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## Use of Information Resources by Marine Scientists in South India: a Study

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### **Abstract:**

*This article explores the marine science libraries enables, the scientists effecting with information distributed across the world. The availability of information resources in the institutional libraries for searching, retrieving, and reading scholarly materials, the usage of information resources with the results were analyzed with more often to used sources like Internet sources 71%, journals 69%, online sources 68.2%, CD ROMs 45.6%, research reports 34.3%, subject portals 29.7%, and very least percent of use of encyclopedias and directories. This data suggests that the primary goal of marine science libraries continued importance to scientists, and greatly usage of journal literature to support their research work.*

**Keywords:** Information resources, research institutes, scientists, South India

### **1. Introduction**

As the twenty-first century approaches, successful storage and retrieval of the exponentially growing body of scientific information is quickly becoming dependent upon the Internet and the World Wide Web (WWW). The way in which scientists seek information to support teaching, research, and creative activities is changing as new technologies and information delivery systems emerge. Consequently, the traditional model of scientific communication proposed by Garvey and Griffith (1972) wherein information is primarily disseminated through, and subsequently becomes most highly valued when printed in, referred journals, is being challenged. An early model of electronic communication proposed by Lancaster (1978) and modernized by Hurd (1996), bypasses printed journals, indexes, and abstracting tools and suggests that scientific information dissemination will eventually be purely electronic.

### **2. Need for the Study**

Information needs of scientists, engineers, technologists and teaching community are equally based on the knowledge about those sources of information and accessibility of these information resources. The scientists, engineers, technologists, and teaching community in general use encyclopedias, handbooks, textbooks, periodicals, abstracts, indexes, standards, patents, etc., for their research and development activities.

### **3. Scope and Limitations of the Study**

This research study is confined to the study of information resources and services in respect of availability, use, usefulness, and reasons for influencing information resources, amount of time spent on use of resources and services etc. in Marine Science research institutions library. Geographically this study 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.

### **4. Objectives of the Study**

The following are the major objectives of the present study:

1. To study in detail about the Information resources and facilities available in Marine
2. Science research institute libraries.
3. To determine the purpose and use of information resources by scientists
4. To rank the importance of information resources
5. To identify the level of user's satisfaction with information resources
6. To suggest the suitable measures to develop the collection of information resources

## 5. 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 had 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 to 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, which covers mainly user's 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.

## 6. Analysis and Interpretation of Results

### 6.1. Information on Use of Library Resources

Marine science libraries are distinct from all other libraries in the sense that it serves the specific needs of specialized user community but its nature is a indicator of academic library as it supports and supplements academic programmes. A marine science library is the main channel of bringing information requirements of the scientists/faculties. In this study, the respondents were requested to indicate in order of their preference in four point scale about their using documentary and non-documentary sources for marine science information.

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

Table 1 and Figure 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%).

Sl. No	Institutions	Total =239		
		M	F	T
1	CESS, Trivandrum	15 (6.3)	02 (0.8)	17 (7.1)
2	CIBA, Chennai	22 (9.2)	14 (5.9)	36 (15.1)
3	CIFT, Cochin	17 (7.1)	08 (3.3)	25 (10.5)
4	CMFRI, Cochin	24 (10.0)	31 (13.0)	55 (23.0)
5	INCOIS, Hyderabad	18 (7.5)	05 (2.1)	23 (9.6)
6	NIO, (Reg off), Cochin	15 (6.3)	06 (2.5)	21 (8.8)
7	NIOT, Chennai	52 (21.8)	10 (4.2)	62 (25.9)
	Total	163 (68.2)	76 (31.8)	239 (100.0)

Table 1: Institution and Gender wise distribution of Respondents: Scientists

Note 1: 1 - CESS-Center for Earth and Environmental Study Services, 2 - CIBA-Central Institute of Brackish water Aquaculture, 3 - CIFT-Central Institute of Fisheries Technology, 4 - CMFRI-Central Marine Fisheries Research Institute, 5 - INCOIS-Indian National Center for Ocean Information Services, 6 - NIO-National Institute of Oceanography, 7 - NIOT-National Institute of Ocean Technology.

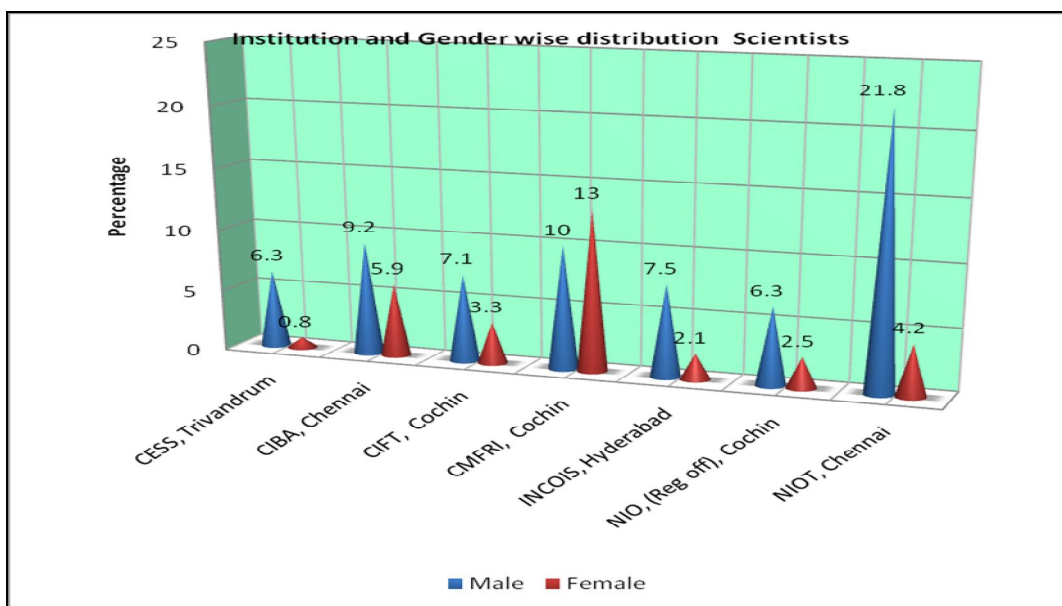


Figure 1: Institution and Gender wise Distribution of Scientists

Sl No	Mode of locating information	Total=239				W.A	Std. Dev	F. Test	Rank
		Most frequently	Frequently	Occasionally	Not at all.				
1	Using the library card catalogue	06 (2.5)	91 (38.1)	61 (25.5)	81 (33.9)	2.90	0.90	168.676 Significant at 1% level	8
2	online public access catalogue (OPAC)	04 (1.7)	106 (44.4)	103 (43.1)	26 (10.9)	2.63	0.70		7
3	Seeking assistance at the reference and information desk	10 (4.2)	21 (8.8)	163 (68.2)	45 (18.8)	3.02	0.67		10
4	Browsing through the library shelves	20 (8.4)	145 (60.7)	28 (11.7)	46 (19.2)	2.42	0.89		5
5	sharing ideas with other users	00 (0.0)	115 (48.1)	09 (3.8)	115 (48.1)	3.00	0.98		9
6	Scanning current periodicals for further directions	28 (11.7)	154 (64.4)	39 (16.3)	18 (7.5)	2.20	0.74		4
7	Consulting library staff	15 (6.3)	82 (34.3)	118 (49.4)	24 (10.0)	2.63	0.75		6
8	Using the Internet facility	200 (83.7)	32 (13.4)	03 (1.3)	04 (1.7)	1.21	0.55		1
9	Searching online databases	161 (67.4)	64 (26.8)	08 (3.3)	06 (2.5)	1.41	0.68		2
10	Referring to e-Journals (CD Rom)	138 (57.7)	69 (28.9)	06 (2.5)	26 (10.9)	1.67	0.96		3

Table 2: Mode of Locating Information in the Library / Information Centers: Scientists

Table 2 describes the mode of locating information in the library. The large number of scientists most frequently used the Internet facility (83.7%) and is ranked first among various channels of information, followed by searching online database (67.4%) and electronic journals (CD-ROMs) (57.7%), which are ranked second and third respectively. In the case of frequently scanning current periodicals (64.4%), browsing through library shelves (60.7%) and sharing ideas with other users (48.1%) have highly utilized mode for locating information. Seeking assistance at the reference and information desk (68.2%) and consulting library staff (49.4%) are the occasionally used modes. Online Public Access Catalogue (OPAC) (44.4%) and library card catalogue which do not appear to be popular modes among marine scientists (38.1%) are ranked seventh and eighth, respectively.

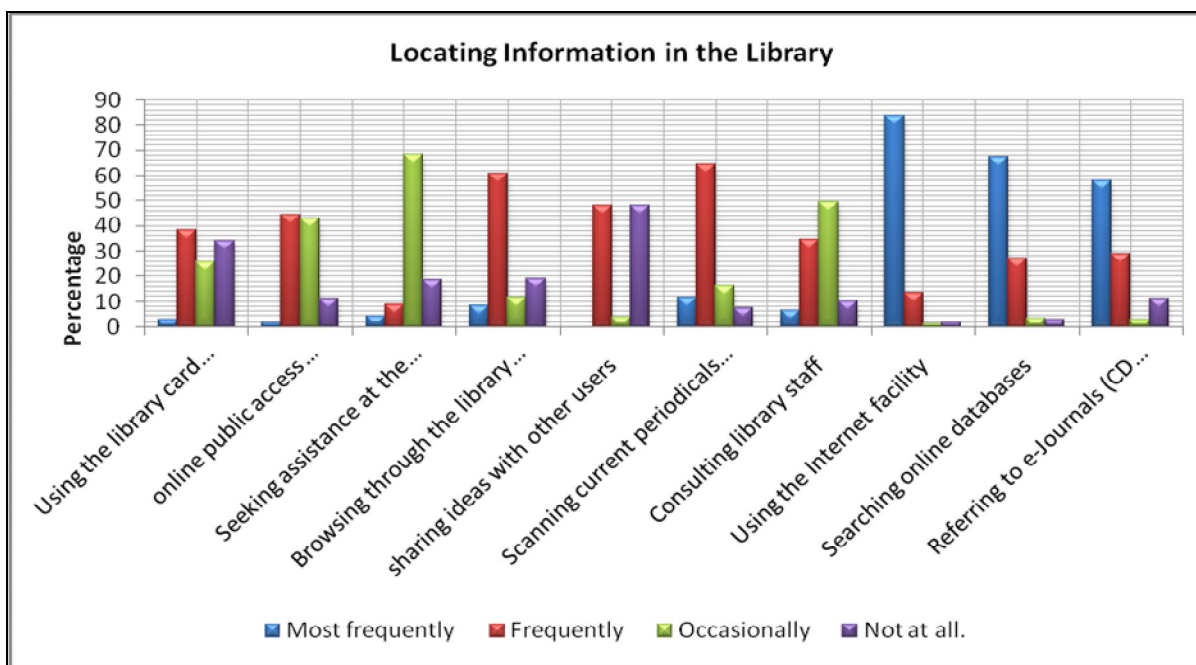


Figure 2: Mode of Locating Information in the Library / Information Centers

Sl No	Information sources	Total=239				W.A	Std. Dev	F. Test	Rank
		More often	Often	Occasionally	Not at all				
1	Books	60 (25.1)	41 (17.2)	96 (40.2)	42 (17.6)	2.50	1.05	59.091 significant at 1% level	10
2	Journals	165 (69.0)	64 (26.8)	09 (3.8)	01 (0.4)	1.36	0.58		01
3	Theses	29 (12.1)	55 (23.0)	130 (54.4)	25 (10.5)	2.63	0.83		11
4	Conference Proceedings	14 (5.9)	136 (56.9)	62 (25.9)	24 (10.0)	2.41	0.76		08
5	Patents / Standards	25 (10.5)	71 (29.7)	99 (41.4)	44 (18.4)	2.84	0.06		14
6	Research Reports	82 (34.3)	115 (48.1)	25 (10.5)	17 (7.1)	1.90	0.85		05
7	Abstracting Journals	41 (17.2)	126 (52.7)	33 (13.8)	39 (16.3)	2.20	0.94		07
8	Bibliographies	24 (10.0)	94 (39.3)	63 (26.4)	57 (23.8)	2.73	1.68		12
9	Encyclopedias	17 (7.1)	26 (10.9)	139 (58.2)	57 (23.8)	2.99	0.79		15
10	Directories	11 (4.6)	22 (9.2)	139 (58.2)	67 (28.0)	3.09	0.74		16
11	Yearbooks	18 (7.5)	47 (19.7)	151 (63.2)	23 (9.6)	2.75	0.73		13
12	CD-ROMs (DVD)	109 (45.6)	71 (29.7)	34 (14.2)	25 (10.5)	1.89	1.01		04
13	Online,	163 (68.2)	45 (18.8)	05 (2.1)	26 (10.9)	1.58	1.17		03
14	Internet	170 (71.1)	43 (18.0)	00 (0.0)	26 (10.9)	1.51	0.95		02
15	Subject portals	71 (29.7)	107 (44.8)	60 (6.7)	45 (18.8)	2.15	1.01		06
16	Cassettes	56 (23.4)	81 (33.9)	41 (17.2)	61 (25.5)	2.45	1.11		09

Table 3: Frequency of Information Sources Accessed by Scientists

Information sources are of great value for the academic and research community. In this study, an attempt has also been made to find out the importance of various information sources referred in the marine science library and information centers as shown in Table 3. The majority of marine scientists used journals which are ranked first. Internet is ranked second, online resources third, CD-ROMs/DVDs fourth and research reports fifth in position. It is a surprise to know that the book is placed in the tenth rank and patents and standards are placed in the fourteenth position. Since reference sources are occasionally used sources obviously less accessed sources are encyclopedia and directories which are placed in fifteen and sixteenth positions. The data presented in Table 3 and is also presented in the form of graph (Figure 3).

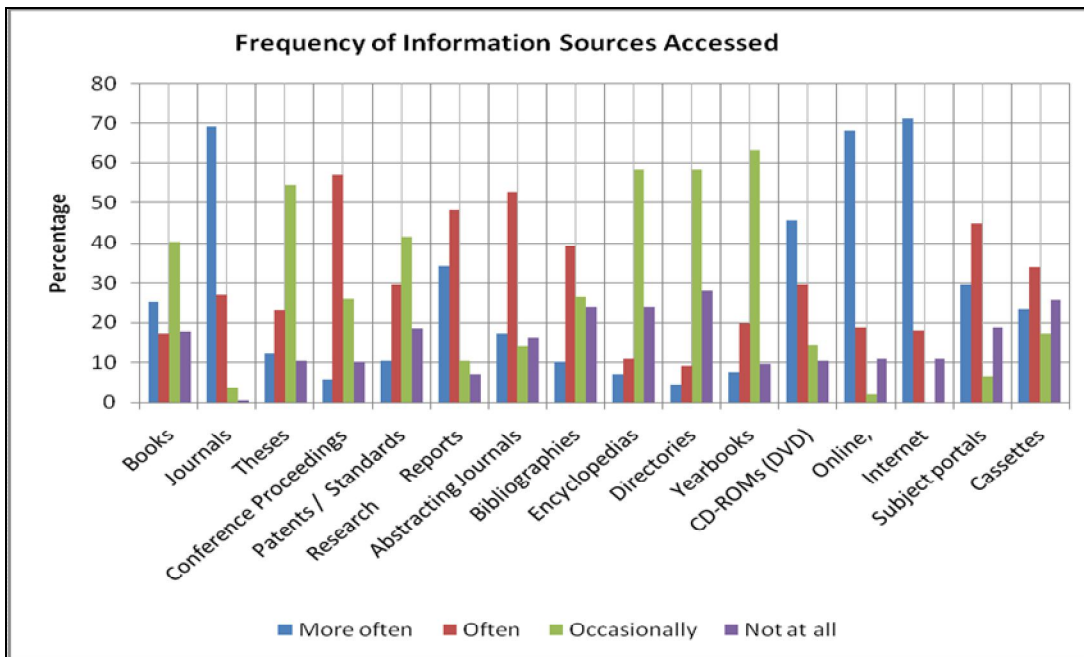


Figure 3: Frequency of Information Sources Accessed

SI No	Information sources	Total=239			W.A
		Institutional Library	Other R&D Libraries	Academic Libraries	
1	Books	176 (73.6)	41 (17.2)	22 (9.2)	1.4
2	Journals	160 (66.9)	68 (28.5)	11 (4.6)	1.4
3	Theses	203 (84.9)	21 (8.8)	15 (6.3)	1.2
4	Conference Proceedings	211 (88.3)	21 (8.8)	7 (2.9)	1.1
5	Patents / Standards	189 (79.1)	48 (20.1)	2 (0.8)	1.2
6	Research Reports	172 (72.0)	60 (25.1)	7 (2.9)	1.3
7	Abstracting Journals	209 (87.4)	28 (11.7)	2 (0.8)	1.1
8	Bibliographies	238 (99.6)	1 (0.4)	0 (0.0)	1.0
9	Encyclopedias	239 (100.0)	0 (0.0)	0 (0.0)	1.0
10	Directories	239 (100.0)	0 (0.0)	0 (0.0)	1.0
11	Yearbooks	230 (96.2)	8 (3.3)	1 (0.4)	1.1
12	CD-ROMs (DVD)	163 (68.2)	58 (24.3)	18 (7.5)	1.4

13	Online,	188 (78.7)	45 (18.8)	6 (2.5)	1.2
14	Internet	239 (100.0)	0 (0.0)	0 (0.0)	1.0
15	Subject portals	237 (99.2)	2 (0.8)	0 (0.0)	1.0
16	Cassettes	229 (95.8)	10 (4.2)	0 (0.0)	1.0

Table 4: Access of Information Resources with Other Libraries

No library fulfils all the information needs of the users obviously. The user has to depend on other library collection. Therefore an attempt has been made to know what percent of users depend on their institution library and libraries of other institutions.

It is good to know that for all forms of information sources, a large number of users depend on institutional library. In the case of reference sources like encyclopedia, directories, bibliographies, nearly cent percent of users depended on their institutional library. A considerable number of scientists depended on other R&D libraries for journals (28.5%), research reports (25.1%), patents/standards (20.1%), books (17.2%) and online databases (18.8%). The range of 2% to 9% of users depended on other academic libraries for books, CD-ROM databases, theses, journals etc. (Table 4).

Based on the opinion of the users, one can say that their institutional libraries are meeting their information needs at maximum extent. It is also observed that the weighted average is in the range of 1.0 to 1.4.

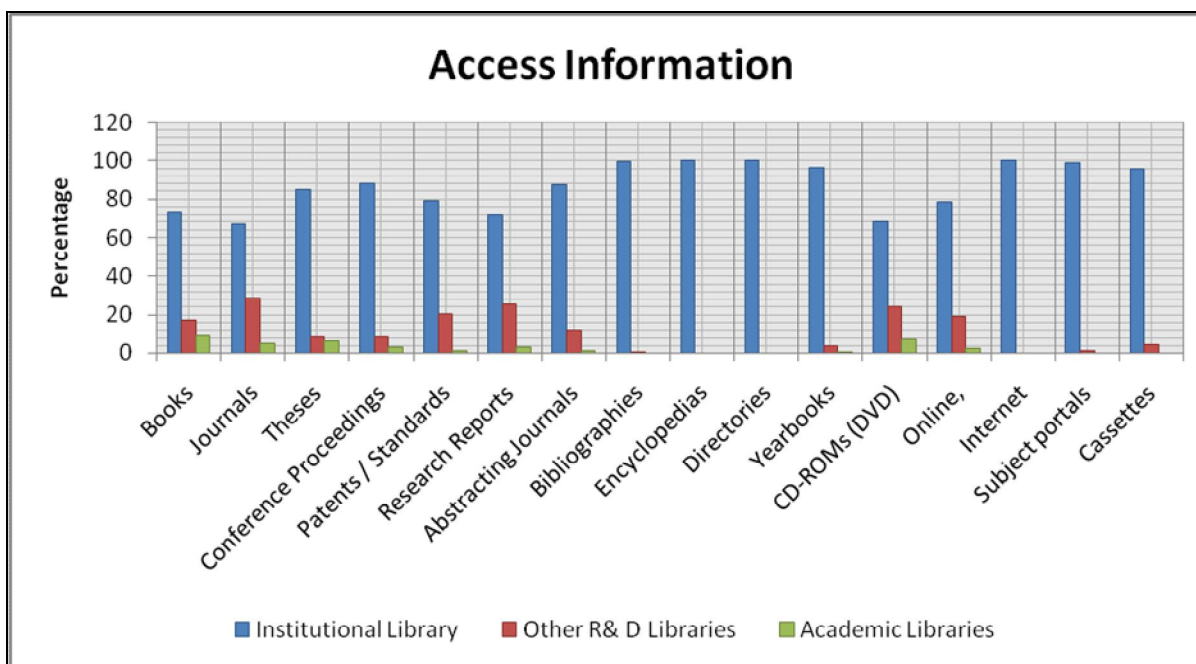


Figure 4: Where do you Access Information

**7. Major Findings**

1. The sample population used in the present study contains more number of male scientists (68.2%) than female scientists (31.8%). (Table 1).
2. A large number of scientists most frequently used Internet facility (83.7%) and is ranked first among various channels of information, followed by searching online database (67.4%) and electronic journals (CD-ROMs) (57.7%), which are ranked second and third respectively (Table 2).
3. The majority of marine scientists used journals which are ranked first, Internet is ranked second, online resources third, CD-ROMs/DVDs fourth and research reports fifth in position. It is a surprise to know that the book is placed in the tenth rank and patents and standards are placed in the fourteenth position (Table 3).
4. A considerable number of scientists depended on other R&D libraries for journals (28.5%), research reports (25.1%), patents/standards (20.1%), and books (17.2%). The range of 2% to 9% of users also depended on other academic libraries for books, CD-ROM databases, theses, journals etc.

Based on the opinion of users, one can say that their institutional libraries are meeting their information needs at maximum extent. It is also observed that the weighted average is in the range of 1.0 to 1.4. In case of faculty members working in marine and fisheries department a large number of them depend on their institution library (Table 4).

## 8. Conclusion

The advent of the information exchange of scholarly communications, in particular for journal articles, is transforming the way scholars work. The first changes have been simple conversions from using print to electronic resources, making researchers' work easier. Searching for research materials is becoming more convenient as researchers increasingly utilize a single interface to search across multiple resources (Google Scholar, open archives harvesters, library metasearch engines). Searching and retrieving information is now done primarily at the researcher's desktop, resulting in a dramatic decrease in the number of visits to the library. As a result, libraries are changing their physical presences by increasing their emphasis on coffee shops, Internet access, meeting rooms, and quiet spaces. While researchers have demonstrated that they almost exclusively search and retrieve materials electronically, many still print out materials for reading. While some researchers clearly favor one format over the other for reading, the majority utilize both methods as appropriate. Researchers are on their way to building collections of electronic articles in the same way they have collected print copies of articles in the past. They also annotate their electronic articles and organize them in bibliographic databases as they do for print collections.

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