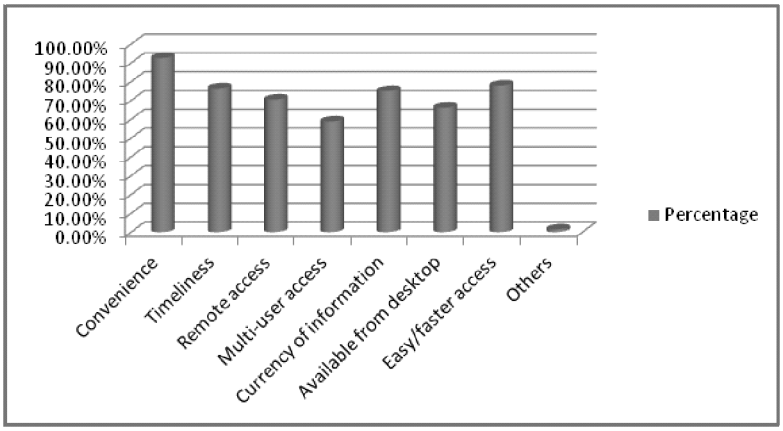

Figure 8. Reasons to use e-resources and e-services

Table 14 and Figure 8 provide the reasons for using e-resources and e-services. The researchers mark 'convenience' as the most important reason (92.6%) followed by 'easy/ faster access' (77.9%), 'timeliness' (76.4%),'currency of information' (75.0%), remote access' (70.5%), available from desktop' (66.1%), and 'multi-user access' (58.8%).

Problems faced while using e-resources for gathering information

Table 15. Problems faced while using e-resources for gathering information

Problems	No. of responses	Percentage
Lack of technical skills	41	60.2
Too much information is retrieved	34	50.0
Lack of IT knowledge to utilize the services effectively	17	25.0
Time consuming	25	36.7
Limited access to computers	23	33.8
Using e-resources often distracts from doing work	12	17.6
Library staff is non- cooperative	09	13.2
Slow network	46	67.6
Potential inhibition to use the new techniques	10	14.7

Table 15 provides information about the problems faced by the researchers while using e-resources. 67.6% of the scholars cite 'slow network' as the major problem followed by lack of technical skills' (60.2%), 'too much information is retrieved' (50.0%), 'time consuming' (36.7%), 'limited access to computers' (33.8%), 'lack of IT knowledge to utilize the services effectively' (25.0%), 'using e-resources often distracts from doing work' (17.6%), 'potential inhibition to use the new techniques' (14.7%) and 'library staff is non- cooperative' (13.2%).

Access to literature

Table 16. Access to literature

Access	No. of responses	Percentage
Always fast	15	22.1
Sometime fast	53	77.9
Never fast	-	-
Total	68	100.0

Table 16 reveals that a majority of the researchers (79.9%) think that with the use of e-resources and e-services access to literature is 'somewhat fast'. Only 22.1% think that it is always fast.

Meeting information needs

Table 17. Meeting information needs

Meet information needs	No. of responses	Percentage
Excellent	04	05.8
Very good	21	30.8
Good	39	57.3
Fair	04	05.8
Poor	-	-
Total	68	100.0

Table 17 depicts that a majority of the respondents (88.1%) find that e-resources and e-services meet their information needs in a good or very good way.

Adequacy of library e-resources and e-services

Table 18. Adequacy of library e-resources and e-services

Adequacy	No. of responses	Percentage
Very adequate	15	22.1
Somewhat adequate	48	70.5
Inadequate	05	07.3
Total	68	100.0

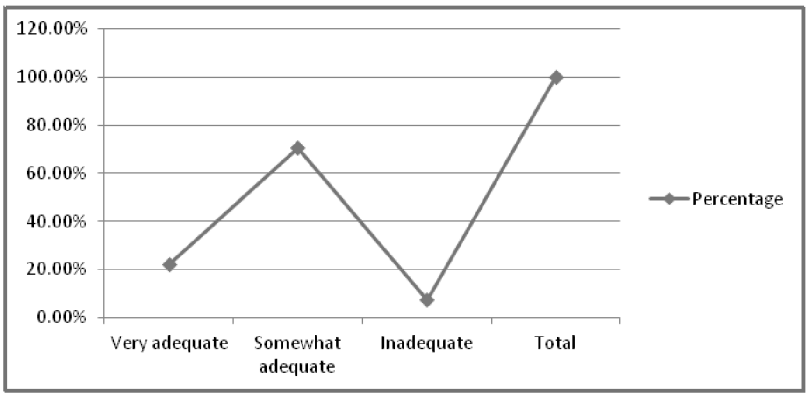

Figure 9. Adequacy of library e-resources and e-services

Table 18 and Figure 9 show that a majority of the respondents (70.5%) consider library e-resources and e-services somewhat adequate. Only 22% regard these very adequate and 7.3% as inadequate.

Comments by the respondents

The following suggestions are put forth by the researchers to improve e-resources and e-services of the library:

- Some computers should be reserved for research scholars only.
- Some sites providing useful data/articles not accessible at present should be made accessible.
- A dedicated person must be in the Internet Lab to guide the researchers.
- No of computers/terminals should be increased and these should be properly maintained.
- Library should subscribe more e-journals and databases especially in social sciences.
- Internet Lab should be in each department so that the researchers can access the e-resources easily without wasting their time.
- Internet speed should be increased.
- Library should be made e-library. Rare documents should be the priority.

Findings of the study

- A majority of the research scholars seek information to support their research activities followed by to keep their knowledge up to date.
- The most preferred formal sources for seeking information are 'journals', 'e-journals', 'books', 'internet sources', 'e-books', 'review articles', 'OPACs', 'theses/research reports', 'reference sources', 'databases', 'online databases' and 'bibliographies'.
- The most preferred informal sources for research is 'consulting supervisor' followed by 'communication with colleagues within the university' and 'attending conferences'.
- The most preferred methods of seeking information are 'follow up references' and 'follow hyperlinks'.
- A majority of the respondents read e-journals to keep their knowledge up to date followed by websites.
- Most of the respondents spend 21-30 hours per week for gathering information for research.
- A majority of the respondents acquire journal articles through library subscription to online and print journals.
- A majority of the respondents prefer to read articles in both formats i.e. print as well as electronic.
- A majority of the respondents give preference to reputed journal in the field for publication of articles.
- The use of e-resources and e-services affected substantially the scholars' information gathering habits and visits to the library.
- Reading online books is the most important practice to seek information followed by searching electronic databases.
- A majority of the respondents consider 'convenience' as the most important

reason for using electronic resources and services followed by 'easy/faster access'.

- The major problem faced by the researchers while using e-resources is that of slow network speed.
- A majority of the respondents find access to literature search with the use of e-resources and e-services 'sometimes fast'.
- A majority of the respondents find performance of e-resources and e-services either good or very good in meeting their information needs.
- A majority of the respondents consider e-resources or e-services of the library 'somewhat adequate'.

Suggestions

Based on the findings, the following suggestions are put forth to make the use of e-resources and e- services more effective:

- E-resources and e-services should be strengthened to meet information needs of the research scholars.
- Number of e-journals should be increased as per requirements of the users and not as available through consortia.
- Bandwidth should be increased to ensure faster access and to solve the problem of slow access speed.
- For the optimum use of e-resources and e-services, the library should organize regular training programmes for the users.
- The library web page should be one stop point for the users for accessing various e-resources.
- All the departments should be connected with the main server to enable scholars to access e- resources from their desktops.
- Feedback from the scholars should be taken regularly to determine their information needs.

Conclusion

The study reveals that research scholars seek information mainly for research work and they require e- journals to keep their knowledge up to date. For current and timely information, they rely on electronic resources rather than on printed resources. They prefer to use e-resources due to convenience, faster and easy access. The library should strengthen e-resources and e-services to meet the information needs of the researchers effectively.

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