

Usage of Information Searching Mechanism among Ophthalmologists: A Study in India

R. Govindarajan¹ and S. Dhanavandan²

¹Librarian, Aravind Eye Hospital & Postgraduate Institute of Ophthalmology, Madurai, Tamil Nadu, India

²Deputy Librarian & Head, Central Library, Central University of Tamil Nadu, Thiruvavur, Tamil Nadu, India

E-Mail: govindarajanthamba@gmail.com, dhanavandan@gmail.com

Abstract - The main goal of the information retrieval systems is to present only the relevant and useful information to the user. The information retrieval systems articulate proper searching mechanism through indexing and abstracting to attain this goal. This study aims to study the search mechanisms usage habits among the Ophthalmologists – Eye Doctors. A survey method is used to obtain the opinion from ophthalmologists' on their usage of search mechanisms. 633 ophthalmologists working in 47 academic eye hospitals from 16 states of India were included in the study. This particular study is a part of the main study "Information Needs and Seeking Behaviour of Ophthalmologists in Academic Eye Hospitals in India". The multi response question about the search mechanisms usage among ophthalmologists was analysed by finding out the popular search mechanism and then identifying the pattern of the search mechanism usage. The statistical relationship between the search mechanism usage and ophthalmologists & institution characteristics were examined with the help of t-test and ANOVA. The study results reveals that "By Title" was the most popular searching mechanism among ophthalmologists. It was used by 77.4% of the ophthalmologists. Majority of the ophthalmologists use more than one search mechanism which is about 82.15% and 17.85% of the ophthalmologists use one search mechanism. The study results show up that searching mechanism usage differs with gender. This reveals the relationship between search mechanism usages among ophthalmologists which will help to the library and information providers to improve their indexing and abstracting services in right manner.

Keywords: Searching Mechanism, Ophthalmologists, User Study, Information Behaviour, Information Seeking Behaviour

I. INTRODUCTION

Information Behaviour describes how people need, seek, search, use, manage, store, organize, share and create information in different contexts. The searching behaviour includes observable actions on formal information retrieval systems and informal information sources. The formal information retrieval systems used to deal with the representation, storage, organization of information items and provide access to the items. The main goal of the information retrieval systems is to present only the relevant and useful information to the user. The information retrieval systems articulate proper searching mechanism through indexing and abstracting to attain this goal.

The searching mechanism serves as the interaction medium between the user and the information retrieval system. It

enables the user to translate the users' information need as a search query and submit to the information retrieval system. The core strength of the information retrieval system is the searching mechanisms included in the system. The searching mechanisms usage among the users will be a great interest to the information retrieval system builders as well as the information providers.

This study aims to study the searching mechanism usage habits among the Ophthalmologists – Eye Doctors. A survey method is used to obtain the opinion from ophthalmologists' on their usage of the searching mechanism. 633 ophthalmologists working in 47 academic eye hospitals from 16 states of India were included in the study. This particular study is a part of the main study "Information Needs and Seeking Behaviour of Ophthalmologists in Academic Eye Hospitals in India".

II. REVIEW OF LITERATURE

In the existing literature only very few information retrieval user studies were conducted. Most of the studies were of exploratory type based on the available online search log entries of the users. Very few studies discuss about the user preference and usage of search mechanisms. The literatures which describe the user behaviour with subject and title keyword searching mechanism were focused in this study and reviewed.

Voorbij, H. J. (1998) carried out two studies to compare the value of subject descriptors and title keywords as entries to subject searches. In the first study, a comparison was made by subject librarians between the subject descriptors and the title keywords. It was concluded that 37 per cent of the records are considerably enhanced by a subject descriptor, and 49 per cent slightly or considerably enhanced. In the second study, subject librarians performed subject searches using title keywords and subject descriptors on the same topic. Failure analysis revealed that so many records that were found by subject descriptors were not found by title keywords. Many relevant titles cannot be retrieved by title keyword searching but subject descriptors returns more results. The reason behind the results is, subject descriptor is controlling the vocabulary.

Strader, C. R. (2011) studied the overlap between author-assigned keywords and cataloguer assigned Library of Congress Subject Headings (LCSH) for a set of electronic theses and dissertations in Ohio State University's online catalogue. Findings support both keywords and controlled vocabularies complement one another.

Studies related to usage of search mechanism in medical field were not found in the existing literature.

III. OBJECTIVES OF THE STUDY

1. To find out the popular searching mechanism used by the ophthalmologists.
2. To identify the pattern of searching mechanism usage by the ophthalmologists.
3. To investigate the usage of searching mechanism among both male and female ophthalmologists.
4. To examine the usage of searching mechanism among all the age groups of ophthalmologists.
5. To examine the usage of searching mechanism among ophthalmologists working in different designations.
6. To investigate the usage of searching mechanism among ophthalmologists of different working experience.
7. To examine the usage of searching mechanism among ophthalmologists working in different institution types.

IV. HYPOTHESES OF THE STUDY

1. There exists a significant difference between the searching mechanism usage habits with gender.
2. There exists a significant difference between the searching mechanism usage habits with age.
3. There exists a significant difference between searching mechanism usage habits with designation.
4. There exists a significant difference between the searching mechanism usage habits with working experience.
5. There exists a significant difference between the searching mechanism usage habits with institution type.

V. METHODOLOGY

Purpose of the study was to find out the usage of searching mechanisms among Ophthalmologists. The research design adopted for this study was cross sectional. Convenience sampling method was found appropriate to enrol the wide-spread ophthalmologist population and the same was followed in the study. A structured questionnaire was used as a data collection tool to record the ophthalmologists' usage habits of searching mechanisms. The questionnaires were distributed among 940 ophthalmologists working in academic eye hospitals in India. 47 academic eye hospitals from 16 states of India were included in the study. Among the 940 ophthalmologists, 633 were responded. The collected data were entered into data-entry software, purposefully developed for the study. The software was developed in Microsoft Visual Basic 6.0 with backend SQL Server 2000. For further analysis, the data stored in SQL Server 2000 was extracted into Ms-Excel 2007 spread sheets. MS-Excel 2017 was used to organize and tabulate the data. SPSS 18 PASW Statistical package was used for statistical analysis.

VI. ANALYSIS

The multi response question about the information searching mechanism of ophthalmologists is analysed by finding out the popular information searching mechanism through a frequency table and then identifying the pattern of the information searching mechanism. To find out the statistical relationship between the information searching mechanism and ophthalmologists & institution characteristics, statistical tests t-test and ANOVA are used.

A. Identifying the Popular Information Searching Mechanism

A frequency Table I is derived based on the 11 choices of the multi response question information searching mechanism. The table shows that the popular information searching mechanism among ophthalmologists.

TABLE I FREQUENCY TABLE ON OPHTHALMOLOGISTS' INFORMATION SEARCHING MECHANISM

S. No.	Description	Ophthalmologists (C)	Percentage of Cases (P)	Rank
1	By Title	490	77.41	1
2	By Subject	326	51.50	2
3	By Journal	287	45.34	3
4	By Author	264	41.71	4
5	By Keyword / tag	244	38.55	5
6	By Year	120	18.96	6
7	By Publisher	62	9.79	7
8	By Publication type	43	6.79	8
9	By ID	42	6.64	9
10	By Language	31	4.90	10
11	By resource format	29	4.58	11
	Total	1938		

N=633, P=C/N

The result shows that 490 ophthalmologists search by title which is about 77.1% and is more popular among the ophthalmologists. 326 ophthalmologists search by subject which is about 51.50%. 287 ophthalmologists search by journal which is about 45.34%.

B. Identifying the Pattern of Information Searching Mechanism of Ophthalmologists

The Table II shows that the pattern of information searching mechanism among ophthalmologists.

TABLE II INFORMATION SEARCHING MECHANISM PATTERN AMONG OPHTHALMOLOGISTS

S. No.	No. of Searching Mechanism Used	No. of Ophthalmologists Used(C)	Percentage of Cases (P)	Cumulative No. of Ophthalmologists Used	Cumulative Percentage of Cases
1	11	2	0.32	2	0.32
2	9	2	0.32	4	0.63
3	8	8	1.26	12	1.90
4	7	16	2.53	28	4.42
5	6	31	4.90	59	9.32
6	5	50	7.90	109	17.22
7	4	101	15.96	210	33.18
8	3	149	23.54	359	56.71
9	2	161	25.43	520	82.15
10	1	113	17.85	633	100.00

N=633, P=C*100/N

The popular information searching mechanism pattern among ophthalmologists is 2, 3, 1 which has the usage percentages 25.43%, 23.54%, 17.85% respectively. 0.32% ophthalmologists use 11 information searching mechanisms. 82.15% of the ophthalmologists use more than one information searching mechanism. Only 17.85% of the ophthalmologists use single information searching mechanism. This indicates that most of the ophthalmologists use more than one information searching mechanism.

Based on the ophthalmologists' response, the information searching mechanism variables contains dichotomous values as 0 – not used, 1 – used. A mechanism score is derived for each ophthalmologist based on the 11 searching mechanism dichotomous variables.

To investigate about the statistical relationship between the mechanism score and ophthalmologists & institution characteristics, the significance level (P value) is find out through the popular statistical tests

C. Investigating the Statistical Relationship between the Information Searching Mechanism and Ophthalmologists & Institution Characteristics

To verify the significance level with mechanism score and gender, t-test is used. The Table III shows that the t-test results on information searching mechanism and gender.

TABLE III T -TEST RESULTS ON INFORMATION SEARCHING MECHANISM AND GENDER

S. No.	Characteristic	Mean	SD	P value	F score
1	Male	3.11	1.768		
2	Female	3.01	1.641		
				0.025**	5.031

** Significant at the 0.05 level

The t-test results reveal that there is a significant difference between the information searching mechanism with gender (p value: 0.025**).

The ANOVA test results reveal that there is no significant difference between the information searching mechanism with age (p value: 0.055).

To verify the significance level with mechanism score and age, ANOVA test is used. The Table IV shows that the ANOVA test results on information searching mechanism and age.

To verify the significance level with mechanism score and designation category, ANOVA test is used. The Table V shows that the ANOVA test results on information searching mechanism and designation category.

TABLE IV ANOVA-TEST RESULTS ON SEARCHING MECHANISM AND AGE

S. No.	Characteristic	Mean	SD	P value	F score
1	Less than or equal to 30	3.18	1.700		
2	31 to 40	3.07	1.632		
3	41 to 50	3.04	1.977		
4	51 to 60	2.29	1.617		
5	61 and above	1.88	1.126		
				0.055	2.327

** Significant at the 0.05 level

TABLE V ANOVA-TEST RESULTS ON ONLINE INFORMATION SEARCHING MECHANISM AND DESIGNATION CATEGORY

S. No.	Characteristic	Mean	SD	P value	F score
1	Medical Officer / Medical Consultant / Ophthalmic Teaching Staff / Management Staff	2.93	1.628		
2	Fellows	3.26	1.821		
3	Senior Residents	2.79	1.424		
				0.055	2.921

** Significant at the 0.05 level

The ANOVA test results reveal that there is no significant difference between the information searching mechanism with designation category (p value: 0.055).

To verify the significance level with mechanism score and working experience, ANOVA test is used. The Table VI shows that the ANOVA test results on information searching mechanism and working experience.

TABLE VI ANOVA-TEST RESULTS ON INFORMATION SEARCHING MECHANISM AND WORKING EXPERIENCE

S. No.	Characteristic	Mean	SD	P value	F score
1	Less than or equal to 5	3.05	1.636		
2	6 to 10	2.98	2.247		
3	11 to 15	3.00	1.930		
4	16 to 20	2.32	1.514		
5	21 and above	3.32	1.709		
				0.067	2.207

** Significant at the 0.05 level

The ANOVA test results reveal that there is no significant difference between the information searching mechanism with working experience (p value: 0.067).

that the ANOVA test results on information searching mechanism and institution type.

To verify the significance level with mechanism score and institution type, ANOVA test is used. The Table VII shows

The ANOVA test results reveal that there is no significant difference between the information searching mechanism with institution type (p value: 0.528).

TABLE VII ANOVA-TEST RESULTS ON INFORMATION SEARCHING MECHANISM AND INSTITUTION TYPE

S. No.	Characteristic	Mean	SD	P value	F score
1	Government	3.05	1.910		
2	Not for Profit Organization	3.09	1.725		
3	Corporate	2.86	1.484		
				0.528	0.639

** Significant at the 0.05 level

VII. CONCLUSION

The study provides insights on ophthalmologists searching mechanism preferences to the eye care information providers. The study results reveals that “By Title” was the most popular searching mechanism among ophthalmologists. It was used by 77.4% of the ophthalmologists. Majority of the ophthalmologists use more than one search mechanism which is about 82.15% and 17.85% of the ophthalmologists use one search mechanism. The study results show up that searching mechanism usage differs with gender. This reveals the relationship between search mechanism usages among ophthalmologists which will help to the library and

information providers to improve their indexing and abstracting services in right manner.

REFERENCES

- [1] Voorbij, H. J. (1998). Title keywords and subject descriptors: a comparison of subject search entries of books in the humanities and social sciences. *Journal of documentation*, 54(4), 466-476.
- [2] Strader, C. R. (2011). Author-assigned keywords versus Library of Congress subject headings. *Library resources & technical services*, 53(4), 243-250.
- [3] Volk, R. M. (2007). Expert searching in consumer health: an important role for librarians in the age of the Internet and the Web. *Journal of the Medical Library Association*, 95(2), 203.
- [4] Lu, Z. (2011). PubMed and beyond: a survey of web tools for searching biomedical literature. *Database*, 2011.