International Journal of Research in Library Science
ISSN: 2455-104X
Volume1,**Issue** 1 (January-June),**2015**

Information Seeking Behavior of Palaeobotanists

AKANKSHA TRIPATHI[1]; SWADESH SHARMA [2]; GARIMA BISARIA[3]

Library Assistant,Central Library, Shiv Nadar University, Greater Noida[1];

MLISc, NET, LLPM, Alambagh, Lucknow[3]

aakankshatripathi1@gmail.com[1];

swadeshsharma13@gmail.com [2];

garimabisaria2000@yahoo.co.in [3]

ABSTRACT

User study means to learn about of the users. It is very necessary for a librarian and information professional to know about the user's pattern of literature use. A proper and systematic user study aims at collecting all the pertinent data concerning the users with the objective of building an efficient information system. The information seeking behavior of scientists and researchers is not very different from each other. But in some areas scientists' and researchers' information seeking behavior is little bit different. The reason could be based on some different factors as their knowledge, their information needs, use of information products, experience, generation gap, availability and portability of resources, their position and status in the organization, accessibility of information products, knowledge of using and managing electronic resources and information products. As from this study it is very clear that scientists & researchers preferred electronic and online information products as e-journals and online journals more compared to print sources. Some prefer print material because there is no need of some special equipment like computer, electricity etc.

Keywords:Information Seeking, Browsing, BSIP Library, Services, User, Information need, Paleobotanist, Information Resources.

1. INTRODUCTION

Information is a critical resource in the operation and management of organizations. Use of information has recently emerged as a subject. From the ancient time to the present day, information has always been an essential part of growth and development, in each and every field. There is a universal assumption that man was born innocent or ignorant and should actively seek knowledge. Information Seeking Behavior is a broad term encompassing the ways individual articulate their information needs, seek, evaluate select and use information. Information seeking is the process or activity of attempting to obtain information in both human and technological contexts. Information seeking behavior is thus a natural and necessary mechanism of human existence.

Information seeking has been found to be linked to a variety of interpersonal communication behaviors beyond question-asking, to include strategies such as candidate answers. An *information need* is "a recognition that [one's] knowledge is inadequate to satisfy a goal." It describes "how people need, seek, manage, give and use information in different contexts." Information seeking is the process or activity of attempting to obtain information in both human and technological contexts.

According to Meho, Lokman I. and Helen R. Tibbo, "Information seeking is conscious effort to acquire information in response to a need or gap in your knowledge." Information seeking behavior means the way users seek information, the way they go about finding it and the way they use it. Information seeking is a fluid and situation dependent activity where a seeker's actions are influenced by access to information, perceived quality and trust in the information source.

In fact the information seeking behavior is the totality of users' information seeking behavior involves a set of actions that a user takes to express information needs, seek information, evaluate and select information and finally uses this information to satisfy their information needs.

According to Wilson a general model of information behavior needs to include at least the following three elements:

- "an information need and its drivers, i.e., the factors that give rice to an individual's perception of need;
- the factors that affect the individual's response to the perception of need; and
- The processes or actions involved in that response."

Objectives of the Study

1. To study about the information seeking behavior of scientists and research scholars in the Birbal Sahni Institute of Palaeobotany, Lucknow.
2. To point out the different sources they used to satisfy their information needs in research work.
3. To examine the information seeking strategies of the scientists and research scholars in the field of Palaeobotany.
4. To find out the present library services used by scientists and researchers and their satisfaction level.
5. To find out the effectiveness of information resources in the field of palaeobotany and the extent to which they meet the information requirement of scientists and research scholars of palaeobotany.
6. To study the factors responsible for information gathering.
7. To know the awareness level of library tools, services and techniques by scientists and research scholars.
8. To study the problems faced by users while seeking and use of information.

The "Birbal Sahni Institute of Palaeobotany" (BSIP)

The Birbal Sahni Institute of Palaeobotany, Lucknow; is a premier Research Organization dedicated to both basic and applied aspects of Palaeobotany. It is the only institute of Palaeobotany in the world which is fully dedicated to its specific field. The Palaeobotanical Society was founded through the dedicated efforts of Professor Birbal Sahni.

Basically it catered the educational field. This institute is most important from the educational point of view. The major research areas of Birbal Sahni Institute of Palaeobotany, Lucknow are:

- Pre-Gondwana
- Lower Gondwana
- Palaeozoic from abroad
- Mesozoic
- Cenozoic Quaternary

Aims and Objectives of Birbal Sahni Institute of Palaeobotany (BSIP)

An integration of plant and earth sciences in the pursuit of palaeobotanical researches is the primary aim of this organization. Researches on various broad topical aspects, applied and basic both, supported by state of the art instrumentation, computational technology, well-equipped laboratories with qualified experts give a true meaning to this Fusion-Science. Interaction through National and International collaborations and different research projects are operational to achieve the desired goals.

- To develop palaeobotany in all its botanical and geological aspects.
- To constantly update data for interaction with allied disciplines.
- To co-ordinate with other palaeobotanical and geological research centres in the areas of mutual interest, such as diversification of early life, exploration of fossil fuels, vegetational dynamics, climatic modelling, conservation of forests, and
- To disseminate palaeobotanical knowledge in universities, educational institutions and other organisations.

BSIP Library

- The library of BSIP is currently receiving 173 journals (103 through subscription and 70 through exchange).
- There are 174 registered card holders using the library facilities.
- The entire literature of the library is in Libsys software. Activities like circulation, cataloging, serials control, binding etc are carried out through this software. The holdings are accessible by a computerized on-line catalogue.
- Efforts are being made so that the OPAC is web enabled and accessible over the Internet.
- Library has subscribed for full text scientific database "Science Direct". Online access to this database has been provided through the Institute's LAN.
- Through this facility 21 Elsevier journals from 1995 onwards are available to the users (within the campus).
- Library is providing Current Awareness Service to keep the users update, Lamination and Xeroxing to preserve the old and rare literatures, Inter-Library Loan Service is provided to users on request.

METHODOLOGY & SCOPE

Librarian and library-staff have to know and examine the criteria of information seeking and information used by users for providing information services, designing new information systems, intervening in the operation of existing systems, or planning in service programs.

To know the information seeking behavior of palaeobotanists Birbal Sahni Institute, Lucknow has been selected to conduct the study. On for the purpose of the study 70 scientists and 20 research scholars associated with the institute have been taken. A structured questionnaire is developed for the purpose of data collection & administered personally. 70 scientists and 20 research scholars of BSIP are taken. The questionnaire covered 15 basic areas namely user's characteristic such as age, level of education, field of specialization, strategies of seeking information, use of libraries/information centre & suggestion for improvement of existing information sources. Thus collected data have been analyzed using different statistical procedures.

Analysis and Findings

A structured questionnaire was developed for the purpose of data collection and distributed personally among the scientists and researchers in the Birbal Sahni Institute of Palaeobotany, Lucknow. Ninety questionnaires were distributed among 70 scientists and 20 researchers, out of which 70 questionnaires were received back with the response rate of 77.77%. In which the response rate of researchers was 100% and of scientists was 71.42%.

After analyzing the collected data the results which are found are given below in different tables. 3 point and 5 point scale have been used to get the weighted values and rank order.

The collected data have been analyzed using the 2003 version of MS-Excel for graphical presentation and appropriate statistical procedures for the description.

According to responses nearly every one of the scientists (94%) are Ph.D. holders and rest are just P.G. (6%). And 90% researchers are Post Graduate and rest 5% are Graduate and other 5% have done M.Phil.

Findings & Discussion

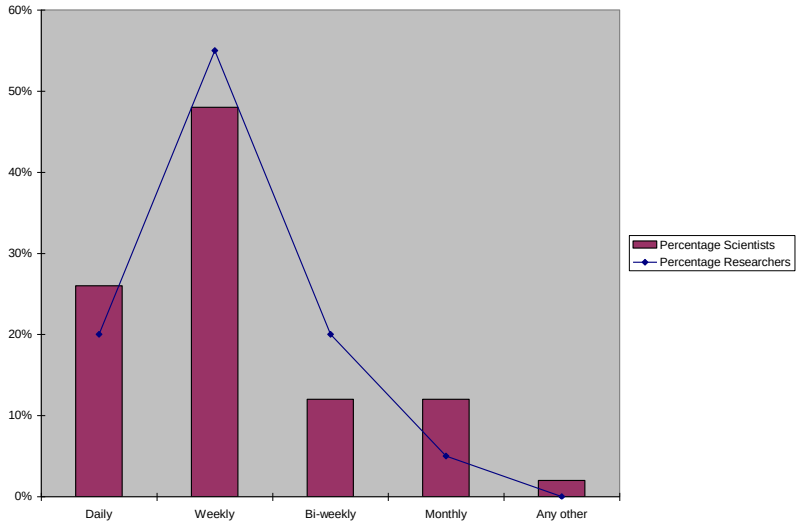
1. Frequency of visiting the library-

Table-1

S. No.	Frequency	No. of Responses		Percentage	
		Scientists	Researchers	Scientists	Researchers
1	Daily	13	04	26%	20%
2	Weekly	24	11	48%	55%
3	Bi-weekly	06	04	12%	20%
4	Monthly	06	01	12%	5%
5	Any other	01	NIL	2%	0%
	Total	50	20	100%	100%

From above table it is clear that maximum no. of scientists i.e. 24(48%) visit library weekly. Followed by 13(26%) of them visiting daily and some of them visits bi-weekly and monthly i.e. 6(12%). This shows that most of the scientists prefer to visit library weekly to keep themselves update so that every week they can view the display of new arrivals.

The researchers' data shows that maximum no. of researchers visit the library weekly i.e. 11(55%). Followed by daily and bi-weekly visits i.e. 4(20%) of the whole to keep themselves update.



Above chart is showing it very clearly in which line is showing the responses of researchers and bars are showing scientists' responses.

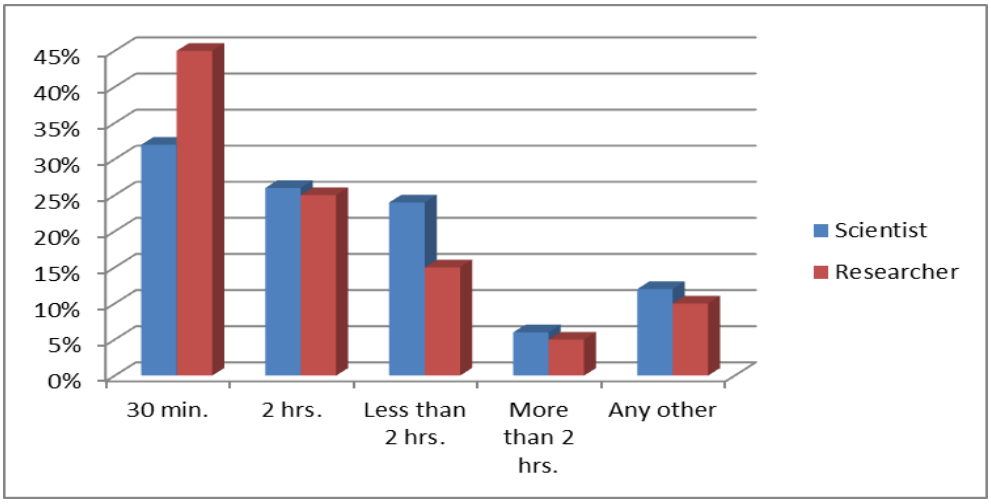
2. The time spent in library for browsing information-

Table-2

S. No.	Time	No. of Responses		Percentage	
		Scientist	Researcher	Scientist	Researcher
1	30 min.	16	09	32%	45%
2	2 hrs.	13	05	26%	25%
3	Less than 2 hrs.	12	03	24%	15%
4	More than 2 hrs.	03	01	06%	5%
5	Any other	06	02	12%	10%
	Total	50	20	100%	100%

Thus, the above table shows that most of the scientists i.e. 16(32%) spend 30 minute for browsing the information in library, followed by 2 hrs. 13(26%), and a little bit difference in less than 2 hrs. with 12 (24%) scientists spend less than 2 hrs. in the library. Few scientists spend more than 2 hrs. in browsing library.

Most of the researchers 9(45%) also spend 30 min. for browsing their information in the library, followed by 2 hrs. 5(25%) researchers.



3. Time spent on reading journal articles-

According to responses most of the scientists 18(36%) and researchers 18(90%) spend 2 hours weekly on reading journal article followed by 3-5 hrs. weekly with 10% response rate of both scientists(5) and researchers(2).

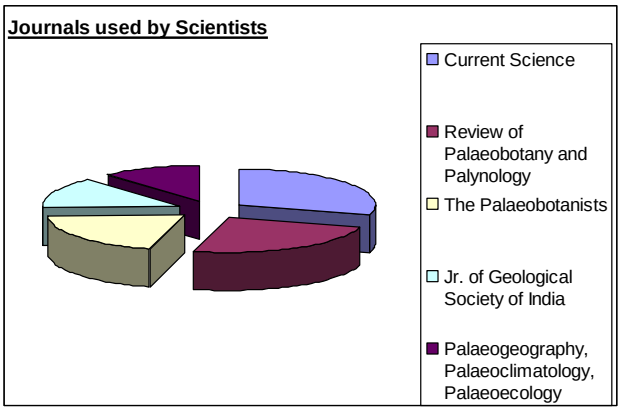
4. Five journals which are used to stay current in the field-

(i) By Scientists

Table-3.1

S. no.	Name of Journal	No. of Responses
1	Current Science	28(56%)
2	Review of Palaeobotany and Palynology	23(46%)
3	The Palaeobotanists	19(38%)
4	Jr. of Geological Society of India	13(26%)
5	Palaeogeography, Palaeoclimatology, Palaeoecology / Quaternary Research	11(22%)

Thus, according to above Table-3.1 it's very clear that Current Science is most useful journal for the scientists of Birbal Sahni Institute of Palaeobotany because among 50 scientists, 28(56%) scientists are using it, followed by Review of Palaeobotany and Palynology 23(46%), The palaeobotanists 19(38%) have been used by the scientists, followed by Journal of Geological Society of India is used by 13(26%) of the scientists. and the last ranking has been held by Palaeogeography, Palaeoclimatology, Palaeoecology i.e. P3 in short 11(22%) and Quaternary Research 11(22%) are at par.

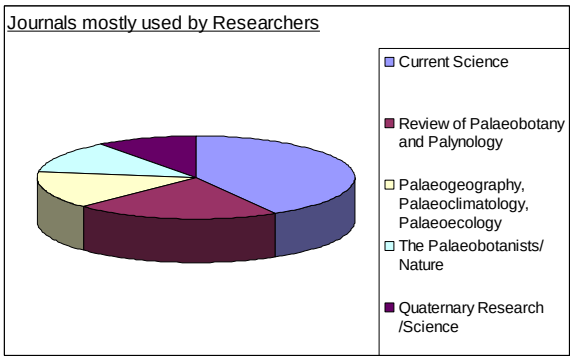


(ii) By Researchers

Table-3.2

S. no.	Name of Journal	No. of Responses
1	Current Science	20(100%)
2	Review of Palaeobotany and Palynology	10(50%)
3	Palaeogeography, Palaeoclimatology, Palaeoecology	07(35%)
4	The Palaeobotanists/ Nature	06(30%)
5	Quaternary Research /Science	05(25%)

Although the first two popular journals with the researchers are Current Science and Review of Palaeobotany and Palynology with 20(100%) and 10(50%) of the responses given by researcher, followed by Palaeogeography, Palaeoclimatology, Palaeoecology i.e. P3 in short 07(35%), The palaeobotanists and Nature at par with 6(30%) users, and Quaternary Research and Science are also used at same level with 5(25%) response.



5. Preference for Source of Information

Table-4

Source of information	Rank-1		Rank-2		Rank-3	
	S	R	S	R	S	R
Visit library/Information centre	42 (84%)	15 (75%)	08 (16%)	05 (25%)	NIL	NIL
Consult review article in a periodical	30 (60%)	03 (15%)	14 (28%)	10 (50%)	06 (12%)	07 (35%)
Discussion with colleagues within the organization	12 (24%)	09 (45%)	20 (40%)	08 (40%)	18 (36%)	03 (15%)
Consult indexing journal	09 (18%)	04 (20%)	16 (32%)	03 (15%)	25 (50%)	13 (65%)
Discussion with experts in the field	24 (48%)	08 (40%)	18 (36%)	11 (55%)	08 (16%)	01 (5%)
Consult bibliography	20 (40%)	03 (15%)	12 (24%)	11 (55%)	18 (36%)	06 (30%)

ISSN: 2455-104X
Volume1,**Issue** 1 (January-June),**2015**

Discussion with librarian/Reference staff of your library	08 (16%)	10 (50%)	18 (36%)	07 (35%)	24 (48%)	03 (15%)
Consult library catalogue	12 (24%)	10 (50%)	29 (58%)	02 (10%)	09 (18%)	08 (40%)
Discussion with supervisor	14 (28%)	14 (70%)	09 (18%)	05 (25%)	27 (54%)	01 (5%)
Consult indexing and abstracting journals	13 (26%)	09 (45%)	26 (52%)	06 (30%)	11 (22%)	05 (25%)
Publishers catalogue	09 (18%)	NIL	23 (46%)	06 (30%)	18 (36%)	14 (70%)
Discussion with colleagues elsewhere	11 (22%)	04 (20%)	23 (46%)	08 (40%)	16 (32%)	08 (40%)

Note: S=Scientist, R=researcher*Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

A number of possible sources of palaeobotanical information were recognized and well thought-out probably pertinent to palaeobotanists in meeting their information requirements. The first choice of palaeobotanists for information sources and their accessibility can be conceptualized in terms of information seeking strategies in which they first access the most preferred sources, subsequently other sources if the problem leftovers unsolved.

According to responses shown in above Table-4 it has been found that palaeobotanists expressed great dependence on their institutional library.

The library/information centre is the most preferred source with (84%) responses, followed by Consult review article in a periodical (60%) and Discussion with experts in the field (48%) responses of scientists for rank-1. These are three most useful sources preferred by scientists. The other sources are given in Table-4 as their preference.

And for researchers library/information centre is again the most preferred source with (75%) responses, followed by Discussion with supervisor (70%) and Discussion with librarian/Reference staff of library (50%) and Consult library catalogue (50%) responses alike. The other sources preferred by researchers are given in Table-4 according to their preference.

6. Extend of dependence on different modes for collection of information

Table-5.1: Responses of scientists

Sources	**Extent of Dependence**						
	Solely	**Most of time**	**Often**	**To some extent**	**Not at all**	**Weighted index**	**Rank**
Own efforts	19	21	08	02	NIL	4.14	1
Library Staff	NIL	02	13	32	03	2.28	2
Colleagues	02	03	11	20	14	2.18	3

ISSN: 2455-104X
Volume1,**Issue** 1 (January-June),**2015**

Librarian	NIL	02	05	27	16	1.86	4
Supervisor	NIL	02	12	12	24	1.84	5
Part-time research assistant	NIL	NIL	NIL	15	35	1.7	6
Full-time research assistant	NIL	04	03	10	33	1.56	7

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

Table-5.1 and 5.2 indicates the decreasing rank order of information seeking on five point scale.

The responses collected from the scientists indicates that they depend on their own efforts which is ranked-1, Library Staff ranked-2, Colleagues ranked-3, Librarian ranked-4, Supervisor ranked-5, Part-time research assistant ranked-6, Full-time research assistant ranked-7.

Table-5.2 Responses of Researchers

Sources	Extent of Dependence					Weighted index	Rank
	Solely	Most of time	Often	To some extent	Not at all		
Own efforts	03	15	01	01	NIL	4	1
Colleagues	04	02	08	05	01	3.15	2
Supervisor	01	08	04	06	01	3.1	3
Library Staff	NIL	02	10	06	02	2.6	4
Librarian	01	01	04	03	11	1.9	5
Full-time research assistant	01	01	04	01	13	1.8	6
Part-time research assistant	NIL	01	02	04	13	1.55	7

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some

Extent=2, not at all=1.

Similarly for the same question Researchers also given rank 1 to own efforts followed by interaction with colleagues rank-2 which is informal method of receiving information, after that 3rd rank to supervisor.

Consistent with the responses shown in Table-5.1 and 5.2 it has been found that palaeobotanists depend maximum on their own efforts to collect the information.

7. Extend of dependence on sources for accessing information.

Table-6.1 Responses of scientists

Sources	**Extent of Dependence**					**Weighted index**	**Rank**
	Solely	**Most of the time**	**Often**	**To some extent**	**Not at all**		
Personal collection	16	29	02	03	NIL	4.16	1
Personal collection of colleagues	NIL	07	07	29	07	2.28	2
Personal collection of supervisor	NIL	07	05	13	25	1.88	3

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some

extent=2, not at all=1.

Table 6.1 and 6.2 reveals the extent of dependence on different sources for accessing information by palaeobotanists.

In the community of scientists it has been found that personal collection has received highest rank for this activity followed by personal collection of colleagues 2nd and personal collection of supervisor as 3rd rank.

Table-6.2 Responses of Researchers

Sources	Extent of Dependence					Weighted index	Rank
	Solely	Most of the time	Often	To some extent	Not at all		
Personal collection	06	11	03	NIL	NIL	4.15	1
Personal collection of supervisor	01	08	07	03	01	3.25	2
Personal collection of colleagues	NIL	01	05	11	03	2.2	3

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

And very in the same way researchers also depend maximum on their personal collection and it received rank-1, followed by personal collection of supervisor and personal collection of colleagues as 2nd and 3rd rank.

8. The information source which use for finding specific information

As we calculate the responses of scientists for specific information it has been found that journals are the major source with highest number of users ranked-1, followed by books, monographs etc. ranked-2 and Reference found while reading literature ranked-3. This is followed by 11 more sources which are shown in Table: 7.1. The source which is used minimum by scientists for the above purpose is abstracting periodicals. The reason for that could be that the awareness about the source is less than other sources.

Tabil-7.1 Responses of Scientists

Source of Information	**Source used for finding Information**					**Weighted index**	**Rank**
	Solely	**Most of the time**	**Often**	**To some extent**	**Not at all**		
Journals	02	17	NIL	01	NIL	4	1
Books, monographs etc.	01	11	07	01	NIL	3.6	2
Workshops, seminar and conference proceedings	03	10	01	05	01	3.45	3
Reference found while reading literature	NIL	11	06	02	01	3.35	4
Attending seminars, conferences and lectures etc.	NIL	06	10	02	02	3	5
Pre-prints/reprints directly from authors	02	01	10	04	03	2.75	6
Conversation with colleagues and experts	01	01	09	09	NIL	2.7	7
Abstracting Periodicals	NIL	05	06	04	05	2.55	8
Dissertations/theses	NIL	02	09	06	03	2.5	9
Library acquisition lists	NIL	06	03	05	06	2.45	10
Bibliographies/library catalogues	NIL	05	03	05	07	2.3	11
Technical/research reports	NIL	03	03	09	05	2.2	12
Indexing periodicals	NIL	03	04	05	08	2.1	13
Yearbooks/annual reviews, advances in etc.	NIL	03	03	06	08	2.05	14

Table-7.2 Responses of Researchers

Source of Information	**Source used for finding Information**					**Weighted index**	**Rank**
	Solely	**Most of the time**	**Often**	**To some extent**	**Not at all**		
Journals	20	25	15	NIL	NIL	4.9	1
Books, monographs etc.	06	18	22	04	NIL	3.52	2
Reference found while reading literature	04	23	15	06	02	3.42	3

ISSN: 2455-104X
Volume1,**Issue** 1 (January-June),**2015**

Attending seminars, conferences and lectures etc.	02	09	26	13	NIL	3	4
Pre-prints/reprints directly from authors	03	13	10	21	03	2.84	5
Workshops, seminar and conference proceedings	02	11	16	18	03	2.82	6
Conversation with colleagues and experts	NIL	10	14	22	04	2.6	7
Indexing periodicals	NIL	16	06	18	10	2.56	8
Bibliographies/library catalogues	02	07	11	23	07	2.48	9
Yearbooks/annual reviews, advances in etc.	NIL	05	18	22	05	2.46	10
Library acquisition lists	02	07	09	21	11	2.36	11
Technical/research reports	NIL	09	06	26	09	2.3	12
Dissertations/theses	03	04	09	18	16	2.2	13
Abstracting Periodicals	NIL	06	05	30	09	2.16	14

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

The responses of researchers shows that among the sources used for finding information the weighted index of journal is 4 and ranked 1 amongst the other sources have been found the most reliable source followed by books and monographs with 3.6 weighted index has been ranked 2nd . Information found from workshops, seminars and conference proceedings has been ranked 3rd, followed by rank-4 obtained by references found while reading literature. This is also followed by 11 more sources given in the Table: 7.2 in which yearbooks/annual reviews, advances in etc. is the least used source for obtaining specific information. The reason for the minimum usage of this source could be that these sources provide information about past year and they have sources which gives current information.

9..Use of Information sources to keep themselves up-to-date

Table-8.1 Responses of scientists

Source of Information	**Source used for finding Information**					**Weighted Index**	**Rank**
	Solely	**Most of the time**	**Often**	**To some extent**	**Not at all**		
Journals	18	29	03	NIL	NIL	4.3	1
Books, monographs etc.	03	15	21	08	03	3.14	2
Attending seminars, conferences and lectures etc.	02	15	22	09	02	3.12	3
Reference found while reading literature	02	19	14	12	03	3.1	4
Yearbooks/annual reviews, advances etc.	02	11	19	14	04	2.86	5
Pre-prints/reprints directly from authors	02	07	22	12	07	2.7	6
Workshops, Seminar and conference proceedings	02	09	16	18	05	2.7	6
Research reports	02	06	22	10	10	2.6	7
Abstracting Periodicals	NIL	06	21	19	04	2.58	8
Conversation with colleagues and experts	03	05	21	18	03	2.58	8
Library acquisition lists	01	09	11	22	07	2.5	9
Indexing periodicals	02	03	17	19	09	2.4	10

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

After calculating the responses of scientists it has been reported that journals are the most valuable source of information to keep them up-to-date and it occupies the 1st rank, followed by books, monographs etc. rank-2 and Attending seminars, conferences and lectures etc. rank-3. Indexing periodicals is the source which is used in smallest amount by scientists. The reason is less awareness about the importance of source.

Some other sources which are used are given in the Table: 8.1 according to their ranking order.

Table-8.2 Responses of researchers

Source of Information	**Source used for finding Information**					**Weighted index**	**Rank**
	Solely	**Most of the time**	**Often**	**To some extent**	**Not at all**		
Attending seminars, conferences and lectures etc.	02	10	05	02	01	4.3	1
Journals	03	14	03	NIL	NIL	4	2
Workshops, Seminar and conference	01	10	05	03	01	3.35	3

proceedings							
Books, monographs etc.	03	09	04	07	NIL	3.1	4
Reference found while reading literature	NIL	08	03	08	01	2.9	5
Library acquisition lists	NIL	04	09	03	04	2.65	6
Abstracting Periodicals	01	03	04	06	06	2.35	7
Pre-prints/reprints directly from authors	NIL	01	08	07	04	2.3	8
Conversation with colleagues and experts	01	02	06	10	01	2.6	9
Research reports	NIL	04	02	08	06	2.2	10
Indexing periodicals	NIL	03	04	06	07	2.15	11
Yearbooks/annual reviews, advances etc.	01	03	01	07	08	2.1	12

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

If we compare the responses of both scientists and researchers it is very clear that the sources which are used by researcher are just a little bit different. As researcher mostly preferred attending seminars, conferences and lectures etc. to keep themselves up-to-date, followed by journals rank-2 and Workshops, Seminar and conference proceedings rank-3.

The least used source is Yearbooks/annual reviews, advances etc. the reason for the minimum use of this source is again because it is less up-to date.

The other sources are given in the Table: 8.2 according to rank allotted in descending order.

10 Which information sources are consulted for background information

Table-9.1 Responses of Scientists

Source of Information	**Source used for finding background information**					**Weighted Index**	**Rank**
	Solely	**Most of the time**	**Often**	**To some extent**	**Not at all**		
Journals	23	21	04	NIL	02	4.26	1
Books, monographs etc.	12	24	09	03	02	3.82	2
Online databases	08	24	07	07	04	3.5	3
Reference found while reading literature	01	20	12	15	02	3.06	4
Pre-prints/reprints directly from authors	02	13	23	08	04	3.02	5

Workshops, seminar and conference proceedings	NIL	09	20	21	NIL	2.76	6
Conversation with colleagues and experts	NIL	10	21	15	04	2.74	7
Yearbooks/annual reviews, advances in etc.	NIL	08	15	22	05	2.52	8
Attending seminars, conferences and lectures etc.	NIL	06	18	22	02	2.48	9
Technical/research reports	NIL	09	15	10	16	2.34	10
Library acquisition lists	01	04	10	30	05	2.32	11
Bibliographies/library catalogues	NIL	05	10	29	06	2.28	12
Dissertations/theses	01	03	10	29	07	2.24	13
CD-ROM	02	04	09	24	11	2.24	13
Indexing periodicals	NIL	03	07	30	10	2.06	14
Abstracting Periodicals	NIL	05	14	25	06	1.96	15

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

As the Table: 9.1 indicates that for scientists journals are the most useful source for background information and received rank-1, followed by Books, monographs etc. as rank-2 and online databases rank-3. It is followed by some other sources given in Table: 9.1 according to their ranking order. Abstracting Periodicals is the least useful source for scientists as it got 15th rank in ranking order. The reason is they have more advance online resources which can replace it.

Table-9.2 Responses of researchers

Source of Information	**Source used for finding Information**					**Weighted Index**	**Rank**
	Solely	Most of the time	Often	To some extent	Not at all		
Journals	03	12	04	NIL	01	3.8	1
Books, monographs etc.	01	10	05	04	NIL	3.4	2
Attending seminars, conferences and lectures etc.	01	07	07	05	02	3.3	3
Online databases	01	05	11	NIL	04	3.1	4
Workshops, seminar and conference proceedings	NIL	08	06	04	02	3	5

Reference found while reading literature	NIL	05	09	05	01	2.9	6
Bibliographies/library catalogues	NIL	04	11	04	01	2.9	6
Conversation with colleagues and experts	NIL	07	04	07	02	2.8	7
Dissertations/theses	NIL	04	11	01	04	2.75	8
Yearbooks/annual reviews, advances in etc.	NIL	05	04	09	02	2.6	9
Pre-prints/reprints directly from authors	NIL	02	11	03	04	2.55	10
Library acquisition lists	NIL	02	08	03	07	2.25	11
Abstracting Periodicals	NIL	05	04	07	04	2.5	12
Technical/research reports	NIL	01	05	09	05	2.1	13
CD-ROM	01	03	02	05	09	2.1	13

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

For researchers journals are again the most preferred source for background information same as of scientists and they gave it rank-1, followed by books, monographs etc. rank-2 again same as scientists, and attending seminars, conferences and lectures etc. rank-3. Other sources given in Table: 9.1 according to their ranking order. Indexing Periodicals is the least useful source for researcher as it got 14th rank in ranking order. The reason is they have online sources and some have not knowledge about use of this source.

If we compare Table: 9.1 and 9.2, it indicates that for both scientists and researchers journals are identified the most preferred source for background information and secondly they depend on books, monographs etc. Here for this purpose the needs of both for information are same

11. Problems which are faced while seeking information

Table: 10

	Scientist	Researcher
1) Material is not available	12(24%)	01(5%)
2) Library staff are unwilling for service	NIL	NIL
3) Incomplete information materials	NIL	NIL
4) Information sources are so far located	NIL	NIL
5) Lack of time	08(16%)	03(15%)
6) Do not know how to use the catalogue	04(8%)	01(%)

7) Lack of knowledge in using the library	NIL	NIL
8) Understanding of English language	NIL	NIL
9) Information scattered in too many sources	01(2%)	05(25%)
10) Information is too vast	05(10%)	01(5%)
11) Some of information materials are old	20(40%)	09(45%)
Total	100%	100%

From the above responses it is very clear that problem which is faced by scientists while seeking information is material available is old with 20(40%) response in this favor. After that the second problem is some times information material is not available within the library with 12(24%) response. And the third one is lack of time with 8(16%) response, followed by Information is too vast 5(10%), do not know how to use the catalogue 8% and Information scattered in too many sources 1(2%) response of scientists.

Researchers' major problem is very same as scientists and they also think with 9(45%) response that information materials are old is too vast and second problem is information is scattered in too many sources 5(25%). The third one is lack of time 3(15%), followed by information is too vast, material is not available, do not know how to use the catalogue with all have equally 1(5%) responses.

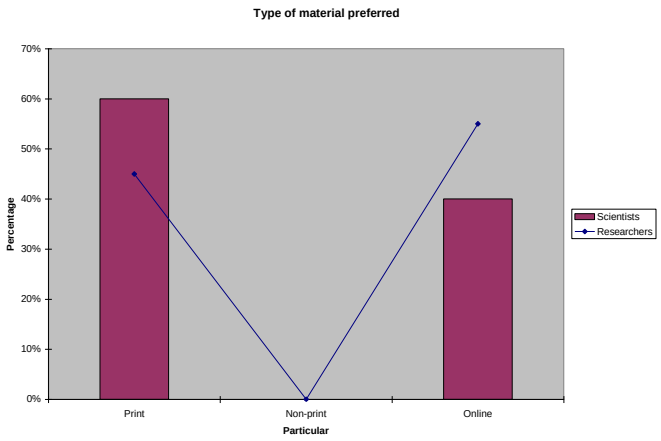
12. Type of material preferred

Table:11

Particular	Print	Non-print	Online
Scientists	30(60%)	NIL	20(40%)
Researchers	09(45%)	NIL	11(55%)

The results given in the table indicate that 30(60%) scientists prefer print material over online 20(40%).

And just opposite of the scientists results 11(55%) researchers preferred online material over print material with just 9 (45%) result for the question.



13. Reason to prefer the one source over other? (e.g. print over non-print)

Table: 12

Particular	Availability	Up-to-date	Portable
Scientists	30(60%)	13(26%)	7(14%)
Researchers	3(15%)	11(55%)	6(30%)

The reason to prefer print over online by scientist is availability of print resource with maximum 30 (60%) response rates. According to them they can use print sources wherever they want and these are portable also.

Researchers 11(55%), consider online sources maximum because these are up-to-date and 6(30%) because these are portable and 3(15%) because of availability.

14. Level of satisfaction from the print, non-print and online resources

Table 13.1 point out that print resource satisfied maximum 47(94%) number of scientists in comparison of non-print and online resources, as non-print got zero response and online got 32(64%) response.

Table: 13.1 Responses of scientists

Particular	High	Low	Moderate
Print resources	47(94%)	NIL	03(6%)
Non-print resources	NIL	34(68%)	16(32%)
Online resources	32(64%)	06(12%)	12(24%)

Table: 13.2 Responses of researchers

Particular	High	Low	Moderate
Print resources	15(75%)	NIL	05(25%)
Non-print resources	NIL	14(70%)	06(30%)
Online resources	15(75%)	NIL	05(25%)

For researcher online and print resources satisfied their need at highest rate of 15(75%) responses of both at high level, 5(25%) responses are calculated for both sources on moderate level and responses for non-print are 14(70%) on low level and 6(30%) moderate.

It is very clear that print and online resources are using equally by researchers and the satisfaction level is also same from both.

15. Difficulties in using the -:

(i) Print materials: are that sometimes pages are too much fragile and are of bad quality, secondly some times the condition of print material are too bad or brittle that can not handle easily, thirdly if more than one article has to search it seize a lot of space on reading table.

(ii) Non-print materials: the major hitch with these materials is availability of equipment as computer, electricity and sometimes compatibility of hardware and software. Secondly it gives stress on mind and eyes.

16. Use of offline databases

Table-14

Users	Yes	No
Scientists	9(18%)	41(82%)
Researchers	3(15%)	17(85%)

In offline database there are just two CD-ROM databases which are used by scientists and researchers one is Georef and the other is National Geographic.

17. Use of online database

Table:14

Users	Yes	No
Scientists	50(100%)	NIL
Researchers	20(100%)	NIL

Each and every scientist and researcher use online databases according to their information needs.

Table: 15.1 and 15.2 represents the most useful database for scientists and researchers respectively.

Table-15.1 Responses of Scientists

Online Databases	Databases used for finding Information					Weighted index	Rank
	Solely	Most of the time	Often	To some extent	Not at all		
Science Direct	15	23	08	02	02	3.94	1
Elsevier	12	25	07	03	03	3.8	2
Springer	02	26	15	01	06	3.34	3
J-CCC	03	10	06	05	26	2.18	4
John Wiley	01	06	08	17	18	2.1	5
Web of Science	01	06	10	08	25	2	6
ALPSP	NIL	01	10	07	32	1.6	7

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some extent=2, not at all=1.

According to Table: 15.1 scientists preferred Science Direct and it has got 1st rank after that Elsevier got 2nd and Springer 3rd followed by J-CCC, John Wiley, ALPSP, Web of Science with 4th, 5th , 6th , and 7th rank in that order.

ISSN: 2455-104X
Volume1,**Issue** 1 (January-June),**2015**

Table-15.2 Responses of Scientists

Online Databases	Databases used for finding Information					Weighted index	Rank
	Solely	Most of the time	Often	To some extent	Not at all		
Science Direct	03	16	01	NIL	NIL	4.1	1
Springer	02	11	03	02	02	3.45	2
Elsevier	02	11	03	01	03	3.4	3
J-CCC	01	05	04	03	07	2.5	4
John Wiley	NIL	03	02	04	11	1.85	5
Web of Science	NIL	02	03	03	12	1.75	6
ALPSP	NIL	01	NIL	03	16	1.3	7

Note: Weighted index is calculated on 5-point scale with weight assigned as follows: solely=5, most of time=4, often=3, to some

extent=2, not at all=1

And Table: 15.2 indicates Science Direct is the most useful online database also for researchers as well as of scientists and got again 1st rank, followed by Springer 2nd, Elsevier 3rd, J-CCC 4th , John Wiley 5th , Web of Science 6th and ALPSP 7th .

In this way it is very clear that Science Direct is the most useful online database for palaeobotanists and ALPSP is the least.

Findings, Suggestions and Conclusion

The study point outs that the palaeobotanists seek varied information for various purposes from varied sources for fulfilling their requirements. They use formal and informal channels also to solve their purpose.

Findings and Suggestions:

- Frequency of visiting the library by palaeobotanists is weekly because every week the new arrivals are placed. The suggestion for above is that the new arrivals placed some more days in week with the intention that palaeobotanists visit more.
- The average time spend in library for browsing information is 30 min. by palaeobotanists because they have lack of time and they are already busy in their research activities they just go through it and search when they needed it. The library timings should be increased if there is demand.
- Average Time spending on reading journal articles is 2 hours weekly it should try to increase by attracting the users by providing them new and interesting reading material related to their fields. A list should be displayed on notice board of library that what is new in the library related to their interest.
- Current Science is the journal which is used maximum to stay current in the field.
- Visit library/information centre is the most preferred source for palaeobotanists. They maximum depend on it so the library/information centre should provide them more facility with the intention that they can eliminate the problems which are facing currently.

- Palaeobotanists depend utmost on their own efforts for collection of information.
- Personal collection is the source on which palaeobotanists depends for accessing information.
- Journals are the most useful information source which use for finding specific information, to keep them up-to-date and for background information by palaeobotanists. Because these all provides current information to them. The journals in the library are sufficient and are available both in print and online. Journals' collection in the library is no doubt awesome.
- Problem which are faced while seeking information is that some of information materials are old. mainly books available in library are very outdated so there is a great need to maintain the book collection which will be helpful in new research activities.
- Type of material preferred by Scientists is print while Researchers Preferred online and e-products. The major reason which is responsible for that is generation gap. Most of the scientists are belonging to average 50 yrs. Age and researchers are belonging to new generation. They have much more knowledge about new technology and use of e-resources than scientists.
- Reason to prefer the print source by scientists is its availability. They can use it at their home also it is reduces the pressure on eyes which is caused by use of e-products. And researchers use online source because these are more up-to-date and can access easily than print. Searching in online source is much more easy than print.

Scientists' level of satisfaction from the print resources is maximum than non-print and online resources but researchers' responses for both print and online are similar it mean they use both resources according to their need and compatibility.

- Difficulties in using the print materials are the quality of pages are not good and the bad condition of print material. It should be maintain by library. They should laminate and scanned these type materials for users' so that they can remove these difficulties. Thirdly if more than one article has to search it seize a lot of space on reading table. And in non-print materials, the major hitch with these materials is availability of equipment as computer, electricity and sometimes compatibility of hardware and software. Secondly it gives stress on mind and eyes.
- Use of offline databases is very nominal by palaeobotanists. To increase the use of offline database it should needed to put them in a proper non-print shelf and make the users' aware about that because most of the users are not aware about that.
- Science Direct is the most useful online database for palaeobotanists.

Bibliography:

[1]. Alien, B. (1996) information tasks in "towards a user- centered approach to information system" Ed. By H. Borko. San Diego, New York: Academic press.

[2]. Annual Report 1973-1974 of Birbal Sahni Institute of Palaeobotany, Lucknow.

[3]. Busha, Charles H and Harter, Stephen H (1988). "Research Methods in Librarianship:Techniques and Interpretations". New York: Academic Press. In: MLIE-102, Block 1, Unit 1 course materials. New Delhi Indira Gandhi National Open Universaity.

[4]. Dervin, B. "An overview of sense-making research: concepts, methods and results to date". In International Communications Association Annual Meeting. 1983. Dallas, Texas.

[5]. Ellis, D., D. Cox, and K. Hall. "A comparison of the information seeking patterns of researchers in the physical and social sciences." Journal of Documentation. **49** (1993): 356-369.

[6]. Ellis, D. "A behavioural approach to information retrieval design." Journal of Documentation. **46** (1989): 318-338.

[7]. Encyclopaedia Britannica 2009 (CD-ROM)

[8]. Fatima, Nishat and Ahmad, Naved. "Infirmation seeking behaviour of the students of Ajmal Khan Tibbiya College, Aligarh Muslim University: a survey". Annals of Library and Information Studies. 55 (2008): 141-144.

[9]. Foster, A. E. (2005). A non-linear model of information seeking behaviour. Information Research, 10.2 paper 222. Available from: http://InformationR.net/ir/10-2/paper222.html

[10]. http://en.wikipedia.org/wiki/Information_seeking

[11]. http://informationr.net/tdw/publ/papers/1999JDoc.htmlWilson, T.D. (1999) "Models in information behaviour research" Journal of Documentation, **55**.3 (1999): 249-270 [Available at http://informationr.net/tdw/publ/papers/1999JDoc.html]

[12]. http://liswiki.org/wiki/Information_behavior_theories

[13]. http://srcweb.berkeley.edu/compAsstNew.html

[14]. http://www.answers.com/topic/unstructured-interview-1

[15]. http://www.bsip.res.in

[16]. http://www.freetutes.com/systemanalysis/sa4-interviews.html#unstructured-interview

[17]. http://www.merriamwebster.com/dictionary/hypothesis">hypothesiswww.wikipedia.com

[18]. http://www.merriamwebster.com/dictionary/hypothesis">hypothesiswww.wikipedia.com

[19]. http://www.public.asu.edu/~ifmls/artinculturalcontextsfolder/qualintermeth.html#qualitativeinterviewing

[20]. http://www.sehd.scot.nhs.uk/involvingpeople/methodologies/individualmethodologies/interviews.htm#semi

[21]. http://www.sehd.scot.nhs.uk/involvingpeople/methodologies/individualmethodologies/interviews.htm#structured

[22]. http://www.sehd.scot.nhs.uk/involvingpeople/methodologies/individualmethodologies/interviews.htm#semi

[23]. http://www.socialresearchmethods.net/kb/hypothes.php

[24]. Koganuramath, M.M., et.al, ed. (2008) "Library & information science profession in the knowledge society": Professor C.R. Karisiddapa Festschrift, New Delhi: allied publisher, p. 293-303.

[25]. Kothari, C.R. "Research methodology: methods & techniques". 2nd rev. Ed. New Delhi, Wishwa Prakashan, 1997, p.1

[26]. Kothari, C.R. (2004). "Research Methodology: Methods and techniques." 2nd rev. ed. New Delhi: New Age International (P) Ltd., Publishers. p. 7-8

[27]. Krishan Kumar (1992). "Research Methods in Library and Information Science". New Delhi: Har Anand Publications in association with Vikas Publishing House. Pp. 121-173. In: MLIE-102, Block 3, Unit 11 course materials. New Delhi Indira Gandhi National Open Universaity.

[28]. Kuhlthau, C.C., Inside the search process: information seeking from the user's perspective. Journal of the American Society for Information Science. 42 **(**1991): 361-371.

[29]. Kumar, P. S. G. (1998): "Fundamental of information science". New Delhi: S. Chand.

[30]. Mahawar, K.L., Verma, Shilpi and Saha, Chhaya. "Information Seeking Behaviour of the Geologists: A study in Geological Survey of India, Lucknow". IASLIC Bulletin 54.2 (2009): 103-113.

[31]. Meho, Lokman I. and Helen R. Tibbo. "Modeling the Information-Seeking Behaviour of Social Scientists: Ellis's study re visited." Journal of the American Society for Information Science & Technology. 54.6 (Apr. 2003): 569-586.

[32]. Mouly George J. "Educational research: The art & science of investigation". Boston: allyn & bacon, 1978, p.62.

[33]. Mukherjee, R.N. (2005) "Social research & statistics". Vivek prakashan, Delhi, p.239

[34]. Sharma, Chhaya. "Madam Savitri Sahni: (1902-1985)". Grana. 24 (1985): 569-586.

[35]. Singh, K.P. and Satija, M.P. "Infirmation seeking behaviour of agricultural Scientists with particular reference to their information seeking strategies". Annals of Library and Information Studies. 54 (2007): 213-220.

[36]. Wilson, T.D. "Models in information behaviour research." Journal of Documentation. 55.3 (1999): 249-270.

[37]. Wilson, T.D. "Human information behaviour." Informing Science. 3.2 (2000) 49-55.

Wilson, T.D. and Streatfield, D. R. "Structured observation in the investigation of information needs." Social Science Information Studies.1 (1981): 173-184.

