Use of Internet Resources by Marine Scientists in south India: A Study

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Abstract- Library resources are prevalent on the Internet, like e-formats such as e-books, e-journals, periodical indexes, reference sources and Indian Government documents are available by Telnet, Google, Yahoo, Rediff, World Wide Web and FTP etc., moderately few copyrighted library resources are available freely on the Internet. The main aim of this paper is to create awareness and usage of Internet resources for marine science scientists. Also highlights consistent growth of the frequency of usage various kinds of Internet resources and usefulness of their Internet information sources, search strategy, and ranking of internet search engines for ease of accessibility of the information through Internet.

Index Terms- Internet; Library resources; Marine Science Scientists; South India.

I. Introduction

The advent of the Internet, as some skeptics predicted, has not meant the end of libraries and traditional library resources. The library catalogues, books, journals, reference works, periodical indexes, and so forth, are all here, just available in somewhat different forms; and they are on the Internet in strikingly large numbers. In fact, the Internet has increased the vitality of and accessibility to library resources. The format-paper vs electronic are not important as the information contained by the sources and how useful and usable that resource is (Nancy L. Buchanan, 1995).

Internet is considered as a great information source to the academic and research groups and also a great information tool to the library and information centers to supplement their information support to the scientists/faculties.

II. Need for the Study

Internet facility has been operation in marine science research and development institute libraries in south India. The researcher conducted a survey "use of Internet information resources and services by marine scientists in south India". But this survey has been necessitated as the situation today has vitally changed. The internet browsing facility, establishment of internet, labs marine science research and development centers and originating vitally different types of information sources and services, types of information search engines.

This survey has particularly in necessitated in marine science research libraries to access benefits of internet.

III. Scope and Limitation of the Study

This research study is confined to the study of Internet resources and services with special reference to Marine scientists. Geographically it is bounded to the departments of Marine Science, Fisheries Colleges and Marine Science Research Institutions affiliated to Central Institute of Fisheries Education (CIFE) and Indian Council of Agricultural Research Institute (ICARI) Mumbai, India with special reference to South India. The study covers four states that include Karnataka, Andhra Pradesh, Tamil Nadu and Kerala.

IV. Objectives of the Study

The following are the major objectives of the present study:

1. To study in detail about Internet resources and facilities available in Marine Science Libraries.
2. To find out the most preferred access point for searching of Internet resources.
3. Determine the purpose and utilization of Internet resources by scientists.
4. To find out rank the importance of Internet resources.
5. To identify the user's satisfaction level of Internet resources.
6. To trace out the difficulties of Scientists in obtaining information by the Internet.
7. To suggest suitable measures to develop the collection of Internet resources.

V. Methodology

As the study is confined to the Marine Science Research Institutions/Universities/Fishery colleges affiliated to the Indian Council of Agriculture Research (ICAR), Central Institute of Fisheries Education (CIFE) and the Oceanographic Research Centers, Council of Scientific and Industrial Research (CSIR) Institutions in India, The questionnaire method has been adopted. Further primary and secondary sources also have been used to collect the necessary information.

The research schedule was designed in two phases; the first schedule meant for users comprising scientists, and the second schedule for librarians of marine science research institutes in south India**.**

5.1 Method of data collection

A structural questionnaire was developed for the purpose of data collection and distributed. Some are distributed personally, some are by post and some are through e-mail among the

marine scientists in the selected CSIR institutions. 373 questionnaires were distributed, out of which 239 questionnaires were received back with the response rate being 64%. The questionnaire covered five basic areas namely, users characteristics such as age, levels of education, field of specialization, institution affiliation and purpose of current research, strategies of seeking information, use of the libraries/information centers, and suggestions for the improvement of the existing information systems.

Table 6.1. Institution and Gender wise distribution of Respondents: Scientists

Table 6.2. Types of Information Sources Accessed on Internet: Scientists

VI. RESULTS AND DISCUSSION

6.1 Distribution of library users by Gender/Designation

To ascertain the use of e-resources by university faculties of marine sciences departments and marine science research institute scientists, fisheries sciences, data has been collected from different categories of scientists and faculties.

Table 6.1, figure 6.1 clearly show the institution wise and gender wise distribution of scientists. The sample population used in the present study contains more number of male scientists (68.2%) than female scientists (31.8%).

Internet carries a vast array of information resources and services, most notably the interlinked hypertext documents of the www. It has become the best source of information as there is nothing on which you cannot find any information by browsing Internet, whether about science, technology, mathematics, history, sociology, medicine, sports, music, jobs etc. So Internet is not just a source of information, it is the best source of information for any field of study and research. Therefore respondents were asked to mention the extent of use of different Internet resources. The tabulated data is given in Table 6.2, and Figure 6.2. It is found from Table 6.2 that a huge number of scientists accessed research articles (96.7%) and research reports (94.6%) with WA 1.03 and 1.09 respectively. These sources are followed by research abstracts (77.8%) and information on training/conferences/seminars (45.2%).

It may be summarized after looking at Table 6.2, that information sources on bibliographical information, career planning/ higher education, placement and job opportunities and software based information are less used information sources by scientists.

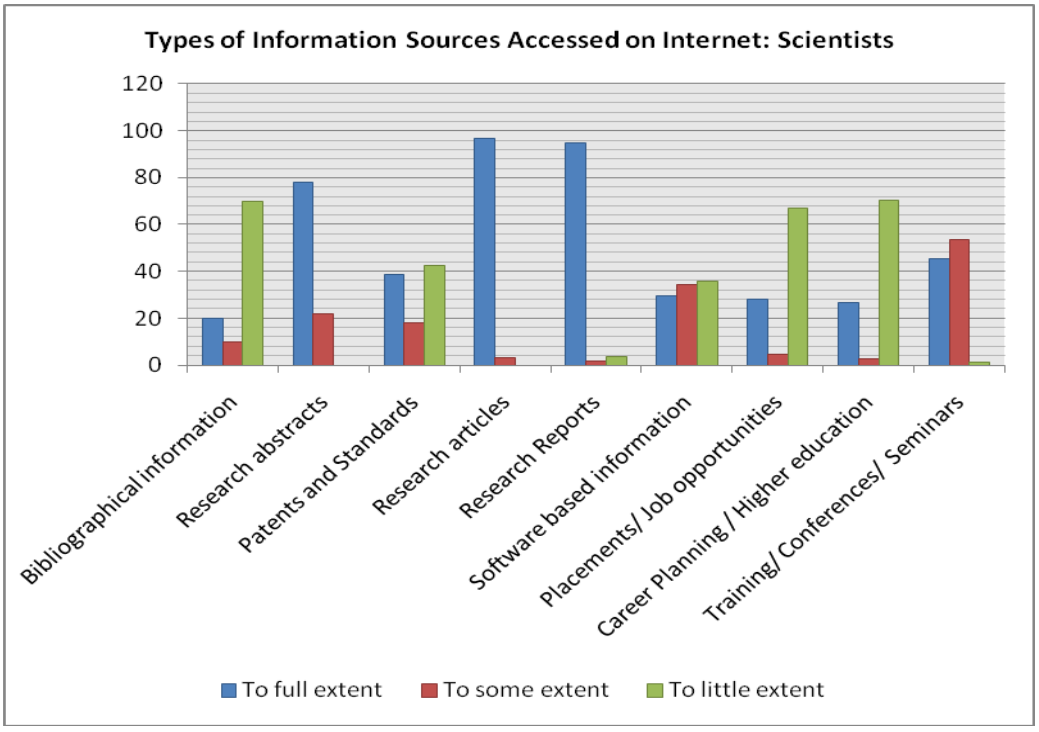

Fig. 6.2. Types of Information Sources Accessed on Internet

Table 6.3. Frequency of Use of Various Internet Services: Scientists

Internet is a wonderful source of information and it offers a verity of services. To elicit information, the respondents were asked to mention the frequency of use of Internet sources and services. Table-6.3, and figure 6.3, Data reveals that a large number of scientists used www (95%) and e-mail (69.9%) most frequently. Quite a good number of scientists also used discussion forum (47.3%) frequently and occasionally news groups (41.8%).

One can also observe from table-6.3 that a large number of respondents i.e. in the range of 60% to 90% never used freeware/shareware, Gopher, Telnet and FTP. The reasons for under utilization of these services would be either a need does not arise or lack of knowledge about these services. So the result of the study demands to bring awareness about these sources and services to exploit for their information need.

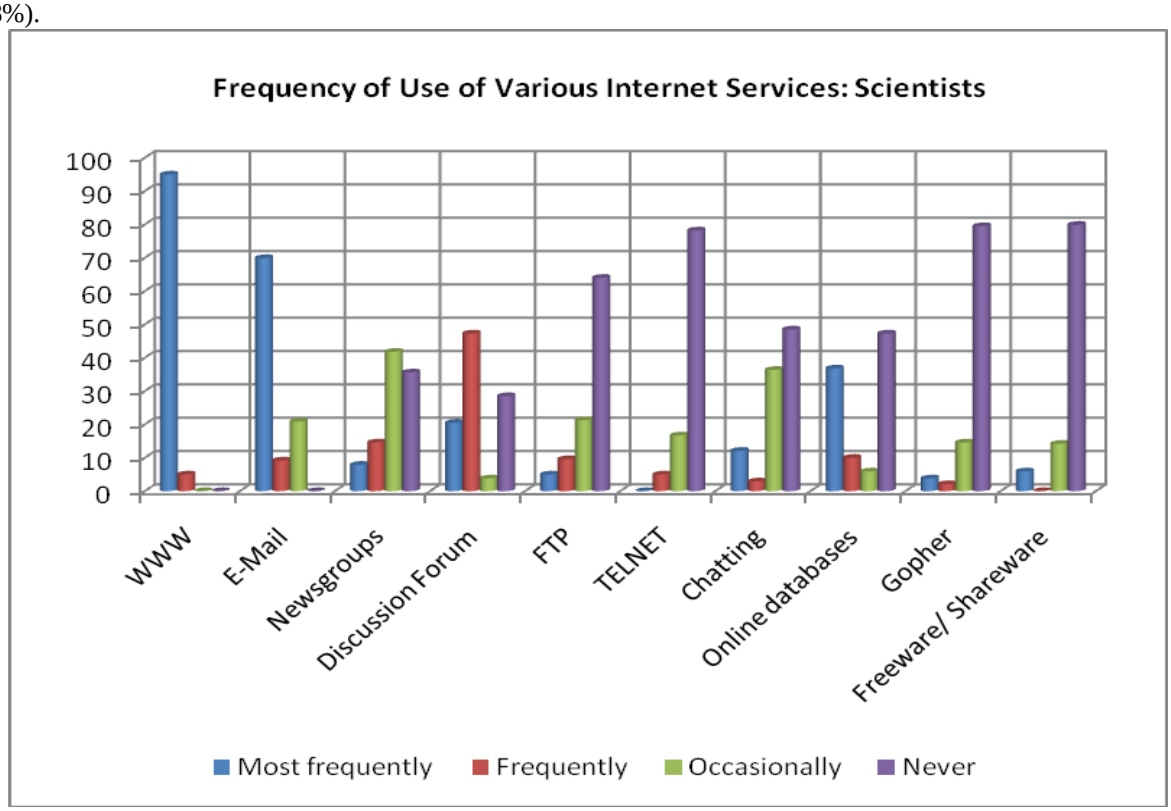

Fig. 6.3. Frequency of Use of Various Internet Services

Whereas Jagboro (2003), Ajuwon (2003), Honauer (2004) and Rajiv Kumar and Kaur. A's (2006) study reveals that e-mail is chosen as the most popular service and being used by nearly total population under study. Studies by Babu, Markwei, Ojedokun Owolabi, Mishra, Sathyanarayana (2001), Kaur (2002) and Biradar .B.S and Sampath Kumar (2005) confirm similar findings. Marginal difference could be found regarding the use of Internet by faculty members in comparison with the present study.[2-10]

Table 6.4. How would you Describe Internet: Scientists

The perception of Internet technology by the scientists is shown in Table 6.4, and Figure 6.4. For each particulars four point scale is used indicating one as strongly agree, two-agree, three-partially agree and four-never. The strong perception is that Internet is a wealth of huge useful current information. The majority (73 .2%) of respondents used Internet and ranked first, followed by the effective communication tool (64.4%). as described by the users. Further a large number of scientists (61.2%) also described Internet as a source for huge information but difficult to obtain, 55.2% of respondents agreed as it enhances the knowledge, 53% opined that it will be a supplement to library as online library and 52.3% said that it has a great reference value and a mechanism to save time.

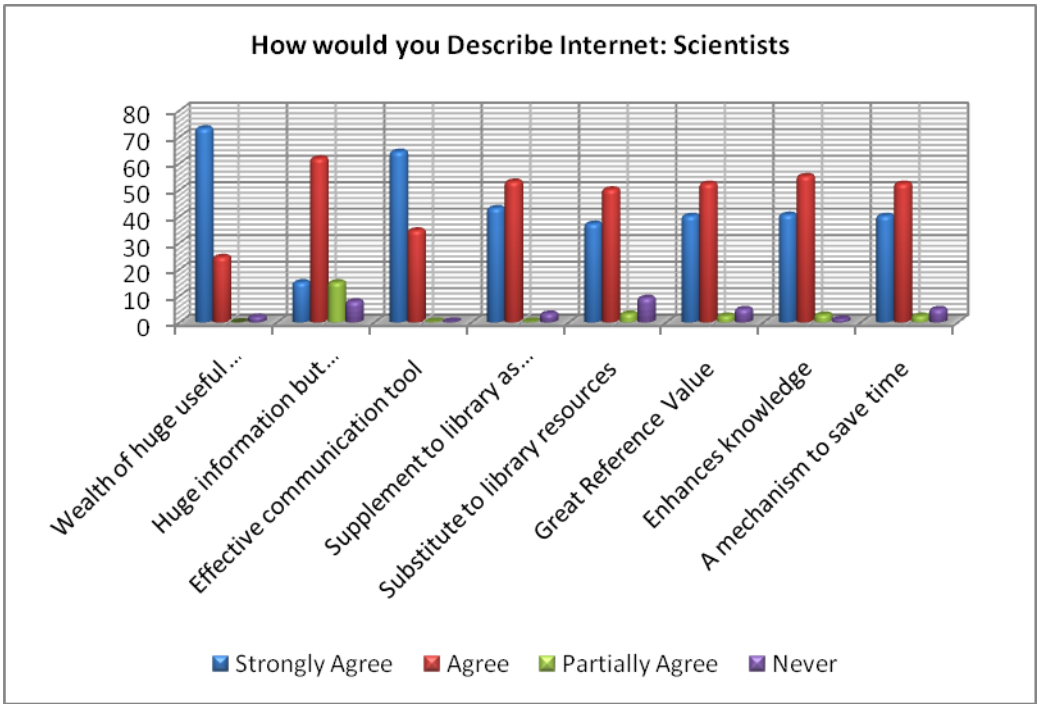

Fig. 6.4. How would you describe Internet

Table 6.5. Sources used for Searching Information on Internet: Scientists

Table 6.5 shows the search strategy adopted by scientists pursuing an activity on a large scale for searching information on the net. The different modes of searching information were also followed by the respondents which indicate browsing websites (58.6%) most often and it is ranked first. A large number of scientists often used interaction with colleagues (77%), follow up references (67.8%) and publications/magazines (63.6%) as a source for searching information on Internet.

The sources used for searching information on Internet by scientists may also be seen in the form of graph (Figure 6.5).

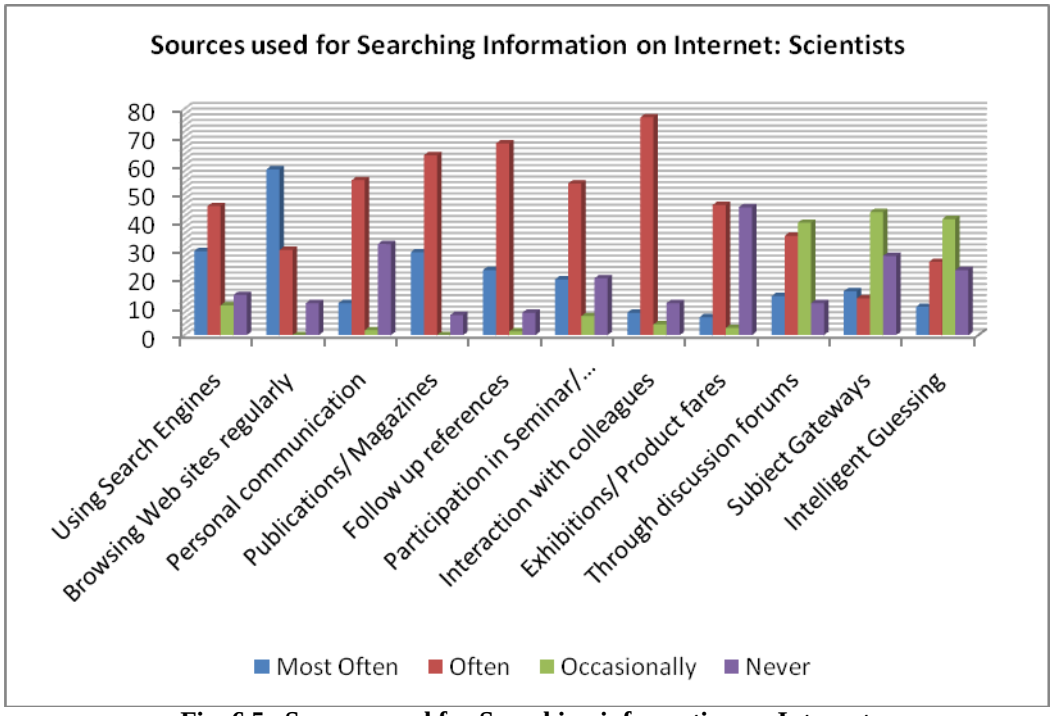

Fig. 6.5. Sources used for Searching information on Internet

Table-6.6. Ranking of Search Engines in the Order of Preference

Sl. No	Ranking	Scientists			Rank
		Yes	No	Total	
1	Yahoo	218 (91.2)	21 (8.8)	239 (100.0)	2
2	AltaVista	197 (82.4)	4 (17.6)	239 (100.0)	6
3	Google	236 (98.7)	03 (1.3)	239 (100.0)	1
4	MSN	188 (78.7)	5 (21.3)	239 (100.0)	8
5	Rediff	212 (88.7)	2 (11.3)	239 (100.0)	3
6	Khoj	168 (28.5)	71 (29.7)	239 (100.0)	11
7	123 India	177 (74.1)	62 (25.9)	239 (100.0)	10
8	Lycos	183 (76.6)	56 (23.4)	239 (100.0)	9
9	WebCrawler	206 (86.2)	33 (13.8)	239 (100.0)	4
10	Hotbot	193 (80.8)	46 (19.2)	239 (100.0)	7
11	NLSEARCH	152 (63.6)	87 (36.4)	239 (100.0)	12
12	Subject Portals	205 (85.8)	34 (14.2)	239 (100.0)	5

As expected by the researcher, scientists and faculty members used popular search engines, more regularly.

Table 6.6 shows that perhaps not unexpectedly a large number of faculty members (100%) and scientists (98.7%) used Google and ranked it as first. Yahoo is the second highly preferred search engine by faculty members (95.2%) and scientists (91.2%) and it is placed at second rank. This is followed by rediff (90.4%) and WebCrawler (86.6%).

This result is substantiated by the study conducted by Biradar B.S and others (2008) at Kuvempu University, which reveals that only Google and Yahoo are the most popular and widely used search engines. To full extent faculties (80.85%) and students used Google while 57.89% of students and 40.42% of faculty used Yahoo. Besides, it is also supported by another study conducted by Biradar B.S and Sampath Kumar B.T (2008). Whereas the study of Amritpal (2002) conducted at Guru Nanak Dev University, Amritsar, reveals that 72.50% of scientists used Yahoo search engines followed by Rediff (35%).[11-13]

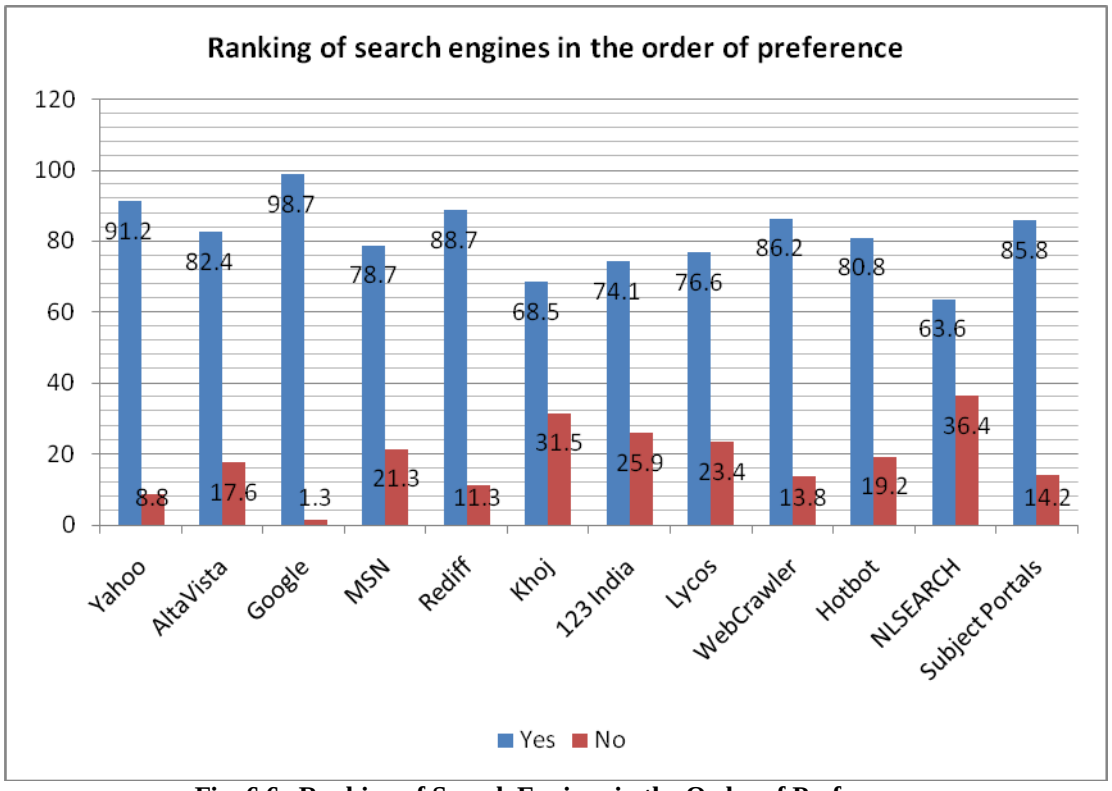

Fig. 6.6. Ranking of Search Engines in the Order of Preference

VII. Findings

1. It is found from table 6.2 that a huge number of scientists accessed research articles (96.7%), and research reports (94.6%) with WA 1.03 and 1.09 respectively. These sources are followed by research abstracts (77.8%) and information on training/conferences/seminars (45.2%).
2. The data reveals that large number of scientists used www (95%) and e-mail (69.9%) most frequently. Quite a good number of scientists used discussion forum (47.3%) frequently and occasionally news groups (41.8%) (Table 6.3).
3. The majority (73.2%) of respondents used Internet, described it as wealth of useful current information and ranked it first, followed by effective communication tool (64.4%) as described by users. Further a large number of scientists (61.2%) described Internet as a source for huge information but difficult to obtain, 55.2% of respondents are agreed as it enhance the knowledge. 53% opined that it will be a supplement to library as online library and 52.3% said that it has a great reference value and a mechanism to save time (Table 6.4).
4. The different modes of searching information were also followed by the respondents which indicate browsing websites (58.6%) most oftenly and is ranked first. A large number of scientists used interaction with colleagues (77%), follow up references (67.8%) and publications/magazines (63.6%) as a source for searching information on Internet. (Tables 6.5).
5. The majority (98.7%) of scientists used Google and ranked it first. Yahoo is the second highly preferred search engine by scientists (91.2%) and it is placed at second rank. This is followed by rediff (90.4%) and WebCrawler (86.6%) (Table 6.6).

VIII. Suggestions

1. The timings of the Internet services should be increase if possible services should be round the clock.
2. The service should be free to the scientists only, this services extend research scholars, and students in marine science research libraries
3. More terminals should be Installed for Internet use
4. More efficient and qualified staff should be appointed. They should be present in Internet lab
5. There should be separate network i.e WI-FI campus net in the campus, with twenty four hours browsing facility.
6. the problem of bend width, slow connectivity should be overcome
7. Sites providing only entertainment should be locked. So that research scholars should not unnecessary sit on computers.

IX. Conclusion

In the present study, the results of this exploratory study show that the Internet information sources and services used in marine science research and development institute scientists is related to some more common needs and that some information resources and communication needs are development on proper access to internet facilities. The results also suggest that some protected masers have to be taken to increase internet use. Since the internet is one of the most important information resources of

marine science research activities, and marine science scientists requirements and effective usage of internet can create mechanisms that enable the sharing of traditional and local knowledge.

REFERENCES

[1] Nancy L. Buchanan,(1995). Library Resources on the Internet. Computers & Geosciences, Vol.21, No.6, 791-798.

[2] Jagboro, K. O (2003). A Study of Internet usage in Nigerian Universities: A case study of Obafemi Awolowo University, Ile-Ife, Nigeria. First orgissues/issues 82/2006, Monday, 8, 2. Retrieved June 19, 2006 from http:// First Monday. jogboro/index.html.

[3] Ajuwon, Grace Ada (2003). Computer and Internet use by first year clinical and nursing students in a Nigerian teaching hospital. BMC Medical Informatics and Decision making, 3(10). Retrieved, June 21, 2006. From http://www.biomedical, com/1472-6947/19.

[4] Rajiv, Kumar and Kaur, A (2006). Internet use by teachers and students in Engineering College of Punjab, Haryana and Himachal Pradesh in India; An analysis. Electronic Journal of Academic and Special Librarianship, 7 (1), 6.

[5] Badu, Edwin Ellis and Markwei, Evelyn D (2005). Reading outside the library: how the Internet has affected reading in China. Information Development, 20 (3), 260-68.

[6] Ojedokum, A. A and Owolaibi, E. O (2003). Internet use for the Teaching and Research in Botswana. African Journal of Library Archives and Information Science, 13 (1), 43-53.

[7] Mishra, J and Sathyanarayana, N. R (2001). Use of Internet in a University Library: A case study. ILA Bulletin, 37 (4), 132-134.

[8] Kaur, A (2002). Use of Internet by Scientists in Guru Nanak Dev University: A Survey. Paper presented at the XX IASLIC Conference, Calcutta.

[9] Biradar, B. S and Sampath Kumar, B. T (2005). Use of Internet by Physicists in Universities of Karnataka State. ILA Bulletin, 41 (4), 25-40.

[10] Biradar, B. S (2008). Use of Search Engines for Retrieval of Scholarly Information: A Case Study. IASLIC Bulletin, 53 (4), 215-222.

[11] Biradar, B. S and Sampath Kumar, B. T (2008). Use of Search Engines by Research scholars and Faculty members of physics departments in the universities of Karnataka State. Annals of Library and Information Studies, 53, 62-68.

[12] Mishra (2005). Internet utilization pattern of undergraduate students. University News, 43 (13), 8-12.

[13] Kaur, Amritpal (2002). Use of Internet by Scientists in Guru Nanak Dev University: A Survey. Paper presented at the XX IASLIC Conference, Calcutta.

[14] Mishra (2005). Internet utilization pattern of undergraduate students. University News, 43 (13), 8-12.

[15] Walke, Rajpal (December 13-16 2007). Use of Electronic Resources by NPL (India) Researchers: A Survey. Paper presented at the 53rd All India Library Conference, New Delhi.

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Table 6.1. Institution and Gender wise distribution of Respondents: Scientists

Sl No	Institutions	Scientist/ Scientist B =62			Sr. Scientist/ Scientist (C.D) =94			Scientist-E/ Scientist (E1,E2) =18			Pri. Scientist/ Scientist F =65			All =239		
		M	F	T	M	F	T	M	F	T	M	F	T	M	F	T
1	CESS, Trivandrum	00 (0.0)	00 (0.0)	00 (0.0)	01 (1.1)	01 (1.1)	02 (2.1)	10 (55.6)	00 (0.0)	10 (55.6)	04 (6.2)	01 (1.5)	05 (7.7)	15 (6.3)	02 (0.8)	17 (7.1)
2	CIBA, Chennai	02 (3.2)	01 (1.6)	03 (4.8)	13 (13.8)	10 (10.6)	23 (24.5)	00 (0.0)	00 (0.0)	00 (0.0)	07 (10.8)	03 (4.6)	10 (15.4)	22 (9.2)	14 (5.9)	36 (15.1)
3	CIFT, Cochin	05 (8.1)	00 (0.0)	05 (8.1)	03 (3.2)	03 (3.2)	06 (6.4)	00 (0.0)	00 (0.0)	00 (0.0)	09 (13.8)	05 (7.7)	14 (21.5)	17 (7.1)	08 (3.3)	25 (10.5)
4	CMFRI, Cochin	02 (3.2)	02 (3.2)	04 (6.5)	19 (20.2)	27 (28.7)	46 (48.9)	00 (0.0)	00 (0.0)	00 (0.0)	03 (4.6)	02 (3.1)	05 (7.7)	24 (10.0)	31 (13.0)	55 (23.0)
5	INCOIS, Hyderabad	13 (21.0)	04 (6.5)	17 (27.4)	05 (5.3)	01 (1.1)	06 (6.4)	00 (0.0)	00 (0.0)	00 (0.0)	00 (0.0)	00 (0.0)	00 (0.0)	18 (7.5)	05 (2.1)	23 (9.6)
6	NIO, (Reg off), Cochin	01 (1.6)	00 (0.0)	01 (1.6)	01 (1.1)	00 (0.0)	01 (1.1)	03 (16.7)	00 (0.0)	03 (16.7)	10 (15.4)	06 (9.2)	16 (24.6)	15 (6.3)	06 (2.5)	21 (8.8)
7	NIOT, Chennai	27 (43.5)	05 (8.1)	32 (51.6)	07 (7.4)	03 (3.2)	10 (10.6)	05 (27.8)	00 (0.0)	05 (27.8)	13 (20.0)	02 (3.1)	15 (23.1)	52 (21.8)	10 (4.2)	62 (25.9)
	Total	50 (80.6)	12 (19.4)	62 (100.0)	49 (52.1)	45 (47.9)	94 (100.0)	18 (100.0)	00 (0.0)	18 (100.0)	46 (70.8)	19 (29.2)	65 (100.0)	163 (68.2)	76 (31.8)	239 (100.0)

Note 1: 1 - S-Scientist 2 - SB-Scientist-B, 3 - SC-Scientist-C, 4 - SD-Scientist-D, 5 - SE-Scientist-E, 6 - SE1-Scientist-E1, 7 - SE2-Scientist-E2, 8 - PS-Principal Scientist, 9 - SF-Scientist-F.

Table 6.2. Types of Information Sources Accessed on Internet: Scientists

Sl No	Sources accessed on Internet	Scientist/ Scientist B=62			Sr.Scientist/ Scientist (C.D)=94			Scientist-E (E1,E2)=18			Prin.Scientist/ Scientist F=65			Total=239			W.A	Std. Dev	F Test	Rank
		1	2	3	1	2	3	1	2	3	1	2	3	1	2	3				
1	Bibliographical information	15 (24.2)	12 (19.4)	35 (56.5)	15 (16.0)	07 (7.4)	72 (76.6)	05 (27.8)	04 (22.2)	09 (50.0)	13 (20.0)	01 (1.5)	51 (78.5)	48 (20.1)	24 (10.0)	167 (69.9)	2.49	0.81	203.220 Significant at 1% probability level	9
2	Research abstracts	48 (77.4)	14 (22.6)	00 (0.0)	70 (74.5)	24 (25.5)	00 (0.0)	16 (88.9)	02 (11.1)	00 (0.0)	52 (80.0)	13 (20.0)	00 (0.0)	186 (77.8)	53 (22.2)	00 (0.0)	1.22	0.42		3
3	Patents and Standards	30 (48.4)	17 (27.4)	15 (24.2)	36 (38.3)	11 (11.7)	47 (50.0)	05 (27.8)	09 (50.0)	04 (22.2)	23 (35.4)	07 (10.8)	35 (53.8)	93 (38.9)	44 (18.4)	102 (42.7)	2.04	0.90		5
4	Research articles	59 (95.2)	03 (4.8)	00 (0.0)	92 (97.9)	02 (2.1)	00 (0.0)	16 (88.9)	02 (11.1)	00 (0.0)	64 (98.5)	01 (1.5)	00 (0.0)	231 (96.7)	08 (3.3)	00 (0.0)	1.03	0.18		1
5	Research Reports	57 (91.9)	03 (4.8)	02 (3.2)	89 (94.7)	01 (1.1)	04 (4.3)	16 (88.9)	00 (0.0)	02 (11.1)	64 (98.5)	00 (0.0)	01 (1.5)	226 (94.6)	04 (1.7)	09 (3.8)	1.09	0.39		2
6	Software based information	14 (22.6)	23 (37.1)	25 (40.3)	30 (31.9)	30 (31.9)	34 (36.2)	05 (27.8)	05 (27.8)	08 (44.4)	22 (33.8)	24 (36.9)	19 (29.2)	71 (29.7)	82 (34.3)	86 (36.0)	2.06	0.81		6
7	Placements/ Job opportunities	12 (19.4)	07 (11.3)	43 (69.4)	29 (30.9)	03 (3.2)	62 (66.0)	05 (27.8)	13 (72.2)	00 (0.0)	21 (32.3)	02 (3.1)	42 (64.6)	67 (28.0)	12 (5.0)	160 (66.9)	2.39	0.89		7
8	Career Planning / Higher education	13 (21.0)	02 (3.2)	47 (75.8)	28 (29.8)	02 (2.1)	64 (68.1)	03 (16.7)	02 (11.1)	13 (72.2)	20 (30.8)	01 (1.5)	44 (67.7)	64 (26.8)	07 (2.9)	168 (70.3)	2.44	0.89		8
9	Training/ Conferences/ Seminars	25 (40.3)	36 (58.1)	01 (1.6)	42 (44.7)	51 (54.3)	01 (1.1)	11 (61.1)	07 (38.9)	00 (0.0)	30 (46.2)	34 (52.3)	01 (1.5)	108 (45.2)	128 (53.6)	03 (1.3)	1.56	0.52		4

Note: 1. To full extent, 2. To some extent, 3. To little extent

F-Value 203.220 Significant at 1% probability level

Table 6.3. Frequency of Use of Various Internet Services: Scientists

Sl No	Internet services	Scientist/ Scientist B=62				Sr. Scientist/ Scientist (C.D)=94				Scientist-E/ (E1,E2)=18				Prin. Scientist/ Scientist F=65				Total=239				W.A	Std. Dev	F. Test	Rank
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
1	WWW	60 (96.8)	02 (3.2)	00 (0.0)	00 (0.0)	89 (94.7)	05 (5.3)	00 (0.0)	00 (0.0)	15 (83.3)	03 (16.7)	00 (0.0)	00 (0.0)	63 (96.9)	02 (3.1)	00 (0.0)	00 (0.0)	227 (95.0)	12 (5.0)	00 (0.0)	00 (0.0)	1.05	0.22	274.414 Significant at 1% probability level	1
2	E-Mail	44 (71.0)	08 (12.9)	10 (16.1)	00 (0.0)	68 (72.3)	07 (7.4)	19 (20.2)	00 (0.0)	12 (66.7)	06 (16.7)	03 (16.7)	00 (0.0)	43 (66.2)	04 (6.2)	18 (27.7)	00 (0.0)	167 (69.9)	22 (9.2)	50 (20.9)	00 (0.0)	1.51	0.82		2
3	Newsgroups	06 (9.7)	11 (17.7)	17 (27.4)	28 (45.2)	05 (5.3)	11 (11.7)	44 (46.8)	34 (36.2)	02 (11.1)	07 (38.9)	04 (22.2)	05 (27.8)	06 (9.2)	06 (9.2)	35 (53.8)	18 (27.7)	19 (7.9)	35 (14.6)	100 (41.8)	85 (35.6)	3.05	0.91		5
4	Discussion Forum	16 (25.8)	22 (35.5)	02 (3.2)	22 (35.5)	15 (16.0)	45 (47.9)	05 (5.3)	29 (30.9)	07 (38.9)	09 (50.0)	01 (5.6)	01 (5.6)	11 (16.9)	37 (56.9)	01 (1.5)	16 (24.6)	49 (20.5)	113 (47.3)	09 (3.8)	68 (28.5)	2.40	1.11		3
5	FTP	05 (8.1)	06 (9.7)	06 (9.7)	45 (72.6)	04 (4.3)	07 (7.4)	25 (26.6)	58 (61.7)	03 (16.7)	04 (22.2)	05 (27.8)	06 (33.3)	00 (0.0)	06 (9.2)	15 (23.1)	44 (67.7)	12 (5.0)	23 (9.6)	51 (21.3)	153 (64.0)	3.44	0.86		7
6	TELNET	00 (0.0)	04 (6.5)	03 (4.8)	55 (88.7)	00 (0.0)	03 (3.2)	22 (23.4)	69 (73.7)	00 (0.0)	02 (11.1)	00 (0.0)	16 (88.9)	00 (0.0)	03 (4.6)	15 (23.1)	47 (72.3)	00 (0.0)	12 (5.0)	40 (16.7)	187 (78.2)	3.73	0.55		10
7	Chatting	09 (14.5)	03 (4.8)	13 (21.0)	37 (59.7)	11 (11.7)	02 (2.1)	38 (40.4)	43 (45.7)	03 (16.7)	00 (0.0)	05 (27.8)	10 (55.6)	06 (9.2)	02 (3.1)	31 (47.7)	26 (40.0)	29 (12.1)	07 (2.9)	87 (36.4)	116 (48.5)	3.21	0.98		6
8	Online databases	24 (38.7)	07 (11.3)	02 (3.2)	29 (46.8)	37 (39.4)	06 (6.4)	06 (6.4)	55 (47.9)	06 (33.3)	06 (33.3)	03 (16.7)	03 (16.7)	21 (32.3)	05 (7.7)	03 (4.6)	36 (55.4)	88 (36.8)	24 (10.0)	14 (5.9)	113 (47.3)	2.67	0.39		4
9	Gopher	03 (4.8)	01 (1.6)	01 (1.6)	57 (91.9)	03 (3.2)	01 (1.1)	21 (22.3)	69 (73.4)	00 (0.0)	02 (11.1)	00 (0.0)	16 (88.9)	03 (4.6)	01 (1.5)	13 (20.0)	48 (73.8)	09 (3.8)	05 (2.1)	35 (14.6)	190 (79.5)	3.69	0.69		9
10	Freeware/ Shareware	06 (9.7)	00 (0.0)	01 (1.6)	55 (88.7)	03 (3.2)	00 (0.0)	20 (21.3)	71 (75.5)	02 (11.1)	00 (0.0)	00 (0.0)	16 (88.9)	03 (4.6)	00 (0.0)	13 (20.0)	49 (75.4)	14 (5.9)	00 (0.0)	34 (14.2)	191 (79.9)	3.68	0.76		8

Note: 1.Most frequently, 2. Frequently, 3. Occasionally, 4.Never

F- Value 274.414 Significant at 1% probability level

Table 6.4. How would you Describe Internet: Scientists

Sl No	Internet	Scientist/ Scientist B=62				Sr.Scientist/ Scientist (C.D)=94				Scientist-E (E1,E2)=18				Prin.Scientist/ Scientist F=65				Total=239				W.A	Std. Dev	F. Test	Rank
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
1	Wealth of huge useful current information	42 (67.7)	19 (30.6)	00 (0.0)	01 (1.6)	67 (71.3)	26 (27.7)	00 (0.0)	01 (1.1)	17 (94.4)	00 (0.0)	00 (0.0)	01 (5.6)	49 (75.4)	14 (21.5)	00 (0.0)	02 (3.1)	175 (73.2)	59 (24.7)	00 (0.0)	05 (2.1)	1.31	0.58	35.115* significant at 1% probability level	1
2	Huge information but difficult to obtain	10 (16.1)	30 (48.4)	13 (21.0)	09 (14.5)	12 (12.8)	66 (70.2)	10 (10.6)	06 (6.4)	04 (22.2)	04 (22.2)	07 (38.9)	03 (16.7)	10 (15.4)	48 (73.8)	06 (9.2)	01 (1.5)	36 (15.1)	148 (61.9)	36 (15.1)	19 (7.9)	2.16	0.77		8
3	Effective communication tool	34 (54.8)	26 (41.9)	01 (1.6)	01 (1.6)	63 (67.0)	31 (33.0)	00 (0.0)	00 (0.0)	10 (55.6)	08 (44.4)	00 (0.0)	00 (0.0)	47 (72.3)	18 (27.7)	00 (0.0)	00 (0.0)	154 (64.4)	83 (34.7)	01 (0.4)	01 (0.4)	1.37	0.52		2
4	Supplement to library as online library	24 (38.7)	33 (53.2)	01 (1.6)	04 (6.5)	42 (44.7)	50 (53.2)	00 (0.0)	02 (2.1)	08 (44.4)	09 (50.0)	00 (0.0)	01 (5.6)	29 (44.6)	35 (53.8)	00 (0.0)	01 (1.5)	103 (43.1)	127 (53.1)	01 (0.4)	08 (3.3)	1.64	0.66		3
5	Substitute to library resources	19 (30.6)	32 (51.6)	04 (6.5)	07 (11.3)	39 (41.5)	48 (51.1)	02 (2.1)	05 (5.3)	06 (33.3)	05 (27.8)	01 (5.6)	06 (33.3)	25 (38.5)	35 (53.8)	01 (1.5)	04 (6.2)	89 (37.2)	120 (50.2)	08 (3.3)	22 (9.2)	1.85	0.87		7
6	Great Reference Value	23 (37.1)	32 (51.6)	02 (3.2)	05 (8.1)	40 (42.6)	50 (53.2)	01 (1.1)	03 (3.2)	06 (33.3)	08 (44.4)	02 (11.1)	02 (11.1)	27 (41.5)	35 (53.8)	01 (1.5)	02 (3.1)	96 (40.2)	125 (52.3)	06 (2.5)	12 (5.0)	1.72	0.74		5
7	Enhances knowledge	23 (37.1)	34 (54.8)	03 (4.8)	02 (3.2)	41 (43.6)	52 (55.3)	01 (1.1)	00 (0.0)	07 (38.9)	09 (50.0)	02 (11.1)	00 (0.0)	26 (40.0)	37 (56.9)	01 (1.5)	01 (1.5)	97 (40.6)	132 (55.2)	07 (2.9)	03 (1.3)	1.65	0.60		4
8	A mechanism to save time	22 (35.5)	33 (53.2)	02 (3.2)	05 (8.1)	41 (43.6)	49 (52.1)	01 (1.1)	03 (3.2)	06 (33.3)	07 (38.9)	02 (11.1)	03 (16.7)	27 (41.5)	36 (55.4)	01 (1.5)	01 (1.5)	96 (40.2)	125 (52.3)	06 (2.5)	12 (5.0)	1.73	0.74		6

Note: 1. Strongly Agree 2. Agree 3. Partially Agree 4. Never

Table 6.5. Sources used for Searching Information on Internet: Scientists

Sl No	Searching information on Internet	Scientist/ Scientist B=62				Sr.Scientist/ Scientist (C.D)=94				Scientist-E (E1,E2)=18				Prin.Scientist/ Scientist F=65				Total =239				W.A	Std. Dev	F. Test	Rank
		1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4				
1	Using Search Engines	26 (41.9)	23 (37.1)	06 (9.7)	07 (11.3)	24 (25.5)	48 (51.1)	14 (14.9)	08 (8.5)	07 (38.9)	08 (44.4)	00 (0.0)	03 (16.7)	14 (21.5)	30 (46.2)	05 (7.7)	16 (24.6)	71 (29.7)	109 (45.6)	25 (10.5)	34 (14.2)	2.09	0.98	48.937* Significant at 1% Probability level	4
2	Browsing Web sites regularly	26 (41.9)	25 (40.3)	00 (0.0)	11 (17.7)	55 (58.5)	31 (33.0)	00 (0.0)	08 (8.5)	15 (83.3)	01 (5.6)	00 (0.0)	02 (11.1)	14 (21.5)	15 (23.1)	00 (0.0)	06 (9.2)	140 (58.6)	72 (30.1)	00 (0.0)	27 (11.3)	1.64	0.95		1
3	Personal communication	09 (14.5)	25 (40.3)	04 (6.5)	24 (38.7)	09 (9.6)	52 (55.3)	00 (0.0)	33 (35.1)	01 (5.6)	14 (77.8)	00 (0.0)	03 (16.7)	08 (12.3)	40 (61.5)	00 (0.0)	17 (26.2)	27 (11.3)	131 (54.8)	04 (1.7)	77 (32.2)	2.55	1.06		8
4	Publications/ Magazines	23 (37.1)	36 (58.1)	00 (0.0)	03 (4.8)	22 (23.4)	67 (71.3)	00 (0.0)	05 (5.3)	09 (50.0)	03 (16.7)	00 (0.0)	06 (33.3)	16 (24.6)	46 (70.8)	00 (0.0)	03 (4.6)	70 (29.3)	152 (63.6)	00 (0.0)	17 (7.1)	1.85	0.75		2
5	Follow up references	14 (22.6)	38 (61.3)	09 (4.8)	07 (11.3)	17 (18.1)	72 (76.6)	00 (0.0)	05 (5.3)	09 (50.0)	04 (22.2)	00 (0.0)	05 (27.8)	15 (23.1)	48 (73.8)	00 (0.0)	02 (3.1)	55 (23.0)	162 (67.8)	03 (1.3)	19 (7.9)	1.94	0.75		3
6	Participation in Seminar/ Conference	17 (27.4)	26 (41.9)	06 (9.7)	13 (21.0)	16 (17.0)	50 (53.2)	04 (4.3)	24 (25.5)	06 (33.3)	12 (66.7)	00 (0.0)	00 (0.0)	08 (12.3)	40 (61.5)	06 (9.2)	11 (16.9)	47 (19.7)	128 (53.6)	16 (6.7)	48 (20.1)	2.27	0.99		6
7	Interaction with colleagues	06 (9.7)	39 (62.9)	05 (8.1)	12 (19.4)	08 (8.5)	77 (81.9)	02 (2.1)	07 (7.4)	04 (22.2)	11 (61.1)	01 (5.6)	02 (11.1)	01 (1.5)	57 (87.7)	01 (1.5)	06 (9.2)	19 (7.9)	184 (77.0)	09 (3.8)	27 (11.3)	2.18	0.73		5
8	Exhibitions/ Product fares	06 (9.7)	19 (30.6)	02 (3.2)	35 (56.5)	05 (5.3)	45 (47.9)	03 (3.2)	41 (43.6)	01 (5.6)	05 (27.8)	00 (0.0)	12 (66.7)	03 (4.6)	41 (63.1)	01 (1.5)	20 (30.8)	15 (6.3)	110 (46.0)	06 (2.5)	108 (45.2)	2.87	1.07		11
9	Through discussion forums	10 (16.1)	23 (37.1)	16 (25.8)	13 (21.0)	11 (11.7)	36 (38.3)	40 (42.6)	07 (7.4)	04 (22.2)	07 (38.9)	03 (16.7)	04 (22.2)	08 (12.3)	18 (27.7)	36 (55.4)	03 (4.6)	33 (13.8)	84 (35.1)	95 (39.7)	27 (11.3)	2.49	0.87		7
10	Subject Gateways	14 (22.6)	08 (12.9)	18 (29.0)	22 (35.5)	12 (12.8)	08 (8.5)	44 (46.8)	30 (31.9)	03 (16.7)	09 (50.0)	03 (16.7)	03 (16.7)	08 (12.3)	06 (9.2)	39 (60.0)	12 (18.5)	37 (15.5)	31 (13.0)	104 (43.5)	67 (28.0)	2.84	1.00		10
11	Intelligent Guessing	08 (12.9)	20 (32.3)	17 (27.4)	17 (27.4)	08 (8.5)	25 (26.6)	43 (45.7)	18 (19.1)	05 (27.8)	02 (11.1)	04 (22.2)	07 (38.9)	03 (4.6)	15 (23.1)	34 (52.3)	13 (20.0s)	24 (10.0)	62 (25.9)	98 (41.0)	55 (23.0)	2.77	0.92		9

Note: 1. Most Often 2. Often 3. Occasionally 4. Never

Table 6.6. Ranking of search engines in the order of preference

Sl.No	Ranking	Scientists			Rank
		Yes	No	Total	
1	Yahoo	218 (91.2)	21 (8.8)	239 (100.0)	2
2	AltaVista	197 (82.4)	4 (17.6)	239 (100.0)	6
3	Google	236 (98.7)	03 (1.3)	239 (100.0)	1
4	MSN	188 (78.7)	5 (21.3)	239 (100.0)	8
5	Rediff	212 (88.7)	2 (11.3)	239 (100.0)	3
6	Khoj	168 (28.5)	71 (29.7)	239 (100.0)	11
7	123 India	177 (74.1)	62 (25.9)	239 (100.0)	10
8	Lycos	183 (76.6)	56 (23.4)	239 (100.0)	9
9	WebCrawler	206 (86.2)	33 (13.8)	239 (100.0)	4
10	Hotbot	193 (80.8)	46 (19.2)	239 (100.0)	7
11	NLSEARCH	152 (63.6)	87 (36.4)	239 (100.0)	12
12	Subject Portals	205 (85.8)	34 (14.2)	239 (100.0)	5