WEB SEARCH BEHAVIOUR OF RESEARCH SCHOLARS: A CASE STUDY

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ABSTRACT

After the advent of internet, a significant transition is seen in users approach and the way they seek information and methods they use in research and learning activities. Web resources help research scholars to update their knowledge through latest information in their respective field of interest which enable them to fertile grounds for further studies. Ignorance of search strategies results the retrieval of irrelevant information and wasting of time and there by affect the research. In this scenario it is necessary to know whether the research scholars are using the suitable search strategies to extract their required information. Here the research scholars of St Berchmans College (Autonomous) is taken for study. Survey method based on questionnaire is used to collect data form them. Besides this interview and observation also are used for the same. Specifically, the study sought to understand the search characteristics, reasons for using the Web, usage of various web features, web search skills and problems faced while using the Web. This study would assist higher learning institutions to develop strategies, policies and plans to improve the use of web-based information resources.

Key words: Web Search, Research Scholars, Search Behaviour

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1. INTRODUCTION

Resources in the web are like an endless ocean. The find the right fish form this vast ocean is the most difficult job one has to encounter in his journey to the shore of wisdom. Researchers are those who are in search of knowledge by profession. Hence the most important place that provide them with what they actually require is the Internet. But to filter that which is most suitable to one is the problem most researchers face on their way. Hence, it is important to note the way the research scholars fish the required knowledge form the ocean of web. This study is trying to fulfil that aim. To know the web search pattern of research scholars the study is based on the research scholars of St Berchmans College (Autonomous), Changanassery, Kottayam, Kerala. It is one of the important research centers under M.G. University. The college conducts research in the discipline such as English, Malayalam, Economics, Physics, Chemistry, Botany. Zoology and Commerce. For decades college has played an important role in the research and development activities. This study is conducted with the view that it would assist higher learning institutions to develop strategies, policies and plans to improve the use of web-based information resources.

2 REVIEW OF LITERATURE

Kinley, Khamsum, et al.¹ examined the relationships between users' cognitive styles and their Web searching and develops a model that portrays the relationship. A total of 50 volunteers comprising students, academics and professional staff from the Queensland University of Technology (QUT), Brisbane Australia, were recruited in this study A questionnaire was utilized to collect participants' demographic information, and Riding's (1991) Cognitive Style Analysis (CSA) test to assess their cognitive styles. Results show that users' cognitive styles influenced their information searching strategies, query reformulation behaviour, Web navigational styles and information processing approaches. The user model developed in this study depicts the fundamental relationships between users' Web search behaviour and their cognitive styles. Modeling Web search behaviour with a greater understanding of user's cognitive styles can help information science researchers and information systems designers to bridge the semantic gap between the user and the systems. Implications of the research for theory and practice, and future work are discussed.

Sohali, M. D., and Andleeb Alvi² describes the use of web resources (e-journals and e-databases subscribed by UGC-info-net consortium) by the students of medical sciences at Aligarh Muslim University, India. The Jawaharlal Nehru Medical College (JNMC) is one of the constituent colleges of the Aligarh Muslim University, Faculty of medicine. JNMC has 18 departments compromising a wide spectrum of academic disciplines. A well-structured questionnaire was administered to 120 students of JNMC randomly selected samples to collect the primary data. Out of which, a total number of 92 filled in questionnaires were received and the overall response rate was 76.66%. 31.13% medical students use web resources for improving knowledge and finding information quickly. 32.60% students of MBBS, MD/MS and PG diploma use web resources. 76.08% (70 students) find web resources as reliable. 26.08% medical students search and access web resources links through search engines. 63.04% generally take assistance from friends for using web resources. Medline and Science direct are most consulted e-journals by medical students.

3 OBJECTIVES

- To examine the web search behaviour of research scholars in S.B. College.
- To find out the extent to which the research scholars are using web based information sources and services.

- To know the satisfaction level of the research scholars with the information retrieved through web.
- To trace out the problems faced while using the web.
- To make suggestions to eliminate the barriers if any experienced by research scholars in seeking web based information.

4. METHODOLOGY

Survey method using questionnaire was adopted to collect data and the investigator interviewed the digital librarian for the same. Observation method also used to gather data for study. The Research Scholars of S.B. College is taken as the population of the study. In S.B. College English, Malayalam, Economics, Physics, Chemistry, Botany, Zoology, Commerce departments offer Ph.D programmes. The total number of research scholars in S.B. College are 101 and all of them have been included in the study. 101 questionnaires were distributed to research scholars and 95 were received from them. The percentage of the response is 94.06%. The percentage of the research scholars who do not respond are 6.32%.

5. ANALYSIS OF DATA

5.1. Web Search Behaviour

5.1.1. Level of Computer and Internet Literacy

Table 1 Level of computer and internet literacy

	Para meters	Number of Respondents	Percentage
1	Efficient	53	55.79%
2	Average	41	43.16%
3	Below average	1	1.05%
4	Not at all	0	0

Table 1 reveals that majority (55.79%) of research scholars are efficient in computer and internet literacy. When 43.16% have average computer and internet literacy, only 1.05% are below average.

5.1.2. Use of Web

Table 2 Use of Web

Sl No.	Parameters	Number of respondents	Percentage
1	Yes	95	100%
2	No	0	0

Table 2 indicates that 100% of research scholars use web.

5.1.3. Purpose of Use of Web Resources

Table 3 Purpose of web usage

Sl. No.	Purpose	Number of respondents	Percentage
1	Reading research articles/projects/reports	66	69.47%
2	Preparation for seminars/ research etc.	91	95.79%
3	Accessing news and current Affairs	77	81.05%
4	Entertainment and recreation	89	93.68%
5	Sending and receiving e-mail	95	100%
6	Net Banking	1	1.05%

It is evident from the Table 3 that multiple responses were received for this question. It shows that all (100%) the research scholars use web for sending and receiving e-mail and 95.79% of research scholars also use for the preparation of seminars/ research etc. 93.68% of research scholars use web for entertainment and recreation whereas 81.05% of research scholars use web for accessing news and current affairs. 69.47% of research scholars use web for reading research articles/ projects/ reports. Only 1.05% of research scholar use web for net banking.

5.1.4. Awareness, use and availability of web resources

A question was asked to indicate the respondents awareness and use of following web resources in their respective fields and it's availability in digital library.

Table 4 Awareness, use and availability of web resources

Sl. No.	Web resources	Awareness		Use		Availability	
		Yes	No	Yes	No	Yes	No
		Number of Respondents and Percentage					
1	E-Journals	78 (82.11%)	17 (17.89%)	65 (68.42%)	30 (31.58%)	77 (81.05%)	18 (18.95%)
2	E-books	84 (88.42%)	11 (11.58%)	64 (67.37%)	31 (32.63%)	17 (17.89%)	25 (26.32%)
3	E-conference proceedings	45 (47.37%)	50 (52.63%)	33 (34.74%)	62 (65.26%)	34 (35.79%)	61 (64.21%)
4	E-tutorials	80 (84.21%)	15 (15.79%)	54 (56.84%)	41 (43.16%)	36 (37.89%)	59 (62.11%)
5	E-thesis/Technical reports/Patents	85 (89.47%)	10 (10.53%)	73 (76.84%)	22 (23.16%)	73 (76.84%)	22 (23.16%)
6	E-databases	55 (57.89%)	40 (42.11%)	43 (45.26%)	52 (54.74%)	0	95 (100%)
7	E-maps	74 (77.89%)	21 (22.11%)	53 (55.79%)	42 (44.21%)	53 (55.79%)	42 (44.21%)
8	E- magazines/ Newspapers	95 (100%)	0	63 (66.32%)	32 (33.68%)	63 (66.32%)	32 (33.68%)
9	E-reference resources (Dictionary, encyclopaedias)	89 (93.68%)	6 (6.32%)	75 (78.95%)	20 (21.05%)	79 (83.16%)	16 (16.84%)

Awareness

All the research scholars are aware of e-magazines/ newspapers (100%) followed by e-reference resources (93.68%), e-thesis/ technical reports/ patents (89.47%), e-books (88.42%), e-tutorials (84.21%), e-journals (82.11%), e-maps(77.89%), e-databases (57.89%) whereas majority of the research scholars (52.63%) are not aware of e- conference proceedings.

Use

Majority of the research scholars responded that they make use of web resources such as e-reference resources (78.95%), e-thesis/ technical reports/ patents (76.84%), e-journals (68.42%), e-books (67.37%), e-magazines/ newspapers (66.32%), e-tutorials (56.84%), e-maps (55.79%). At the same time majority of the research scholars do not use web resources such as e-conference proceedings (65.26%) and e-databases (54.74%).

Availability

All the research scholars (100%) responded that digital library of the college do not provide e-databases in their respective fields. Majority of research scholars responded that important web resources in their field such as e-thesis/ technical reports/ patents (76.84%), e-conference proceedings (64.21%), e-tutorials (62.11%), e-books (26.32%) are not available in S.B. College digital library.

5.1.5. Use of Open E-Resources**Table 5** Open sources E-resources

Sl. No.	Parameters	Number of respondents	Percentage
1	Yes	76	80%
2	No	19	20%

Table 5 reveals that majority of research scholars (80%) use open source e-resources whereas 20% of research scholars are not using it.

5.1.6. Awareness and use of open access e-resources

A question was asked to know the awareness and use of the open access e-resources retrieved through the following platforms.

Table 6 Awareness and use of open access e-resources

Sl. No.	Platforms	Awareness		Use	
		Yes	No	Yes	No
		Number of Respondents and Percentage			
1	DOAJ	43 (45.26%)	52 (54.74%)	30 (31.58%)	65 (68.42%)
2	Shodhaganga	87 (91.58%)	8 (8.42%)	71 (74.74%)	24 (25.26%)
3	Researchers World	30 (31.58%)	65 (68.42%)	27 (28.42%)	68 (71.58%)
4	DOAB	37 (38.95%)	58 (61.05%)	33 (34.74%)	62 (65.26%)
5	Open DOAR	28 (29.47%)	67 (70.53%)	26 (27.37%)	69 (72.63%)
6	Royal society open science	35 (36.84%)	60 (63.16%)	34 (35.79%)	63 (66.32%)

Awareness

Analysis revealed that majority of the research scholars are not aware of the platforms used to retrieve open access e-resources in their respective fields such as Open DOAR (70.53%), Researchers world (68.42%), Royal society open science (63.16%), DOAB (61.05%), DOAJ (54.74%) whereas majority (91.58%) are aware about shodhaganga.

Use

Majority of the research scholars are not using open access e-resources platforms such as Open DOAR (72.63%), Researchers world (71.58%), DOAJ (68.42%), Royal society open science (66.32%), DOAB (65.26%) whereas 74.74% make use of shodhaganga.

5.1.7. Use and availability of journal database

A question was asked to know the frequency of using various journal databases and it's availability in the digital library.

Table 7 Use and availability of journal database

Sl. No.	Databases	Number of Respondents and Percentage				
		Frequently	Occasionally	Rarely	Never	Not available
1	JSTOR	8 (8.42%)	12 (12.63%)	17 (17.89%)	58 (61.05%)	95 (100%)
2	ProQuest	2 (2.11%)	11 (11.58%)	25 (26.32%)	59 (62.11%)	95 (100%)
3	Emerald	5 (5.26%)	12 (12.63%)	21 (22.11%)	57 (60%)	95 (100%)
4	Springer link	4 (4.21%)	10 (10.53%)	27 (28.42%)	51 (53.68%)	95 (100%)

Frequently

Analysis shows that 8.24% of research scholars frequently use JSTOR followed by Emerald (5.26%), Springer link (4.21%) and ProQuest (2.11%).

Occasionally

Analysis revealed that 12.63% of research scholars use JSTOR and Emerald followed by ProQuest (11.58%) and Springer link (10.53%).

Rarely

Analysis shows that 28.42% of research scholars rarely use Springer link followed by ProQuest (26.32%), Emerald (22.11%) and JSTOR (17.89%).

Never

Analysis revealed that majority of the research scholars do not use journal databases such as ProQuest (62.11%), JSTOR (61.05%), Emerald (60%) and Springer link (53.68%).

Not Available

All the research scholars (100%) responded that journal databases such as ProQuest, JSTOR, Springer link, Emerald are not available in digital library.

5.1.8. Awareness and Use of Web Based Services**Table 8** Awareness and use of web based services

Sl. No.	Web Based Services	Awareness		Use	
		Yes	No	Yes	No
		Number of Respondents and Percentage			
1	Online catalogue	33 (34.74%)	62 (65.26%)	30 (31.58%)	65 (68.42%)
2	Bibliographic Database	40 (42.11%)	55 (57.89%)	34 (35.79%)	61 (64.21%)
3	Subject gateway	43 (45.26%)	52 (54.74%)	41 (43.16%)	54 (56.84%)
4	Search engines	95 (100%)	0	95 (100%)	0
5	Directories	53 (55.79%)	42 (44.21%)	45 (47.37%)	50 (52.63%)
6	Discussion forum	61 (64.21%)	34 (35.79%)	36 (37.89%)	59 (62.11%)
7	Blogs and wikis	90 (94.74%)	5 (5.26%)	91 (95.79%)	4 (4.21%)
8	Web archives	35 (36.84%)	60 (63.16%)	28 (29.47%)	67 (70.53%)

Awareness

Majority of the research scholars are not aware of the web based services in their respective subject field such as online catalogue (65.26%), web archives (63.16%), bibliographic database (57.89%) and subject gateway (54.74%) whereas all of them are aware of the web based services such as search engines (100%) followed by blogs and wikis (94.74%), discussion forum (64.21%) and directories (55.79%).

Use

Majority of the research scholars do not use the important web based services in their respective subject field such as web archives (70.53%), online catalogue (68.42%), bibliographic database (37.93%), discussion forum (62.11%), subject gateway (56.84%), and directories (52.63%), all of them use web based services such as search engines (100%), blogs and wikis (95.79%).

5.1.9. Preferred Search Engine of Use

A question was asked to rank their preferred search engine.

Table 9 Search Engine

Sl. No.	Search engine	Order of preference					
		1	2	3	4	5	6
		Number of Respondents and Percentage					
1	Google	92 (96.84%)	3 (3.16%)	0	0	0	0
2	Yahoo	0	13 (13.68%)	23 (24.21%)	38 (40%)	7 (7.37%)	14 (14.74%)
3	Alta vista	0	4 (4.21%)	17 (17.89%)	21 (22.11%)	30 (31.58%)	32 (24.21%)
4	Bing	0	24 (25.26%)	27 (28.42%)	19 (20%)	11 (11.58%)	14 (14.74%)
5	MSN	0	13 (13.68%)	10 (10.53%)	17 (17.89%)	21 (22.11%)	34 (35.79%)
6	Google scholar	3 (3.16%)	38 (40%)	18 (18.95%)	15 (15.79%)	9 (9.47%)	12 (12.63%)

First Preference

It is evident from the analysis that majority of the research scholars (96.84%) give first preference to Google and only 3.16% of research scholars give first preference to Google Scholar.

Second Preference

40% of research scholars give second preference to Google Scholar. When 25.26% of research scholars give second preference to Bing whereas 13.68% of research scholars give second preference to Yahoo and MSN. 4.21% of research scholars give second preference to Alta Vista and only 3.16% of research scholars give second preference to Google.

Third Preference

28.42% of research scholars give third preference to Bing. When 24.21% of research scholars give third preference to Yahoo and 18.95% of research scholars give third preference to Google Scholar. 17.89% of research scholars give third preference to Alta Vista. Only 10.53% of research scholars give third preference to MSN.

Fourth Preference

40% of research scholars give fourth preference to Yahoo. When 22.11% of research scholars give fourth preference to Alta Vista, 20% of research scholars give fourth preference to Bing. 17.89% of research scholars give fourth preference to MSN only 15.79% of research scholars give fourth preference to Google Scholar.

Fifth Preference

31.58% of research scholars give fifth preference to Alta Vista and 22.11% of research scholars give fifth preference to MSN. When 11.58% of research scholars give fifth preference to Bing, 9.47% of research scholars give fifth preference to Google Scholar and 7.37% of research scholars give fifth preference to Yahoo.

Sixth Preference

35.79% of research scholars give sixth preference to MSN and 24.21% of research scholars give sixth preference to Alta Vista. 14.74% of research scholars give sixth preference to Bing and Yahoo, only 12.63% of research scholars give sixth preference to Google Scholar.

5.2. Frequency of Use***5.2.1. Frequency of Web Search*****Table 10** Frequency of web search

Sl. No.	Frequency	Number of respondents	Percentage
1	Everyday	88	92.63%
2	2-3 days a week	5	5.26%
3	Occasionally	2	2.11%

Analysis of Table 10 reveals that majority of research scholars (92.63%) use web everyday for various purposes. When 5.26% of research scholars use web 2 to 3 days a week and only 2.11% of research scholars use web occasionally.

5.2.2. Amount of Time Spent on Web per Day**Table 11** Amount of time spent on web per day

Sl. No.	Time spend	Number of respondents	Percentage
1	Less than 1 hour	25	26.32%
2	1-3 hours	67	70.53%
3	4-6 hours	2	2.11%
4	More than 6 hours	1	1.05%

It is evident from the Table 11 that majority (70.53%) of research scholars spend between 1 to 3 hours daily on web. When 26.32% of research scholars spend less than 1 hour, 2.11% of research scholars spend between 4 to 6 hours on web daily whereas 1.05% of research scholar spend more than 6 hours on web daily.

5.3. Satisfaction on Web Services**Table 12** Satisfaction on web services

Sl. No.	Web Services	Number of Respondents and Percentage		
		Fully satisfied	Partially Satisfied	Not satisfied
1	Online catalogue	7 (7.37%)	15 (15.79%)	73 (76.84%)
2	Bibliographic Database	0	18 (18.95%)	74 (77.89%)
3	Subject gateway	9 (9.17%)	28 (29.17%)	58 (61.05%)

4	Search engines	62 (65.26%)	33 (34.74%)	0
5	Directories	8 (8.42%)	30 (31.58%)	55 (57.89%)
6	Discussion forum	5 (5.26%)	44 (46.32%)	46 (48.42%)
7	Blogs and wikis	51 (53.68%)	38 (40%)	6 (6.32%)
8	Web archives	6 (6.32%)	21 (22.11%)	64 (67.37%)

5.4. Problems Encountered in Using Web Services

Table 13 Hindrances

Sl. No.	Constraints	Number of Respondents and Percentage			
		Major constraints	Constraints	Somewhat a constraint	Not a constraint
1	Retrieval of junk information	39 (41.05%)	32 (33.69%)	20 (21.05%)	4 (4.2%)
2	Slow internet speed	9 (9.47%)	39 (41.05%)	16 (16.84%)	31 (32.63%)
3	Server down/system problem	35 (36.84%)	33 (34.74%)	26 (27.37%)	1 (1.05%)
4	Lack of IT knowledge to effectively utilize web resources	24 (25.27%)	29 (30.53%)	33 (34.74%)	9 (9.48%)
5	Unfamiliarity with search methods	23 (24.21%)	28 (29.47%)	30 (31.58%)	14 (14.74%)
6	Cost	19 (20%)	26 (27.37%)	31 (32.64%)	19 (20%)
7	Restricted downloading of web	31 (32.63%)	30 (31.58%)	27 (28.42%)	7 (7.37%)
8	Health problems	7 (7.37%)	19 (20%)	38 (40%)	31 (32.63%)
9	Over load information	45 (47.37%)	12 (12.63%)	10 (10.53%)	28 (29.47%)
10	Less number of computer terminals in the digital library	34 (35.79%)	23 (24.21%)	22 (23.16%)	16 (16.84%)

Major Constraints

Research scholars responded that while accessing web resources the major constraints encountered by them are over load information (47.37%), retrieval of junk information (41.05%), server down/system problem (36.84%), less number of computer terminals in the digital library (35.79%), restricted downloading of web resources (32.63%), lack of IT knowledge to effectively utilize web resources (25.27%), unfamiliarity with search methods (24.21%), cost (20%), slow internet speed (9.47%) and health problems (7.37%).

Constraints

Constraints encountered by research scholars while accessing web resources are slow internet speed (41.05%), server down/system problem (34.74%), retrieval of junk information (33.69%), restricted downloading of web resources (31.58%), lack of IT knowledge to effectively utilize web resources (30.53%), unfamiliarity with search methods (29.47%), cost (27.37%), less number of computer terminals in the digital library (24.21%), health problems (20%) and over load information (12.63%).

Somewhat a constraint

Research scholars encountered health problems (40%), lack of IT knowledge to effectively utilize web resources (34.74%), cost (32.64%), unfamiliarity with search methods (31.58%), restricted downloading of web resources (28.42%), server down/system problem (27.37%), less number of computer terminals in the digital library (23.16%), retrieval of junk information (21.05%), slow internet speed (16.84%) and over load information (10.53%).

Not a constraint

Analysis revealed that slow internet speed (32.63%), health problems (32.63%), over load information (29.47%), cost (20%), less number of computer terminals in the digital library (16.84%), unfamiliarity with search methods (14.74%), lack of IT knowledge to effectively utilize web resources (9.48%), restricted downloading of web resources (7.37%), retrieval of junk information (4.2%) and server down/ system problem (1.05%) are not a constraint for research scholars.

5.5. Suggestions

Important suggestions received are listed below.

- Provide access to digital library.
- Provide free access to resources.
- Provide subject databases facility to improve academic quality.
- Library must provide e-journals from approved sources.
- Reference to valuable articles gives good guidance for future work.
- Provide Wi-Fi facility in the institution.
- Provide more computers to the departments.
- Extent digital library service time.
- Develop knowledge about web searching keywords and other easy accessing possibilities.
- Online classes/ information to use search engines would be an added advantage to those who can't afford to attend classes mainly due to time constraint.
- Thesis papers should be regularly published for the future reference.
- Institutional repository must be provided.

6. MAJOR FINDING

6.1. Web Search Behaviour

- The study reveals that majority of research scholars are efficient in computer and internet literacy.
- It is evident from the analysis that all the research scholars are using web for the purpose of sending and receiving e-mail besides almost all of them use it for the preparation of seminars and research etc.
- Almost all web resources are available in digital library and the researchers are making use of it except for e-conference proceedings, e-databases and e-tutorials. Analysis further revealed that majority of them are not aware of e-conference proceedings.

- Analysis depicts that majority of research scholars use open source e-resources from shodhaganga but are not aware of major platforms such as DOAJ, Researchers world, DOAB, Open DOAR and Royal society open science.
- Majority of the research scholars do not use journal databases such as ProQuest, JSTOR, Emerald and Springer link. It is evident from the responses that S.B. College digital library do not provide these significant journal databases.
- It is clear from the analysis that majority of the research scholars are not using significant web services such as Online catalogue, Bibliographic database, Subject gateway and Web archives due to non-awareness whereas majority of them are not using Directories and Discussion forum even though they are aware of it.

6.2. Satisfaction Level

- Majority of the research scholars responded that while searching web they feel satisfaction.
- Improvement in the quality of academic work and portability of web resources are benefits experienced by majority of the research scholars along with up to datedness and access to wide range of information.

6.3. Problems

Major constraints encountered in accessing web resources is over load information other than retrieval of junk information and non-availability of sufficient number of computer terminals in digital library.

6.4. Other Findings

- Digital library lacks adequate infrastructure.
- It is observed that digital library of the college do not support research activity through the provision of important e-databases in their respective fields. Precisely digital library provides only web browsing with low bandwidth even the e-mail facility is banned.
- Researchers have to develop their search skills so as to retrieve relevant information from the vast of ocean of web
- IT orientation programmes shall be provided at regular intervals so as to make them aware of various online information sources and services including open access sources.

7. CONCLUSIONS

The study was conducted to know the web search behaviour of research scholars in S.B. College, Changanacherry. The study revealed that research scholars are not aware of advanced search techniques, open access e-resource platforms etc. There is a shortage of a qualified library staff who will be able to guide the research scholars to find their required information. The study revealed that web is growing as an information seeking platform for researchers.

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