Web Search Behaviour among Faculty Members of Colleges Affiliated to Kuvempu University, India- A case study

Maruthi G.
Research Scaholar
Dept. of Library & Information Science,
Kuvempu University, Shankaraghatta
Librarian
Smt. Indira Gandhi Govt. First Grade women's College
Sagar, Shivamogga Dist., Karnataka, INDIA
e-mail: maruthi.gs@gmail.com

Dr. B. S. Biradar
Professor and Chairman
Dept. of Library & Information Science,
Kuvempu University
Shankaraghatta, Shivamogga Dist., Karnataka, INDIA

Abstract *- Searching for information in a web environment is typically a repetitive and daunting activity. The rapid development of the infrastructure for web information has contributed to the rapid publishing of web information. Too much web publishing information creates the issue of information overload that prevents the effectiveness of searching for information. This study explored how faculty searches the Web. The search engines like Google, Yahoo, Bing etc. are selected for the study. This research found that user awareness contributes to user search behaviour. By means of the search log review and questionnaire, this paper explores the inquiry empirically. Among the 109 faculty of colleges affiliated to Kuvempu University in India were the respondents. The findings support the mediator impact of the user search behaviour on the correlation between user awareness and satisfaction with the search. This article provides an overview of search engines used by the faculty members of the higher education institutions. The researchers examined the topics of Web searches; how users search the Web using terms in queries during search sessions; and the challenges faced while searching the information of their needs.*

Key Words: Faculty members, Internet, Search Engine, Kuvempu University

Introduction

A Search Engine is a computer programme that searches for documents or information comprises keywords or phrases of internet to user community. The Search Engine itself is virtually a powerful workstation-class machine that searches a database of information collected from the web. This information is gathered primarily by software programmes called Robots or Spiders that crawl through all the files on the Internet and download them into a searchable database. Search engines have become the paramount tools for searching for information on the internet (Kehoe et.al., 1999).

In many cases a global search engine is available at a local URL. For example Google is available at the URL http://www.google.co.in/ as well as at http://www.google.com/. The local URL usually searches the same database as the international one, but provides an option for restricting the search to local sites.

Search Engines

Encyclopedia Britannica defines search engine is a computer program to find answers to queries in a collection of information, which might be a library catalog or a database but is most commonly the World Wide Web. A Web search engine produces a list of "pages"- computer files listed on the Web- that contain the terms in a query. Most search engines allow the user to join terms with *and*, *or*, and *not* to refine queries. They may also search specifically for images, videos, or news articles or for names of web sites.

Search engines are tools for finding, classifying, and storing information on various websites on the internet. They can help in locating information of relevance on a particular subject by using various search methods (Rowley,1998).

Objectives and Methodology

The general purpose of the study is to determine the use of search engine by faculty members of graduate colleges affiliated to the Kuvempu University, Karnataka, India. For the pilot study, 109 college faculty of different stream were selected.
The present study has been conducted keeping in view the following objectives:

- To examine the frequency of use of search engines.
- To know the level of computer knowledge of the faculty.
- To know the purpose of use of search engine by faculty members of colleges.
- To examine the use of various search engines.
- To know the desirable features opted by the faculty members in search engines.
- To know the challenges while using search engines.

Research hypothesis

The following research hypotheses were formulated for the present study:

- Frequency of use of internet and the disciplines of the respondents are associated.
- Use of search engines is associated with the respondents' professional designation.
- There is an association between the use of search strategies of search engines and age of respondents.

Review of literature

The study of Zhang (1999) shows that the most used strategy to locate e-sources for research purpose was Internet search engine. Timeliness was rated as the best feature of e-sources and most of the researchers were not satisfied with the current state of Internet based e-sources for their research. The investigator pointed out that the quality; reliability and stability of e-sources were the major problems in using e-sources. Spink et.al. (2006) examined three major commercial web search engines illustrate the real differences in web search engines that use various search technologies and deliver a high degree of uniqueness in supported links. Web search engines (Ask.com, Google and Yahoo!) have developed different web indexing and query ranking methods. Meta-search technology, such as Dogpile.com, take the collective content, resources, and ranking capabilities from multiple web search engines to produce a more comprehensive result set containing potentially relevant results from the first results page. The study of Thanuskodi and Ravi (2011) on the use of the internet by the members of social science faculty of Annamalai University indicated that the use of internet services by

the faculty members is associated with an increase in the number of research papers and with improvement in the quality of research and teaching. Mostofa (2011) examined at Darul Ishan University, Bangladesh, more than 56 percent of the respondents use the internet for educational purpose. The access point for them is mostly the university. Google and Yahoo search engines are found that more widely used than other search engines. The major problem faced by the students in their use of the internet includes slow access speed.Purcell et.al (2012) examined that Google continues to dominate the list of most used search engines. Asked which search engine they use most often, 83% of search users say Google. The next most cited search engine is Yahoo, mentioned by just 6% of search users. When we last asked this question in 2004, the gap between Google and Yahoo was much narrower, with 47% of search users saying Google was their engine of choice and 26% citing Yahoo. By serving as a means of imputing future behavior of the provider, and encouraging the willingness to rely on the provider, trust could serve as a relational forward-looking measure. Future research should also consider analyzing search engine behavior through employing data mining and data visualization techniques (Shi et al., 2014). With an effective, explicit, visualization tracking system, search engine providers and their managers can better gauge user loyalty and commitment, over time. Based on consumer value and technology usage research, we propose a conceptual model linking search engine performance to search engine value, user satisfaction with the search engine and search engine reputation for innovation, and ultimately to user loyalty intention and commitment. The results of a study based on data collected from search engine users provide support for a majority of proposed relationships. Functional performance of the search engine affected search engine value. Value was found to be a full mediator of the relationship between functional performance and user satisfaction and between functional performance and reputation for innovation (Sirdeshmukh et.al..2018). The study of Gao & Shah (2020) shows that fairness, diversity and relevance in search results. Author has Used 100 queries and top 100 results per query from Google as the data to demonstrate how topical diversity bias is present in the top web search results. The study explored several fairness ranking strategies to investigate the relationship between fairness, diversity, novelty and relevance.

Top 10 countries with the highest number of internet users

#	Country	Internet Users 2020 Q1	Internet Users 2000 Q4	Population, 2020 Est.	Population 2000 Est.	Internet Growth 2000 - 2020
1	China	854,000,000	22,500,000	1,439,062,022	1,283,198,970	3,796 %
2	India	560,000,000	5,000,000	1,368,737,513	1,053,050,912	11,200 %
3	United States	313,322,868	95,354,000	331,002,651	281,982,778	328 %
4	Indonesia	171,260,000	2,000,000	273,523,615	211,540,429	8,560 %
5	Brazil	149,057,635	5,000,000	212,392,717	175,287,587	2,980 %
6	Nigeria	126,078,999	200,000	206,139,589	123,486,615	63,000 %
7	Japan	118,626,672	47,080,000	126,854,745	127,533,934	252 %
8	Russia	116,353,942	3,100,000	145,934,462	146,396,514	3,751 %
9	Bangladesh	94,199,000	100,000	164,689,383	131,581,243	94,199 %
10	Mexico	88,000,000	2,712,400	132,328,035	2,712,400	3,144 %

Source: https://www.internetworldstats.com/top20.htm

Analysis of data

Table-1: Subject-wise distribution of respondents by gender

Subject	Male	Female	Total
Arts	33(84.62%)	6(15.38%)	39(100%)
Science	24(55.81%)	19(44.19%)	43(100%)
Commerce & Management	19(70.37%)	8(29.63%)	27(100%)
Total	76(69.72%)	33(30.28%)	109(100%)

Table-1.above represents the subject-wise gender distribution of the respondents. With a count of 98 (69.72%) of the total population, the male respondents were more than female respondents (30.28%).

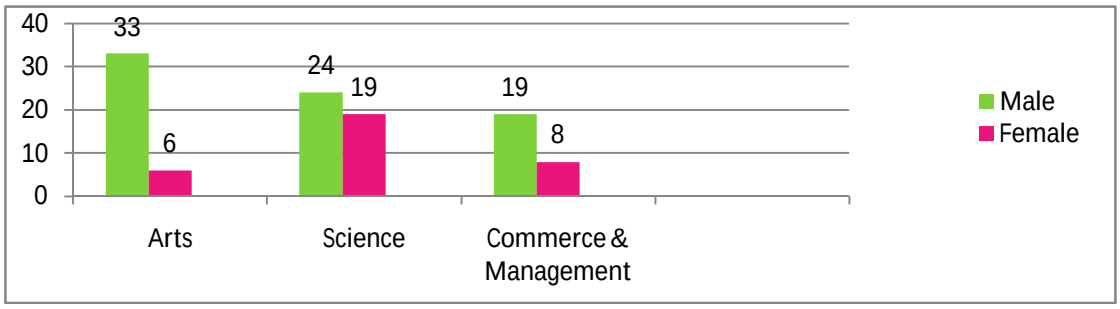

Figure 1: Subject-wise distribution of respondents by gender

Table-2: Designation-wise distribution of respondents by gender

Designation	Male	Female	Total
Lecturer	29(38.16%)	21(63.64%)	50(45.87%)
Assistant Professor	39(51.32%)	9(27.27%)	48(44.04%)
Associate Professor	8(10.53%)	3(9.09%)	11(10.09%)
Total	76(69.72)	33(30.28)	109

There were fifty lecturers, forty eight assistant professors and only eleven associate professors who participated in this study, based on the responses shown in table-2 above. This is due to the fact that there is a large number of lecturers compare to other designations in each college under the study.

Table-3: Age group-wise distribution of respondents by gender

Age group	Male	Female	Total
22-31	11(14.47%)	21(63.64%)	32(29.36%)
32-41	40(52.63%)	5(15.15%)	45(41.28%)
42-50	13(17.11%)	5 (15.15%)	18 (16.51%)
51 & Above	12(15.79%)	2(6.06%)	14(12.84%)
Total	76(100%)	33(100%)	109(100%)

It is evident from Table-3 above that more participants (41.28%) belonged to the age group of '32-41' years.' In the age group of '22-31 years, a comparable attendance of 29.36 percent of faculty members. The lowest participants (12.84%) were belonged to the age group over 51 years.

Table-4: Level of computer knowledge by respondents' category

Level of computer knowledge	Designation			Overall
	Lecturer	Asst. Professor	Associate Professor	
Turn a computer on and off	4.7	4.4	4.18	4.51
Use of computer keyboard & Mouse	4.6	4.44	4	4.47
Use of search engines (e.g., Google)	**4.42**	4.44	4.18	4.4
Find information resources on the Internet	4.36	4.42	3.91	4.34
Send/Open e-mails	4.34	**4.56**	4.27	4.43
Read the news on the Internet	4.12	4.44	3.73	4.22
To post messages (e.g., to blogs, Facebook, Whatsapp, Twitter, online forums)	4.16	4.13	3.73	4.1
To make online purchases	3.92	4.13	3.82	4

5-Excellent, 4-Above Average, 3-Average, 2-Below Average, 1-Very Poor

Table-4 shows that all category faculties' have 'above-average' computer knowledge. And all the faculties were less aware of online purchases.

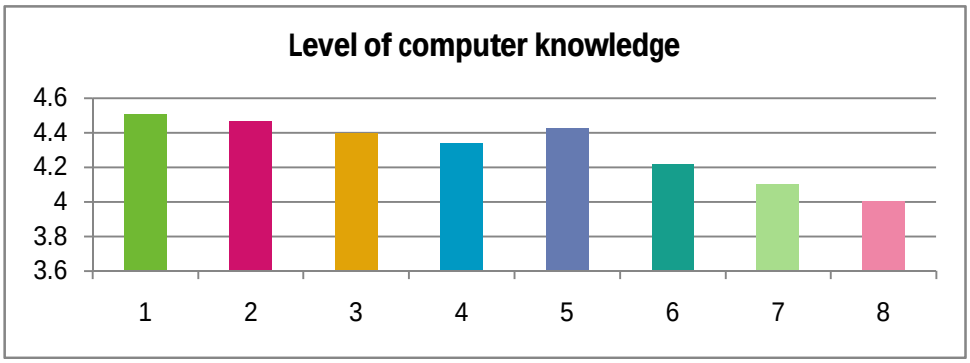

Figure: 2 Level of computer knowledge by respondents' category

Table-5: Use of different search engines by respondents' category

Search engine	Designation			Overall
	Lecturer	Asst. Professor	Associate Professor	
Google	3.94	3.96	3.94	3.96
Yahoo	1.92	1.23	1.86	1.76
Bing	1.68	1.63	1.91	1.74
Altavista	0.64	0.46	0.22	0.44
Ask	0.66	0.78	0.23	0.58

4-Regularly, 3-Frequently, 2-Occasionally, 1-Never

In above Table-5 the participants' responses (n=109) are tabulated with respect to search engines used for accessing information The highest number of respondents (Average 3.96) use the search engine 'Google' followed by Yahoo (Average 1.76). Bing is in third place (1.74) and just 0.44 and 0.58 average of respondents use the Altavista and Ask search engines.

Table-6: Frequency of use of search engines by respondents' category

Frequency	Designation			Total
	Lecturer	Asst. Professor	Associate Professor	
Multiple times in a day	5 (10.00%)	1(2.08%)	3(27.27%)	9(8.26%)
Every Day	6(12.0%)	1(2.08%)	0	7(6.42%)
Twice a Week	11(22%)	20(41.67%)	**5(45.45%)**	36(33.03%)
Occasionally	**28(56%)**	**26(54.17%)**	3(27.27%)	**57(52.29%)**
Total	50(100%)	48(100%0	11(100%)	109(100%)

Above table-6 shows that the frequency of the participants consists of lecturers, assistant professors and associate professors search information to the search engines and the percentage of their answers are shown in Table 6 above. The highest number of respondents used the search engine 'Occasionally' (52.29%). 33.03% respondents use the search engines 'Twice a week'.

Table-7: Purpose of use of search engines by respondents' category

Purpose	Designation			Total
	Lecturer	Asst. Professor	Associate Professor	
Research	23(46%)	30(62.5%)	**8(72.73%)**	61(55.96%)
Search information for teaching purpose	**43(86%)**	**42(87.5%)**	**11(100%)**	96(88.07%)
To read newspaper/magazines	27(54%)	32(66.67%)	6(54.55%)	65(59.63%)
Look up a place/address	23(46%)	31(64.58%)	4(36.36%)	58(53.21%)
For Recreation purpose	16(32%)	21(43.75%)	3(27.27%)	40(36.7%)

Table-7 shows that Associate Professor (72.73%) uses the search engines for the purpose of 'Research'. And use the search engine by all respondents for 'information for teaching purpose (88.07%)'. Uses of search engine for recreation purpose were vey less by all three types of respondents.

Table-8: Features of search engines desirable for respondents' category

Feature of Search Engine	Designation			Total
	Lecturer	Asst. Professor	Associate Professor	
Results displayed in ranked order	**32(64%)**	30(62.5%)	7(63.64%)	69(63.3%)
Search word highlighted in document	23(46%)	21(43.75%)	5(45.45%)	49(44.95%)
Number of hits displayed	11(22%)	15(31.25%)	1(9.09%)	27(24.77%)
Phrase searching	9(18%)	12(25%)	2(18.18%)	23(21.1%)
Option searching (Find ANY word, Find ALL words, Find EXACT phrase)	22(44%)	15(31.25%)	6(54.55%)	43(39.45%)

Above table-8 depicted that the majority of the faculties (63.3%) opined that features of search engines desirable was 'results displayed in ranked order'. 44.95 percent respondents desires 'Search word highlighted in document', 'Phrase searching' desires by respondents in search engine was very less(21.1%).

Yamin, Ramayah and Ishak (2015) only note in their 2015 study that a higher knowledge of search query formulation leads to a higher search satisfaction.

Table-9: Challenges faced by categories of respondents' while searching information

Challenges/Problems	Designation			Total
	Lecturer	Asst. Professor	Associate Professor	
Lack of links	27(54%)	23(47.92%)	4(36.36%)	54(49.54%)
Repetitive title tags	21(42%)	18(37.50%)	4(36.36%)	43(39.45%)
Too many 404 errors	12(24%)	20(41.67%)	1(9.09%)	33(30.28%)
Duplicate hosts	10(20%)	13(27.08%)	1(9.09%)	24(22.02%)
Bad Links to your home page	14(28%)	17(35.42%)	2(18.18%)	33(30.28%)
Unclean URLs	8(16%)	14(29.17%)	2(18.18%)	24(22.02%)
Synonymy	3(6.00%)	6(12.50%)	0	9(8.26%)

It is evident from Table-9 above that the broad segment of participants (49.54%) highlighted that 'lack of links' was their key challenge in finding information. The second most frequently experienced barrier was 'repetitive title tags ' by (39.45%) participants. 'too many 404 errors' and 'bad links to your home page' were also reflected by a significant number of participants (30.28%). A small percentage of respondents (8.26) faced problems such as 'Synonymy'.

6. Findings of the study

The findings of the survey indicate that more participants belonged to the age group'32-41 '(41.28%). The lowest participants (12.84%) belonged to the 51-year-old age group. Google was the most used search engine for retrieval of information for the needs. The majority of the faculties (63.3%) opined that features of search engines desirable was 'results displayed in ranked order'. This study reveals that the Associate Professor (72.73%) uses search engines for research purposes. All respondents use the search engine for" teaching purpose (88.07%). Many users used the search engine very less for recreational purposes.

Conclusion:

This study focused on behaviour of college faculty towards the search engines. The study results endorse the importance of search engines as information retrieval tools on the web. The faculty' was very much aware of search engines available on the web. The main purpose of search engine was used by the faculty for accessing information for teaching needs. The search engine providers should overcome the problems faced while searching the information on the web. The overall search experience of faculty on the search engines was highly satisfactory.

References:

1. Gao, R., & Shah, C. (2020). Toward creating a fairer ranking in search engine results. *Information Processing & Management*, *57*(1), 102-138.
2. Kehoe, C., Pitkow, J., Sutton, K., Aggarwal, G., & Rogers, J. D. (1999). Results of GVU's tenth world wide web user survey. https://www.cc.gatech.edu/gvu/user_surveys/survey-1998-10/report.pdf retrieved on 28/12/2019

3. Mostofa, Mamun (2011). Internet access and use among business students of a private university of Bangladesh: a survey. *Annals of library and Information Studies*, *58*(4), 79-86.
4. Purcell, K., Rainie, L., & Brenner, J. (2012). Search engine use 2012. https://www.ris.org/uploadi/editor/ 1341041853PIP_Search_Engine_Use_2012.pdf retrieved on 28/12/2019
5. Rowley, J.(1998). The Electronic Library, Ed. 4. *Facet Publishing*, London, 186-187.
6. Shi, C., Wu, Y., Liu, S., Zhou, H., & Qu, H. (2014). Loyaltracker: Visualizing loyalty dynamics in search engines. *IEEE transactions on visualization and computer graphics*, *20*(12), 1733-1742.
7. Sirdeshmukh, D., Ahmad, N. B., Khan, M. S., & Ashill, N. J. (2018). Drivers of user loyalty intention and commitment to a search engine: An exploratory study. *Journal of Retailing and Consumer Services*, *44*, 71-81.
8. Smith, A. G. (2003). Think local, search global? Comparing search engines for searching geographically specific information. *Online Information Review*, *27*(2), 102-109
9. Spink, A., Jansen, B. J., Kathuria, V., & Koshman, S. (2006). Overlap among major web search engines. *Internet Research*, 16(4), 419-426.
10. Thanuskodi, S., & Ravi, S. (2011). Use of internet by the social science faculty of Annamalai University, Annamalainagar, India. *Library Philosophy and Practice* (e-journal) 633.
11. Yamin, F. M., Ramayah, T., & Ishak, W. H. W. (2015). Does user search behaviour mediate user knowledge and search satisfaction?. International Journal of Economics and Financial Issues, *5*(1S), 34-39.
12. Zhang, Yin. (1999). Scholarly use of internet based electronic resources: a survey report. *Library Trends*, *47*(4), 746-770.
13. https://www.britannica.com/technology/search-engine
14. https://www.internetworldstats.com/top20.htm