INFORMATION SEEKING BEHAVIOR AND SEARCH TECHNIQUES BY THE POSTGRADUATE STUDENTS IN THE WEB ENVIRONMENT AT KARNATAKA STATE OPEN UNIVERSITY, MYSURU: A STUDY

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ABSTRACT

The present study was carried at Karnataka State Open University, Mysuru in Karnataka to examine the factors that affect the Information Seeking Behavior and Search Techniques. The study mainly focused on the use of different types of web based information resources by the postgraduate students, place of access to web information resources, frequency of use, purpose of use, problems faced while accessing web information resources, preferred search options for searching web based information resources, use of field based search methods, use of advanced search facilities, preferred file format to downloading web information and factors influencing the use of search engines. For this purpose the researchers prepared a well structured questionnaire as a tool for data collection and the collected questionnaire has been analyzed and presented with useful percentage analysis and suitable tables for presentation of data. The article concluded with summaries of the results and suggestions.

KEYWORDS: *Information Seeking Behavior, E-Resources, Web Environment, Search Techniques, Information Search Pattern*

INTRODUCTION

Information seeking is the acquisition of information from resources to build knowledge. Wilson (1999) defines the term information seeking behavior as the totality of human behavior in relation to sources and channels of information, including both active and passive information seeking and information use. The advent of the Internet and the Web has had a profound impact on information seeking and search behavior. The Web has transformed the way the user's access, retrieve and use information. The volume and variety of information has drastically increased. The profusion of information available on the Web poses a challenge to the users who seek relevant information. The users find it difficult to identify, select and access the relevant and appropriate resource. The transformation of resources from print to electronic medium has also made the users to use new tools to access information. Information search pattern is the method pursued by the user to satisfy their information needs. It is important on the part of the academician or the researcher to have a clear understanding of the various search strategies like Boolean search, phrase search, proximity search etc., to quickly retrieve pertinent information. As the Web has become a ubiquitous medium in information dissemination and retrieval. Effective information seeking has thus become indispensable in today's information society. The present study was conducted to track the Information Seeking Behavior and Search Techniques by the Postgraduate Students in the Web Environment at Karnataka State Open University, Maseru.

Objectives of the Study

The objectives behind conducting the present study are:

- To find out the types of web based information resources used by the postgraduate students.

- To identify the place of access, frequency of use and purpose of use of web based information resources by the postgraduate students.

- To investigate various problems faced while accessing web information resources.

- To investigate different search methods used by postgraduate students to retrieve relevant information from the web.

- To examine the awareness of advance search methods among postgraduate students.

- To suggest ways and means for maximizing use of web information resources and search pattern by the postgraduate students.

Scope Limitations and Methodology

The scope of the study is restricted to information seeking behavior and search techniques in web environment by the postgraduate students of Karnataka State Open University, Mysuru. The survey method was adopted, using questionnaire as a tool for data collection. A structured questionnaire was designed and distributed among postgraduate students of Karnataka State Open University, Mysuru. Out of 220 questionnaires distributed among postgraduate students of which, 185 filled in question naires were received back amounting 84.09%. In addition to questionnaire method, interview schedule and observation method were also used to collect required information as a supplement to the questionnaire method to bring more clarity to the data.

Data Analysis

The data was collected by different methods were analyzed and interpreted and the same is presented in the following tables.

Gender and Discipline Wise Distribution

The gender and discipline wise distribution of postgraduate students has been shown in Table-1. The Table 1 shows that out of 185 postgraduate students, 77 (41.62%) are from Science discipline and the remaining 108 (58.38%) are from 'Social Science'. Among 111 male postgraduate students, 46 (41.44%) are from Science discipline and 65 (58.56%) of postgraduate students belongs to Social Science. Among 74 female postgraduate students, 31 (41.89%) are from Science discipline and 43 (58.11%) of postgraduate students belong to the discipline of Social Science.

Table 1: Gender and Discipline Wise Distribution

Discipline	Gender		Total (N=185)
	Male (N=111)	Female (N=74)	
Science	46(41.44)	31(41.89)	77(41.62)
Social Science	65(58.56)	43(58.11)	108(58.38)

Age Wise Distribution

The age wise distribution of postgraduate students has been shown in Table-2. It may be observed from the Table 2 that the population studied ranges from below 24 years to above 33 years of age. Of the 185 postgraduate students surveyed, 43

(23.24%) belongs to 'Below 24 years', 38 (20.54%) come under '31-32 years', 34 (18.38%) fall under '27-28 years', 31 (16.76%) come under '29-30 years', 27 (14.59%) fall under '25-26 years' and the remaining 12 (06.49%) of the sample represent 'Above 33 years' of age group.

Table 2: Age Wise Distribution

Age Group	Frequency	Percentage
Below 24	43	23.24
25-26	27	14.59
27-28	34	18.38
29-30	31	16.76
31-32	38	20.54
Above 33	12	06.49
Total	**185**	**100.0**

Use of Web Based Information Resources

The use of various types of web based information resources by the postgraduate students has been summarized in Table 3. The Table 3 depicts that 154 (83.24%) of postgraduate students use e-teaching materials, 125 (67.57%) use e-tutorials, 115 (62.16%) open source literature, 112 (60.54%) e-reference resources, 75 (40.54%) students and faculty generated contents, 60 (32.43%) Blogs, Wikis, RSS feeds, 51 (27.57%) e-journals, 44 (23.78%) e-report, 40 (21.62%) e-magazines, 37 (20.00%) e-books, 33 (17.84%) subject gateways/e-portals, 27 (14.59%) e-thesis and dissertations, 14 (07.57%) e-patents, 14 (07.57%) e-databases, 13 (07.03%) e-standards/specifications and 08 (04.32%) of postgraduate students use e-conference proceedings.

Table 3: Use of Web Based Information Resources

Information Resources	Science (N=77)	Social Science (N=108)	Total (N=185)	Mean	SD
E-Journals	28(36.36)	23(21.30)	51(27.57)	1.45	0.49
E-Books	21(27.27)	16(14.81)	37(20.00)	1.43	0.49
E-Magazines	19(24.68)	21(19.44)	40(21.62)	1.52	0.49
E-Conference Proceedings	06(07.79)	02(01.85)	8(04.32)	1.25	0.43
E-Report	20(25.97)	24(22.22)	44(23.78)	1.54	0.49
E-Teaching Materials	58(75.32)	96(88.89)	154(83.24)	1.62	0.48
E-Standards/Specifications	11(14.29)	02(01.85)	13(07.03)	1.15	0.36
E-Tutorials	46(59.74)	79(73.15)	125(67.57)	1.63	0.48
E- Databases	08(10.39)	06(05.56)	14(07.57)	1.42	0.49
E- Thesis and Dissertations	19(24.68)	08(07.41)	27(14.59)	1.29	0.45
E- Patents	10(12.99)	04(03.70)	14(07.57)	1.28	0.45
Subject Gateways / E-portals	07(09.09)	26(24.07)	33(17.84)	1.78	0.40
Blogs, Wikis, RSS feeds	29(37.660	31(28.70)	60(32.43)	1.51	0.49
Open Source literature	34(44.16)	81(75.00)	115(62.16)	1.70	0.45
E- Reference resources	36(46.75)	76(70.37)	112(60.54)	1.67	0.46
Students and faculty generated contents	26(33.77)	49(45.37)	75(40.54)	1.65	0.47

Place of Access to Web Information Resources

The Place of Access to Web Information Resources by the postgraduate students has been summarized in Table 4.The Table 4 depicts that 143(77.30%) of postgraduate students access web information resources from home, followed by 135 (77.30%) from library, 29(15.68%) from Laboratory and 28(15.14%) of postgraduate students access web information resources from department. The Table 4 also depicts that 57 (74.03%) of male postgraduate science students access web information resources

from home and 89 (79.63%) of female postgraduate student of social science access from the university and its branch libraries.

Table 4: Place of Access to Web Information Resources

Place	Science (N=77)	Social Science (N=108)	Total (N=185)
Department	11(14.29)	17(15.74)	28(15.14)
Library	46(59.74)	89(82.41)	135(72.97)
Lab.	17(22.08)	12(11.11)	29(15.68)
Home	57(74.03)	86(79.63)	143(77.30)

Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%

Frequency of Use of Web Information Resources

The Frequency of use of web information resources by the postgraduate students has been summarized in Table 5. The Table 5 depicts that 59 (31.89%) of postgraduate students use web information resources daily, followed by 57(30.81%) use 'Fortnightly', 43 (23.24%) use '2-3 times in a week' and 26 (14.05%) of postgraduate students use web information resources monthly.

The Table 5 also depicts that 26(33.77%) of postgraduate students of Science discipline use web information resources 'Fortnightly' and 36 (33.33%) postgraduate students of Social Science discipline use web information resources daily.

Table 5: Frequency of Use of Web Information Resources

Frequency	Science (N=77)	Social Science (N=108)	Total (N=185)
Daily	23(29.87)	36(33.33)	59(31.89)
2-3 times in a week	18(23.38)	25(23.15)	43(23.24)
Fortnightly	26(33.77)	31(28.70)	57(30.81)
Monthly	10(12.99)	16(14.81)	26(14.05)

Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%

Purpose of Use of Web Information Resources

The purpose of use of web information resources by the postgraduate students has been summarized in Table 6. The Table 6 depicts that 172(92.97%) of postgraduate students use web information resources for collecting general information, followed by 154 (83.24%) access for reading / writing assignments and projects, 126 (68.11%) access audio/ visual materials, 85 (45.95%) for basic scientific and technical information, 58 (31.35%) for reading/ writing articles, 20 (10.81%) for preparation for seminars, conference and workshop and 15 (08.11%) of postgraduate students use web information resources for accessing standards and patents. It is also clear from the table that 74 (96.10%) Science and 98 (90.74%) of Social Science post graduate students use web resources for collecting general information.

Table 6: Purpose of Use of Web Information Resources

Purpose	Science (N=77)	Social Science (N=108)	Total (N=185)
Reading/ Writing articles / papers	19(24.68)	39(36.11)	58(31.35)
Reading/ Writing Assignment and projects	68(88.31)	86(79.63)	154(83.24)
For accessing standards and patents	12(15.58)	03(02.78)	15(08.11)
Preparation for Seminars, conference and workshop	09(11.69)	11(10.19)	20(10.81)
For basic scientific and technical information	49(63.64)	36(33.33)	85(45.95)
For collecting general information	74(96.10)	98(90.74)	172(92.97)
To access audio/ visual materials	67(87.01)	59(54.63)	126(68.11)

Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%

Problems Faced while Accessing Web Information Resources

The problem faced by the postgraduate students while accessing web information resources has been summarized in Table 7. The Table 7 depicts that 113 (61.08%) of postgraduate students face problem retrieval of irrelevant/ junk information, 98 (52.97%) poor internet connectivity, 80 (43.24%) unorganized information content, 68 (36.76%) problem due to non availability of latest software, 53 (28.65%) using web information resources often detracts from doing work, 51 (27.57%) lack of IT knowledge to effectively utilize the service / e-resources, 47 (25.41%) unfamiliar file formats, 46 (24.86%) Change in URL, 44(23.24%) server down or system problem, 36(19.46%) Change of the content/ information, 35(18.92%) of postgraduate students face problem due to lack of assistance from library staff. The Table-7 also depicts that 42 (54.55%) of postgraduate science students face problem due poor connectivity of internet and 74 (68.52%) of postgraduate social science students face problem retrieval of irrelevant/ junk information.

Table 7: Problems Faced while Accessing Web Information Resources

Problems	Science (N=77)	Social Science (N=108)	Total (N=185)
Poor connectivity (Low bandwidth)	42(54.55)	56(51.85)	98(52.97)
Retrieval of irrelevant / junk information	39(50.65)	74(68.52)	113(61.08)
Frequent power failure	12(15.58)	08(07.41)	20(10.81)
Server down or system problem	21(27.27)	23(21.29)	44(23.24)
Unfamiliar file formats	17(22.08)	30(27.78)	47(25.41)
Change in URL	21(27.27)	25()	46(24.86)
Change of the content / information	15(19.48)	21(19.44)	36(19.46)
Non availability of latest software (to view, read and write accessed information)	26(33.77)	42(38.89)	68(36.76)
Unorganized information content	34(44.16)	46(42.59)	80(43.24)
Lack of assistance from library staff	13(16.88)	22(20.37)	35(18.92)
Using electronic resources often detracts from doing work	21(27.27)	32(29.63)	53(28.65)
Lack of IT knowledge to effectively utilize the service / e-resources	16(20.78)	35(32.41)	51(27.57)

Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%

Table 8: Anova Single Factor

Summary						
Groups	Count	Sum	Average	Variance		
Column 1	12	277	23.08333	102.6288		
Column 2	12	418	34.83333	311.0606		
Anova						
Source of Variation	SS	DF	MS	F	P-Value	F Crit
Between Groups	828.375	1	828.375	4.004816	0.057857	4.300949
Within Groups	4550.583	22	206.8447			
Total	5378.958	23				

Preferred Search Options for Searching Web Based Information Resources

The preferred search options for searching web based information resources used by the postgraduate students has been summarized in Table 9. The basic search option is used by 121(65.41%) of the postgraduate students, followed by 38(20.54%) of postgraduate students prefer and use both basic and advance search options and 26(14.05%) of postgraduate students prefer advance search options. The Table 8 also depicts that 32 (41.56%) of postgraduate students of Science discipline and 89 (82.41%) of postgraduate students of Social Science discipline prefer basic search option for searching web based information resources.

Table 9: Preferred Search Options for Searching Web Based Information Resources

Search Method	Science (N=77)	Social Science (N=108)	Total (N=185)
Basic	32(41.56)	89(82.41)	121(65.41)
Advanced	19(24.68)	07(06.48)	26(14.05)
Both	26(33.77)	12(11.110	38(20.54)

Use of Field Based Search Methods to Access Web Resources

The use of field based search methods to access web resources by the postgraduate students has been summarized in Table 10. The Table 10 depicts that 158(85.41%) of postgraduate students prefer author field based search methods to access web resources, followed by 130(70.27%) search by title, 74(40.00%) search by subject, 29(15.68%) search by publisher and 28 (15.14%) of postgraduate students search web resources by author address. The Table-9 also depicts that 66 (85.71%) of science postgraduate students and 92 (85.19%) social science postgraduate students prefer author field based search method for accessing web resources.

Table 10: Use of Field Based Search Methods to Access Web Resources

Field based search	Science (N=77)	Social Science (N=108)	Total (N=185)	Mean	SD
Author	66(85.71)	92(85.19)	158(85.41)	1.58	0.49
Title	49(63.64)	81(75.00)	130(70.27)	1.62	0.48
Subject	28(36.36)	46(42.59)	74(40.00)	1.62	0.48
Publisher	12(15.58)	17(15.74)	29(15.68)	1.86	0.33
Author Address	16(20.78)	12(11.11)	28(15.14)	1.42	0.49

Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%

Use of Advanced Search Facilities to Access Web Resources

The advance search options used by the postgraduate students for searching web information resources have been summarized in Table 11. The Table 11 depicts that 144(77.84%) of postgraduate students use phrases search, followed by 140(75.68%) of postgraduate students use Field based search, 49 (26.49%) use Digital Object Identifier, 35(18.92%) use Boolean Search and 22 (11.89%) prefer Truncation/ wildcard search. It is also clear from the Table-10 that 56 (72.73%) of postgraduate students of Science discipline use Field based search and 96 (88.89%) of postgraduate students of Social Science discipline use Phrase search to access web resources.

Table 11: Use of Advanced Search Facilities to Access Web Resources

Advance Search Facilities	Science (N=77)	Social Science (N=108)	Total (N=185)
Boolean search	21(27.27)	14(12.96)	35(18.92)
Truncation / wildcard search	04(05.19)	18(16.67)	22(11.89)
Field based search	56(72.73)	84(77.78)	140(75.68)
Phrases search	48(62.34)	96(88.89)	144(77.84)
Digital Object Identifier	17(22.08)	32(29.630	49(26.49)

Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%

Preferred File Format to Downloading Web Information

The Preferred format to downloading web information resources has been shown in Table 12. The Table12 depicts that 160 (86.49%) of postgraduate students prefer HTML file format for downloading web information resources, followed by 159 (85.95%) prefer PDF Word, 117 (63.24%) prefer MS Word and 113 (61.08%) of postgraduate students prefer Power Point Presentation file format of downloading web information resources. The Table 12 also depicts that 71(92.21%) of

Information Seeking Behavior and Search Techniques by the Postgraduate Students in the Web Environment at Karnataka State Open University, Mysuru: a Study

11

postgraduate students of Science discipline prefer HTML file format and 91 (84.26%) of postgraduate students of Social Science discipline prefer PDF file format for downloading web information resources.

Table 12: Preferred File Format to Downloading Web Information

File Format	Science (N=77)	Social Science (N=108)	Total (N=185)
PDF	68(88.31)	91(84.26)	159(85.95)
HTML	71(92.21)	89(82.41)	160(86.49)
MS-Word	43(55.84)	74(68.52)	117(63.24)
PPT	46(59.74)	67(62.04)	113(61.08)

Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%

Factors Influencing the Use of Search Engines

The factors influencing the use of Search Engines by the postgraduate students have been summarized in Table 13. The Table 13 depicts that 136(73.51%) of postgraduate students are influenced by the factor of user friendly features, followed by 120 (64.86%) easy to browse the Internet sources, 99 (53.51%) advanced search features which help them in achieving relevant resources, 95 (51.35%) popularity of search engine, 94 (50.81%) more relevant information can be retrieved, 61 (32.97%) recommendations by library staff/colleagues and 59 (31.89%) of postgraduate students know the search strategy of the search engine. The Table-12 also depicts that 57 (74.03%) of Science discipline and 79 (73.15%) of Social Science discipline postgraduate students are influenced by the factor of user friendly features.

Table 13: Factors Influencing the Use of Search Engines

Factors	Science (N=77)	Social Science (N=108)	Total (N=185)
Easy to browse the Internet sources	46(59.74)	74(68.52)	120(64.86)
User friendly features	57(74.03)	79(73.15)	136(73.51)
I know the search strategy of the search engine	33(42.86)	26(24.07)	59(31.89)
Popularity of Search engine	42(54.55)	53(49.07)	95(51.35)
Recommendations by library staff/colleagues	23(29.87)	38(35.19)	61(32.97)
More relevant information can be retrieved	39(50.65)	55(50.93)	94(50.81)
Advanced search features help in achieving relevant resources/ output	41(53.25)	58(53.70)	99(53.51)

Note: Figures in parentheses indicate percentage and because of multiple choice options the percentage is exceeded to more than 100%

Suggestions

Based on the above results the following suggestions are made for further improvement in utilization of web information resources.

- The postgraduate students should further improve their information searching skills to make better use of largely available web information resources.

- The postgraduate students should be trained in using advance search options available in search menu of web based information resources for retrieval of relevant information.

- The speed of the internet should be increased to save user valuable time and to speed up information search and retrieval process.

- The web designers / publishers / distributors should provide online help menu in the search page for better utilization of their information resources.

- The web search engines retrieve information based on the metadata. It is strongly suggested that the search engine should have content based information search facilities for effective information retrieval.

- The university should organize seminars, workshops and orientation programmes for postgraduate students and students at regular interval of time to keep them in tune with latest technologies.

- The library staff should send e-mail alerts regarding newly subscribed or already available web information resources to the users regularly.

CONCLUSIONS

Due to advancement in Information Communication Technology the internet has become an inseparable part of today's educational system. With the development in the area of internet and information technology, more and more of the educational resources are being produced, distributed and accessed in the digital format. The dependency on internet based services is increasing everyday and users of traditional universities are depending much more on information resources available through internet for various educational purposes. The web based information resources in the virtual world represent a large investment of people's effort, money and wisdom. The users should become familiar with latest search patterns for better utilization of available web based information resources. The library should organize seminars, workshops and orientation programmes for faculty, research scholars and students at frequent interval of time to keep them up to date with latest technologies.

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