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Web Searching Patterns Used by Social Sciences Faculty and Researchers

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This study is focused to find the web searching patterns used by the faculty and researchers of Social Sciences, at the universities of Punjab and Chandigarh in India.

A survey method was used to collect the primary data from the sample of 532 respondents including social sciences faculty and researchers from the total population of 1061 including 08 departments of Social Sciences in three universities. The proportionate random sampling method was used to select the sample. The data were collected through structured questionnaire method and further analysed using SPSS using descriptive statistical data analysis techniques and Chi-square test was used to test the hypothesis.

Results of the survey revealed that the majority of social sciences faculty and researchers search the web to accomplish their research related activities and for writing research papers. They use mostly a simple search technique and rarely use advanced search technique. They generally prefer a search engine to find the web resources mostly in text-format and the majority of them having the ability to search and use the web 'to some extent' only.

Therefore, this study concludes that there is a significant difference between the social sciences faculty and researchers related to their ability to search the web. Hence, there are still a lot of things to be done by the university libraries to ensure the optimal use of the web by the social sciences faculty and researchers.

Key Words: *Search Patterns; Web Resources and Services; Social Sciences; Faculty; Researchers; Search Engine; Simple Search Technique; Advanced Search Technique*

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1 INTRODUCTION

Web is a new normal in the present era that has become a new medium of information. There are a plethora of information contents available on the web in different forms and formats which are searched by users in different manners. A pattern can be defined as a systematic method or a way to do something repeatedly. 'The term 'search pattern' is known as a systematic way or method in which a search for an object or person is made. Therefore, web searching patterns can be broadly defined as the different ways or methods or processes, used to access or search the web.

In the past decade, there has been significant growth and development in all areas of literature, resulting in a substantial increase in the amount of fragmented knowledge available on the web. This has created significant challenges for users to search relevant information from the web as per their specific requirements. Users are primarily concerned with accessing information contents which are both comprehensive and precise and directly address their specific queries in the shortest possible timeline.

In the present time, people are investing increasing amounts of time working with electronic data. Web searching services such as Google, Yahoo, and LYCOS etc. give easy access to the myriad sources of textual and multimedia data. More than one billion pages are recorded by search engines, and finding the coveted data is not a simple assignment (Spink, 2003). There are different patterns for web searching used by users to find their desired information on the web. Therefore, it is required to identify effective patterns in searching the web through which users can get the required information. The research mentioned in this article is about web searching patterns by the social sciences faculty and researchers at the universities of Punjab and Chandigarh.

2 REVIEW OF RELATED LITERATURE

The survey of the relevant published literature was made to collect the required information of research gaps in the previous studies. Several studies have been conducted in the recent past on the web search patterns used by users. The present study has made an endeavour to cover a spectrum of works that transcend discussions about the web search pattern itself. Studies on the web search pattern by the users include that of **Giddaiah (2004),** who found that most of the researchers prefer simple search techniques. In a separate study, **Wang and Artero (2005)** discovered that most of the students search the web through keywords followed by using website addresses (URLs) respectively. Similar study was conducted by **Al-ansari (2006)** on the patterns of the internet use by the faculty members of Kuwait University. Findings of the study revealed that search engines and the WWW are mostly used by the faculty. In the same way, **Raza and Upadhyay (2006)** found that majority of

the researchers' access electronic journals through search engines. Further, the study of **Mulimani and Gudimani (2008)** confirmed that Google is the most preferred search engine among the research scholars and students. Subsequently, a study conducted by **Joshi (2010)**, established that a search engine is frequently used by the faculty for browsing and searching information while other searching tools like subject gateways, bibliographic databases, and digital libraries are less used. In a different study, **Madhusudhan (2010)** revealed that most of the research scholars use a 'Boolean Search' followed by the 'Phrase Search', 'the Field Search' and 'the Truncation Search' respectively. Likewise, **Khan, Khan, and Bhatti (2011)** investigated the attitude of the PG students towards internet at Islamia University of Bhawalpur (Pakistan) in their research study and discovered that most of the PG students use 'Google' as a search engine to retrieve information. Similarly, a case study, conducted by **Bhardwaj and Walia (2012)** on the use of web-based information sources and services by the faculty established that 100% of the faculty members use 'Boolean search' and the majority of them have learnt to access web resources by themselves. Another study was carried out at the University of Agricultural Sciences, Bangalore (India) by **Kumar and Subramanyam (2012)** who found that most of the faculty members access information through website addresses or URLs followed by search engines. Similarly, **Tsvere, Nyaruwata, and Swamy (2013)** examined the internet usage patterns among the university academics and confirmed that the internet is used for research more than for teaching by university academics. In a separate study, **Kumar and Reddy (2014)** established that a significant number of research scholars use open-access databases frequently and apply a keyword searching technique. Furher, **Karkun and Mallinath (2015)** concluded in their study that most of the faculty and research scholars have learnt the techniques of accessing electronic resources from their colleagues and friends. In a related study, **Firdaus (2016)** found that a search engine is the most popular tool for accessing web resources followed by publisher websites and library websites respectively. Key-word search is the most popular simple searching technique followed by the title search among internet users. In another study of **Ali, Khan and Khanam (2017)** it was found that the majority of the research scholars utilize the web daily for their research purpose. Most of them explore web through the search engines using keywords. The vast majority of the scholars also use Boolean logic for extracting the desired information on the web. Further, **Ankrah and Atuase (2018)** found that most of the PG students prefer to access electronic information resources through Google scholars. The majority of them are dependent on the library professionals in accessing these resources.

3 NEED OF STUDY

As there has been a tremendous growth in web resources, it is very difficult

for users to find their pin point information on the web to cater their specific information requirements. Here, the library professionals must be known to the patterns used by their different users for web search with a view to provide them all required support to ensure the optimal use of the web by them. This research study aims to uncover the search patterns used by faculty and researchers of Social Sciences at three universities of Punjab and Chandigarh i.e., Punjabi University, Patiala, Guru Nanak Dev University, Amritsar and Panjab University, Chandigarh. The findings of this study would help to the university libraries to frame strategies and policies that could make better search and use of the web by the social sciences faculty and researchers for their teaching and research purpose.

4. RESEARCH OBJECTIVES

The ultimate aim of the present study is to investigate the web search patterns used by the social sciences faculty and researchers with the following research objectives:

1. To identify the purposes of using the web by social sciences faculty and researchers;
2. To explore their modes of searching the web;
3. To discover the web searching techniques used by them;
4. To find their use of different formats of web resources;
5. To investigate their ability to search and use the web;

5. HYPOTHESIS

To accomplish this research objective, the following hypothesis was proposed on the basis of the review of the related literature along with the consultation of faculty members, subject experts, researchers and practitioners:

$H_0$1 There is no difference between the social sciences faculty and researchers related to their ability to search the web.

6. RESEARCH METHODOLOGY

A survey method was applied to collect the data using a structured questionnaire to examine the web search patterns used by the social sciences faculty and researchers. The population of the study is shown in Table 1.

Table 1 Population of the Study

Department	Punjabi University, Patiala		Panjab University, Chandigarh		Guru Nanak Dev University, Amritsar		Total
	Faculty	Researchers	Faculty	Researchers	Faculty	Researchers	
History	09	27	10	30	04	08	88
Sociology	07	50	08	30	05	09	109
Political Science	10	28	07	20	04	06	75
Law	16	10	18	100	07	18	169
Economics	14	200	11	30	08	14	277
Psychology	15	93	06	30	05	13	162
Lib. & Inf. Sci	06	32	04	20	03	04	69
Education	04	22	8	45	05	28	112
Total	**81**	**462**	**72**	**305**	**41**	**100**	**1061**
	543 (51.17)		**377 (35.53)**		**141 (13.28)**		

It is indicated from Table 1 that the populace for the present study comprises of faculty and researchers pursuing Ph.D. belonging to 08 departments/ disciplines of Social Sciences at the three universities of Punjab and Chandigarh i.e. Punjabi University, Patiala, Guru Nanak Dev University, Amritsar and Panjab University, Chandigarh. The proportionate stratified random sampling method was adopted by the investigators to carry out the study. Moreover, this research applied a personal approach to stimulate the respondents to partake in the survey, with the goal of getting a high response rate. A total number of 799 questionnaires were administered among the faculty and researchers of 08 departments/disciplines of Social Sciences selected on the guidance of ICSSR and their equal distribution in these universities, through accidental random sampling method. Out of 799 questionnaires, 584 questionnaires from the faculty and researchers of Social Sciences were returned showing a response rate of 73.09 %. Further, a total number of 532 questionnaires were found completed and considered valid, which constituted 50.14% of the total population (1061). The reliability and internal consistency of variables were tested using techniques such as Cronbach's Alpha test prior to the study.

Table 2 Proportionate Stratified Random Sampling

Respondents From the three university	Total population N (%)	Minimum stratified sample size required sample of total population=N	Minimum Required Sample=N	Total sample used for study N (%)
Researchers	867 (81.72)	290.48*867/1061=237.36	237.36	422 (39.77)
Faculty	194 (18.28)	290.48*194/1061=53.11	53.11	110 (10.37)
Total	1061 (100)	290.48(27.38%)	290.48	532 (50.14)

Table 2 shows that the total numbers of faculty members were 194 (18.28%); total numbers of researchers were 867 (81.71%) and the total population of the selected departments of Social Sciences from three universities was 1061 only. The sample size has been calculated using Solvin's formula where proposed sample size is 290.48 respondents from the total population of 1061. A proportionate random stratified sampling has been employed as presented in Table 2. In this study, however, data were collected from 110 faculty members (20.7% of 532) and 435 researchers (79.3% of 532) for a total of 532 responses. As a result, the sample represents 532 (50.14%) of the

total population (1061) was taken. Structured questionnaire (Likert 4 point scale) was used for the collection of primary data from the respondents.

6 DATA ANALYSIS

The data analysis and interpretation were drawn by applying appropriate statistical tools and techniques using SPSS. Scale Statistics**,** Pearson Chi-square test and mean-based ranking were applied. The significance level was checked with p-value (probability value) to draw results.

6.1. Results and Discussion

On the basis of the responses received from the respondents through questionnaires, the data were organized, analysed, tabulated and interpreted by using different statistical tools and techniques and demonstrated in the following headings:

6.1.1. Purpose of Searching the Web

As web is used by the respondents for different purposes, they were asked a question about it as demonstrated in Table 3.

Table 3: Item Statistics: Purpose of Searching the Web

Purpose	Mean	Std. Deviation	N
Teaching and Learning	2.1541	0.63388	532
Research Work	3.4436	0.61265	532
Professional Competency or Updating Subject Knowledge	2.2970	0.55417	532
Writing Articles/ Research Papers	2.9060	0.64557	532
Scale Statistics (Cronbach's Alph=0.485; Mean= 10.8008, Variance= 2.359,Std. Deviation=1.53606, N of Items=04), 4 point scale			

Table 3 explains the Scale Statistics (Cronbach's Alpha=0.485and Mean=10.8008; Variance=2.359, Std. Deviation=1.53606, N. of Items=4). The scale mean value =10.8008 is from the total of 16 if all 4 variables were rated @ 4. This had explained 67.50% of the construct and Alpha had showed scale reliability and validity (Hair et al., 2010). The means indicate that the majority of the respondents used web-based resources and services for the purpose of 'Research Work' followed by 'Writing articles or Research Papers', 'Professional Competency or Updating Subject knowledge' and 'Teaching and Learning'respectively.

7.1.2 Use of Different Modes to Search the Web

As the respondents use different modes of searching the web, they were asked a question related to this as demonstrated in Table 4.

Table 4 Item Statistics: Use of Modes to Search the Web

Mode	N	Range	Minimum	Maximum	Sum	Mean	Std. Dev.	Variance
Search Engines	532	2.00	2.00	4.00	1950.00	3.6654	0.51061	0.261
Website Addresses/URLs	532	1.00	2.00	3.00	1332.00	2.5038	0.50046	0.250
Mean=6.1692,Variance=0.585,Std. Dev.=0.76502, N of Items=2, Valid N (list wise)=532, 4 point scale								

Table 4 shows scale statistics (Mean=6.1692; Variance=0.585, Std. Deviation=0.76502, N. of Items=2). The scale mean value =6.1692 was from the total of 08 if all 2 variables were rated @ 4 and this had explained 77.11% of the construct and Alpha had showed scale reliability and validity (Hair et al., 2010). It is shown from the mean values that most of the respondents used a "Search Engine" to search the web followed by a "Website Address /URL" in this regard.

7.1.3 Use Searching Techniques

Different searching techniques are used by users to search their required information on the web. Table 5 shows the descriptive summary of the use of different searching techniques, used by the respondents including social sciences faculty and researchers to find web resources.

Table 5 Item Statistics: Use Searching Techniques

Descriptive Statistics								
Search Technique	N	Range	Minimum	Maximum	Sum	Mean	Std. Deviation	Variance
Simple Search Technique	532	2.00	2.00	4.00	1968.00	3.6992	0.46715	0.218
Advanced Search Technique	532	3.00	1.00	4.00	800.00	1.5038	0.59659	0.356
Mean=5.2030,Variance=0.569,Std. Deviation=0.75424,N of Items=2,Valid N (list wise)=532								

Table 5 indicates scale statistics (Mean=5.2030; Variance=0.569, Std. Deviation=0.75424, N. of Items=2). The scale mean value =5.2030 was from the total of 08 if all 02 variables were rated @ 04.This had explained 65.03% of the construct and Alpha had showed scale reliability and validity (Hair et al., 2010). The means show that the majority of the respondents used the 'Simple Search Technique' to find web-based resources followed by the 'Advanced Search Technique'.

7.1. 4 Use of Searching Fields

There are different searching fields which are used by the respondents to search web resources. The analysis of the data related to different searching fields used by the respondents is described in Table 6.

Table 6 Item Statistics: Use of Searching Fields

Field	Mean	Std. Deviation	N
Keyword	3.4023	0.65515	532
Title	2.4474	0.58790	532
Author	2.2970	0.50436	532
Journal Name	2.0188	0.38280	532
DOI (Digital Object Identifier)	1.2406	0.43657	532
Publisher Name	1.8571	0.52997	532
Scale Statistics(Cronbach's Alpha=0.470 N=5; Mean=13.2632; Variance=2.703;Std. Deviation=1.644), 4 point scale			

Table 6 shows scale statistics (Cronbach's Alpha=0.470and Mean=13.2632; Variance=2.703, Std. Deviation=1.644, N. of Items=6). The scale mean value =13.2632 was from the total of 24 if all 6 variables were rated @ 4. This had explained 55.26% of the construct and Alpha had showed scale reliability and validity (Hair et al., 2010).The mean-based ranking shows that 1st rank is given to 'Keyword ' that was mostly used by the respondents followed by Title(2nd), 'Author' (3rd), 'Journal Name'(4th) 'Publisher Name' (5th), and 'DOI' (6th) respectively.

7.1.5. Searching the Web Resources in Different Formats

As web resources are available in different formats, the respondents were asked a question about it as demonstrated in Table 7.

Table 7 Item Statistics: Searching the Web Resources in Different Formats

Format	Mean	Std. Deviation	N
Text Format	3.5902	0.49985	532
Image Format	1.8308	0.59308	532
Audio Format	1.5714	0.51765	532
Video Format	2.8985	0.55662	532
Multi-media Format	2.2782	0.73496	532
Scale Statistics (Cronbach's Alpha=0.610 N=5; Mean=12.1692; Variance=3.357;Std. Deviation=1.832), 4 point scale			

Table 7 indicates scale statistics (Cronbach's Alpha=0.610 and Mean=12.1692; Variance=3.357, Std. Deviation=1.832, N. of Items=5). The scale mean value =12.1692 was from the total of 20 if all 05 variables were rated @ 04. This had explained 60.84% of the construct and Alpha has showed scale reliability and validity (Hair et al., 2010). The means show that the majority of the respondents used text-format followed by video-format, multimedia-format, image-format, and audio-format respectively.

7.1.6. Ability to Search the Web

With a view to know about the ability among the respondents to search the web, they were asked a question related to this subject matter as demonstrated in Table 8.

Table 8: Ability to Search and Use the Web

Variable	Rating	Respondents		Total N (%)	Chi-Square χ^2 (df; C)
		Researchers N (%)	Faculty N (%)		
Ability	Not at All	2 (0.4)	0 (0)	2 (0.4)	**479.549 (3; 0.00)**
	To A Little Extent	176 (33.1)	56 (10.5)	232 (43.6)	
	To Some Extent	200 (37.6)	48 (9)	248 (46.6)	
	To A Great Extent	44 (8.3)	6 (1.1)	50 (9.4)	
	Total	422 (79.3)	110 (20.7)	532 (100)	

The analysis of the data related to the self assessment of the respondents about their ability to search and use the web is presented in Table 8. The results of the study show that the majority of the respondents (46.6%) were found having the ability to search and use the web 'to some extent' while 43.6% of the respondents were having such ability 'to a little extent' and only a few of them (9.4%) were having such ability 'to a great extent'. Thus, it is relevant to say that most of the social sciences faculty and researchers were having the ability to search and use the web 'to some extent'.

The Chi-square test has produced statistically significant results ($\div^2$=4.775, df=3, p-value=0.00<0.05) which indicate that there was a significant difference between the social sciences faculty and the researchers about their ability to search and use of web. ***Hence, $H_0$1 is rejected for this variable.*** So, it is pertinent to say that the social sciences faculty and the researchers were having no equal ability to search and use the web.

7 FINDINGS OF THE STUDY

The findings of the survey conducted among the social sciences faculty and researchers at the three universities of Punjab and Chandigarh i.e., Punjabi University Patiala, Guru Nanak Dev University, Amritsar and Panjab University, Chandigarh under the study are given below:

- It is indicated from the study that the majority of the social sciences faculty and researchers search the web for the purpose of 'Research Work' followed by 'Writing Research Papers or Articles', 'Professional Competency or Updating Subject knowledge' and 'Teaching and Learning' purpose respectively.
- Most of the social sciences faculty and researchers use a "Search Engine" to search the web followed by a "Website Addresses or URLs" while searching the web.
- The significant number of respondents uses the 'Simple Search Technique' to find web resources followed by the 'Advanced Search Technique'.
- The most of the social sciences faculty and researchers use a 'Keyword ' followed by Title', 'Author', 'Journal Name', 'Publisher Name', and 'DOI' respectively to find web resources while searching the web.

- The majority of the social sciences faculty and researchers prefer text-format followed by video-format, multimedia-format, image-format, and audio-format of web resources respectively while searching the web.
- The results of the study show that the majority of the social sciences faculty and researchers (46.6%) have the ability search and use the web 'to some extent' while 43.6% of the respondents have such ability 'to a little extent' and only a few of them (9.4%) have such ability 'to a great extent'.
- There is a significant difference between the social sciences faculty and the researchers about their ability to search and use the web. ***Hence, $H_0$1 is rejected for this variable.*** So, it is pertinent to say that the social sciences faculty and the researchers are having no equal ability to search and use the web.

8 SUGGESTIONS

- The university libraries should give all their support to the social sciences faculty and researchers in making the optimal use of web by them to perform their academic and research tasks.
- The social sciences faculty and researchers at the universities should be technically trained enough to apply advanced techniques for searching web resources.
- The social sciences faculty and researchers should make the maximum use of the web for their teaching and learning purpose also.
- The university libraries should initiate capacity building programmes aimed at enhancing their ability to search and use the web.

9 CONCLUSION

The results of the study clearly indicate that the social sciences faculty and researchers mostly search the web for their research work or writing research papers using just simple searching techniques and they rarely apply advanced search techniques. Key word is mostly used by them as searching field and they use web resources generally in text-form. They are having the ability to search and use the web 'to some extent'. The study has concluded that there is a significant difference between social sciences faculty and researcher related to their ability to search and use the web. Hence, there are still a lot of things to be done by the university libraries to ensure the optimal use of the web by the social sciences faculty and researchers.

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