Use of Web of Science among Research Scholars of Institute of Science, Banaras Hindu University: a Study

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Abstract

The present study was conducted with the objective to examine the use of Web of Science among Research Scholars of Institute Science (erstwhile Faculty of Science) of Banaras Hindu University. A well-structured questionnaire was administered through random sampling method to the Research Scholars of the Institute to collect the data regarding the use of Web of Science. The survey reveals that 68.7% respondent Research Scholars are using the Web of Science for different purposes related to their research. The scope of the present study is limited only to the Research Scholars of Institute of Science, Banaras Hindu University only.

Keywords: Web of Science, Google Scholar, Research Scholar, BHU.

1. Introduction

Web of Science (previously known as Web of Knowledge), emerged in 1997 from the Science Citation Index created by Eugene Garfield in 1960s[1]. It is an online subscription-based multidisciplinary citation database originally produced by the Institute for Scientific Information (ISI), now maintained by Clarivate Analytics[2] (previously the Intellectual Property and Science business of Thomson Reuters), that provides a comprehensive citation search. Web of Science includes above 18,000 journals and comprises of seven different citation databases including different information collected from journals, conferences, reports, books and book series. WOS citation databases are Social Sciences Citation Index (SSCI), Science Citation Index Expanded (SCI Expanded), Conference Proceedings Citation Index (CPCI), Arts and Humanities Citation Index (A&HCI) and. Since WOS is the oldest citation database, it has strong coverage with citation data and bibliographic data which goes back to 1900 (Boyle & Sherman, 2006)[3]. Until 2004, Web of Science was the single database for citation, in 2004, Google Scholar, citation database of giant Search Engine Google and Scopus of Elsevier came into existence. WoS has a thorough journal selection process based on publication standards, expert judgements, regular appearances and quality of citation data (Garfield, 1990)[4].

In late 2014, Web of Science has tied up with Google Scholar to provide linking of Web of Science for any particular article which is indexed by Web of Science in Google Scholar. But this link of Web of Science will appear only in those institutions where Web of Science access is available.
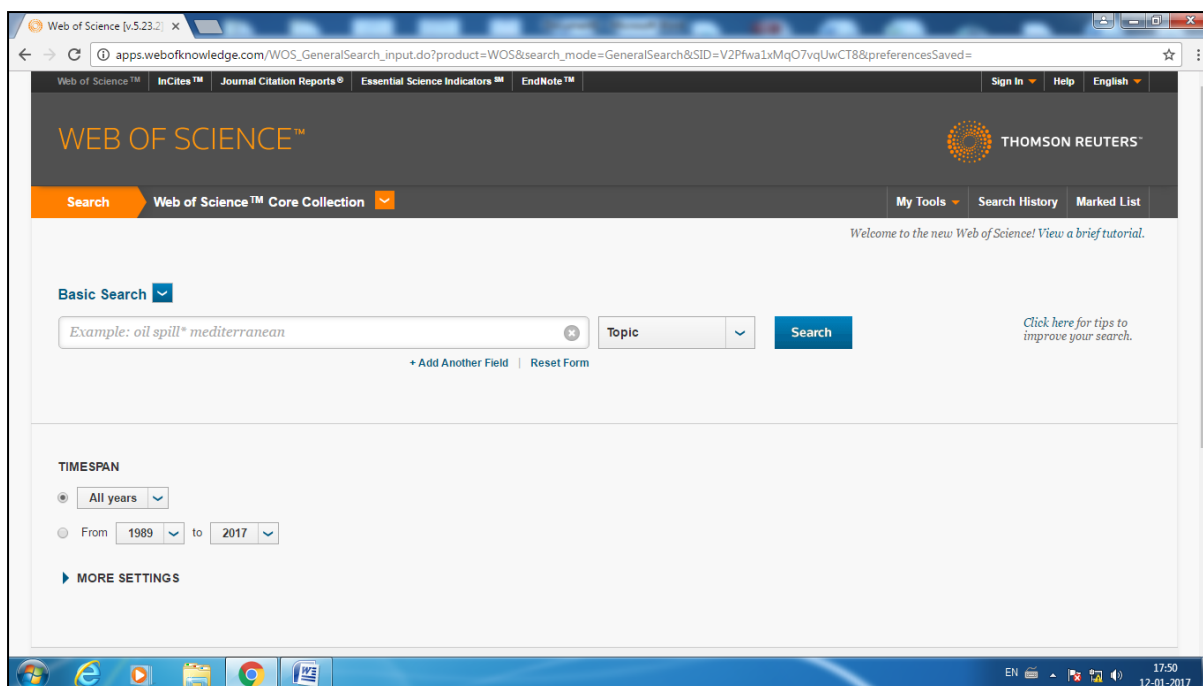
Figure: Homepage of Web of Science

2. Banaras Hindu University

Banaras Hindu University is an internationally reputed temple of learning, situated in the holy city of Varanasi. This Creative and innovative university was founded by the great nationalist leader, Pandit Madan Mohan Malviya, in 1916 with cooperation of great personalities like Dr Annie Besant, who viewed it as the University of India. Banaras Hindu University was created under the Parliamentary legislation - B.H.U. Act 1915. It played a stellar role in the independence movement and has developed into the greatest center of learning in India. It has produced many great freedom fighters and builders of modern India and has immensely contributed to the progress of the nation through a large number of renowned scholars, artists, scientists and technologists who have graced its portals. The area of the main campus of this premiere Central University is 1300 acres, having well maintained roads, extensive greenery, a temple, an air strip and buildings which are an architectural delight. The Air Field of the campus was started for military training for flying during the second world war. Another campus of the university at Barkachha, in Mirzapur district, covering an area of 2700 acres is coming up. The university comprises 3 Institutes, 14 Faculties 140 Departments, 4 Inter-disciplinary Centers a constituent college for women's and 3 Constituents Schools, spanning a vast range of subjects pertaining to all branches of humanities, social science, technology, medicine ,science, fine arts and performing arts. It has 6 centres of Advanced Studies, 10 Departments under Special Assistance Programme and a large number of specialized Research Centers. Four Degree Colleges of the city are affiliated to the University. Bharat Kala Bhavan, the reputed museum of the university, is a treasure trove of rare collections. The 927 bed hospital of the University is equipped with all the modern amenities. The university provides a wide range of facilities for sport and hobbies, has large playgrounds, a big auditorium, a flying club and many auxiliary services and units like Printing Press, Publication Cell, Fruit Preservation Center, Subsidized Canteens, Employment and Information Bureau, Security etc. The University family consists of about 15000 students belonging to all streams of life, castes and religions and races, about 1700 teachers, and nearly 8000 non-teaching staff A large number of students from foreign countries like the

U.S.A, the countries of Europe, Asia, Middle East, Africa etc., come to study here. The university has taken a leadership role in promoting new ideas, the spirit of integration of the world, and cultivation of intellect and culture. Banaras Hindu University is small virtually the universe in microcosm. [5]

2. Institute of Science

Institute of Science (erstwhile Faculty of Science) comprises thirteen Departments covering almost all the branches in modern science. It offers B.Sc.(Hons.) and M.Sc. courses in most disciplines, M.Sc. (Tech.) in Geophysics, MCA, and conducts research programmes in all areas. Two vocational courses, Industrial Microbiology and Electronics Instrumentation and Maintenance have been introduced in recent years at U.G. level. The Departments have expertises in various related fields and are engaged in advanced research activities. The School of Biotechnology has introduced a new course on Cell Biology and Virology. It has a Bioinformatics User Center. The Department of Chemistry has been conducting research in the frontier areas of subject like Nuclear and Radio Chemistry, Organometillic Chemistry, Biosensor. The Department of Geography has a new course of Satellite Imagery Interpretation. The Department of Geology is a pioneering department in the country. The Department of Mathematics has thrust areas of research in relativity, fluid mechanics and operations research. The Department of Physics, a leading Department in the country, has International Collaboration Programmes like Indo-German and Indo-US. The Department of Statistics has two major research projects sponsored by Rockefeller Foundation. The Departments of Statistics & Botany have introduced Self-financing courses in Population Studies and Environmental Science respectively. Department of Computer Science runs B.Sc. and M.Sc. courses. Home Science is taught at MMV. Department of Biochemistry has postgraduate teaching and research programmes.

The Departments of Botany, Zoology, Physics, Geology and Chemistry are recognized Centers of Excellence and Centers of Advanced Study. The Department of Geophysics receives grants under Special Assistance Programme. The Institute of Science keeps itself alive with regular academic activities like seminars, workshops, conferences. It is equipped with advanced and sophisticated laboratories. Faculty members have liaison with research institutions of repute in India and abroad. A large number of the teachers of the Institute have received distinctions and honors like Shanti Swarup Bhatnagar Prize, Jawaharlal Nehru Fellowship, FICCI Award, etc. and several are fellows of the various academies. [6]

3. Literature Reviewed

Adriaanse and Rensleigh (2013) compared three citation resources with one another to identify the citation resource with the most representative South African scholarly environmental sciences citation coverage. This paper focuses on the results of the content verification process which measured amongst others the citation counts, multiple copies and inconsistencies encountered across the three citation resources ISI Web of Science, Scopus and Google Scholar. Data from the South African scholarly environmental sciences journals for the year range 2004-2008 were extracted from the three citation resources and compared. They find that the total citation counts indicated that Web of Science (WoS) retrieved the most citation results, followed by GS and then Scopus. WoS performed the best with complete coverage of the journal sample population and also retrieved the unique items. The investigation into multiple copies indicated that WoS and Scopus retrieved no duplicates, while GS retrieved multiples copies. Scopus delivered the least inconsistencies regarding content verification and content quality compared to the other two citation resources.

Additionally, GS also retrieved the most inconsistencies, with WOS retrieving more inconsistencies than Scopus. [7]

Amara and Landry (2012) studied and compared Google Scholar with Web of Science. This study examines the research outputs of scholars in business schools and how their performance assessment was affected when using data extracted either from Web of Science or Google Scholar. The study found that the performance of Business school researchers regarding the number of contributions, citations, and the h-index was much higher when performances were assessed using GS rather than WoS. The results showed that the researcher who exhibits the highest performances when assessed in reference to articles published in ISI-listed journals also reflects the highest performances in Google Scholar too. [8]

Chadegani et al. (2013) in the present study compared Web of Science and Scopus on the basis of qualitative and quantitative characteristics such as provenance, citations, searching and unique features by reviewing prior studies. The comparison of WOS and Scopus discovers that WoS has strong coverage which goes back to 1990 and most of its journals written in English. However, Scopus covers a superior number of journals but with lower impact and limited to recent articles. Both databases allow searching and sorting the results by expected parameters such as first author, citation, institution regarding impact factor and h-index, different results obtained from prior studies. [9]

Mongeon and Paul-Hus (2016) conducted the study to describe the journal coverage of Web of Science and Scopus databases and to assess whether some field, publishing country and language are over or underrepresented. For this, they compared the coverage of active scholarly journals in WoS (13,605 journals) and Scopus (20,346 journals) with Ulrich's extensive periodical directory (63,013 journals). Results indicate that the use of either WoS or Scopus for research evaluation may introduce biases that favour Natural Sciences and Engineering as well as Biomedical Research to the detriment of Social Sciences and Arts and Humanities. Similarly, English-language journals are overrepresented to the detriment of other languages. While both databases share these biases, their coverage differs substantially. As a consequence, the results of bibliometric analyses may vary depending on the database used. These results imply that in the context of comparative research evaluation, WoS and Scopus should be used with caution, especially when comparing different fields, institutions, countries or languages. [10]

4. Objective of Study

Following are the objectives of the study:

1. To examine the use of Web of Science among Research Scholars of Institute of Science
2. To know the purpose of using Web of Science
3. To find out the problems which Research Scholars are facing in using Web of Science
4. To know their level of satisfaction with Web of Science

5. Significance of the Study

In the present era of information explosion-more and more publications are becoming online or web based. The publication environment is rapidly changing in electronic. Hence, the investigator decided to conduct this study for measuring the usage of Web of Science by Researchers Scholars in Institute of Science, Banaras Hindu University.

6. Methodology

Keeping in view the above objectives, a structured questionnaire was prepared to collect data from the Research Scholars of Institute of Science, Banaras Hindu University. Questionnaire contains various questions pertaining to the use of Web of Science, its features, problem faced etc. For this purpose a total of 250 questionnaire was distributed among Researchers Scholars of both faculty. Out of 250 distributed questionnaire, 195 valid questionnaire (Table 1) was collected and then data was analyzed, tabulated, interpreted and presented in form of this paper.

7. Data Analysis

Statistics on use of Web of Science was recorded as per the questionnaire distributed and responses received from the Research Scholars of Institute of Science, Banaras Hindu University.

Table 1: Distribution of Questionnaire to Research Scholars

Sl. No.	Questionnaire Distributed	Questionnaire Received	Questionnaire used for data analysis	Percentage of valid questionnaire
1	250	208	195	78.00

Distribution of questionnaire among the Research Scholars of Institute of Science, Banaras Hindu University is presented in above Table 1. A total of 250 questionnaire was distributed out of 208 questionnaire was received back. Out of 208 received questionnaire, 195 valid questionnaire was used for data analysis.

Table 2: Use of Web of Science

Sl. No.	Use of Web of Science	No. of Respondents	Percentage (%)
1	Yes	134	68.7
2	No	61	31.3
	Total	**195**	**100.0**

The above Table 2 shows the use of Web of Science by the research scholars. Among total respondents, 68.7% respondents said that they use Web of Science whereas 31.3% said that they do not use Web of Science. From this table it is clear that more than two third of research scholars are using Web of Science.

Table 3: Purpose of Using Web of Science

Sl. No.	Purpose of Using Web of Science	No. of Respondents	Percentage (%)
1	Literature search	109	55.9
2	Creating Researcher ID	12	6.2
3	Getting information about citation	35	17.9
4	Creating citation alert	17	8.7
5	Knowing research contribution in my area of research	34	17.4
6	Knowing thrust area of present research in my field of study	54	27.7
7	Others	2	1.0

Note: Total number of responses exceeds 134 because the respondent was asked to choose more than one option, if they want.

From the analysis of use of Web of Science in previous table, the purpose of using Web of Science is depicted in above Table 3. Out of total respondents, 55.9% respondents used Web of Science for searching the articles whereas 17.9% used it for getting information about citation, 27.7% respondents used it for knowing the thrust area of present research in their field of study while 17.4% used it for knowing the research contribution in their research area, 8.7% and 6.2% uses Web of Science for creating citation alerts and creating Researcher Id respectively.

Table 4: Reason for Not Using Web of Science

Sl. No.	Reason for Not Using Web of Science	No. of Respondents	Percentage (%)
1	Does not cover my subject area	29	14.9
2	Does not give relevant result	15	7.7
3	Has very few features	13	6.7
4	Metrics is not reliable	9	4.6

Note: Total number of responses exceeds 61 because the respondent was asked to choose more than one option, if they want.

In continuation of the analysis of use of Web of Science in previous two tables, the above Table no. 4 depicts the reason for not using Web of Science. From the table it clear that 14.9% respondents found that it has does not cover their subject area because of that they do not use it while 7.7% respondents said that Web of Science does not give relevant result whereas 6.7% respondents said that Web of Science have very few features followed by 4.6% who says Web of Science metrics is not reliable, that's why they do not use Web of Science.

Table 5: Experience with Web of Science

Sl. No.	Experience with Web of Science	No. of Respondents	Percentage (%)
1	Used it and found it useful	112	57.44
2	Used it and found it NOT useful	19	9.74
3	Not used it and don't have plan to use it	15	7.69
4	Not used it but would like to try it	49	25.13
	Total	**195**	**100.0**

The above Table 5 shows the experience of research scholars in using Web of Science, 57.44% respondents used Web of Science and found it useful, whereas 9.7% said that they used it but not found useful. While 25.13% respondents said they have not used it yet but want to use it whereas only 9.74% said that neither they have used it nor they want to use it in future also.

Table 6: Familiarity with Different Features of Web of Science

Sl. No.	Features of Web of Science	No. of Respondents	Percentage (%)
1	Simple search	90	46.2
2	Advance search	77	39.5
3	Researcher ID	16	8.2
4	Endnote	20	10.3
5	Citation Map	21	10.8
6	Citation Alert	15	7.7
7	Saved searches	11	5.6
8	Time span	5	2.6

| 9 | Cited Reference search | 19 | 9.7 |
| 10 | Others | 3 | 1.5 |

Note: Total number of responses exceeds 195 because the respondent was asked to choose more than one option, if they want.

Familiarity with different features of Web of Science is presented in above Table 6. Out of total respondents, 46.2% respondents were familiar with 'Simple search' whereas 39.5% respondents were familiar with 'advanced search' feature of Web of Science. Only 10.8% respondents were familiar with 'citation map' feature followed by 10.3% respondents who were familiar with Endnote. Further, 8.2% respondents were familiar with 'Researcher ID' whereas 9.7% respondents were familiar with 'cited reference search' feature of Web of Science. While 7.7%, 5.6% and 2.6%,1.5% respondents were familiar with 'Citation alert', 'saved search results', and 'time span' and some other features of Web of Science respectively.

From the above table it is clear that research scholars used only searching features of Web of Science while most of the features still they are not using which will help a lot in filtering their required results.

Table 7: Web of Science Alone Serve Your Purpose of Information Search

Sl. No.	Parameters	No. of Respondents	Percentage (%)
1	Strongly disagree	10	5.1
2	Disagree	54	27.7
3	Can't say	74	37.9
4	Agree	55	28.2
5	Strongly Agree	2	1.0
	Total	**195**	**100.0**

In the above Table, the response of whether Web of Science alone serves the purpose of information search is presented. From the table it exhibits that 29% respondents are agree that Web of Science alone serve their purpose of information search, whereas almost 32% disagree with the statement while 37.7% respondents were not sure and chose the can't say option.

Table 8: Influence of Web of Science on Research Work

Sl. No.	Influence of Web of Science on Research Work	Strongly Disagree	Disagree	Can't say	Agree	Strongly Agree	Total
1	Expedited the research process	4 (2.1%)	17 (8.7%)	72 (36.9%)	97 (49.7%)	5 (2.6%)	195 (100.0%)
2	Improved professional competence	4 (2.1%)	23 (11.8%)	76 (39.0%)	80 (41.0%)	12 (6.2%)	195 (100.0%)
3	Access to wider range of information	3 (1.5%)	24 (12.3%)	73 (37.4%)	84 (43.1%)	10 (5.1%)	195 (100.0%)
4	Easier and faster access to information	4 (2.1%)	21 (10.8%)	77 (39.5%)	84 (43.1%)	9 (4.6%)	195 (100.0%)
5	No influence	46 (23.6%)	62 (31.8%)	63 (32.3%)	9 (4.6%)	15 (7.7%)	195 (100.0%)

The above Table 8 reveals the influence of Web of Science on research work. Out of total respondents, 52.3% of respondents agreed or strongly agreed that Web of Science has expedited their research process whereas 10.8% disagreed with the statements while 36.9% respondents gave 'can't say' remark. In response to the next statement 47.2% respondents said that Web of Science has improved the professional competence among them whereas 13.9% respondents did not agreed with the statement while 39% respondents gave can't say remark. Further, 48.2% respondents found that Web of Science provides the access to wide range of information to them whereas 13.8% respondents are not agree with statement while 37.4% respondents have chosen the can't say option. In response to next statement, 47.7% respondents answered that Web of Science provides easier and faster access to information whereas 12.8% respondents are not agreed with the statement while 39.5% respondents given can't say remark. Further, in response to next statement 'No influence', 55.4% respondents are not agreed with statement whereas 32.3% given can't say remark while 12.3% respondents are agreed with the statement.

In nutshell, it is found from the above table that Web of Science has helped Research Scholars in locating their required e-resources, in knowing citation, and other metrics like h-index etc.

Table 9: Users level of satisfaction with regard to various dimensions of Web of Science

Description	Highly Dissatisfied	Dissatisfied	Can't say	Satisfied	Highly Satisfied	Total
Availability of Content	4 (2.1%)	24 (12.3%)	70 (35.9%)	79 (40.5%)	18 (9.2%)	195 (100.0%)
User Interface	2 (1.0%)	25 (12.8%)	67 (34.4%)	86 (44.1%)	15 (7.7%)	195 (100.0%)
Easy to Use	3 (1.5%)	17 (8.7%)	84 (43.1%)	78 (40.0%)	13 (6.7%)	195 (100.0%)
Search Result	1 (0.5%)	25 (12.8%)	64 (32.8%)	85 (43.6%)	20 (10.3%)	195 (100.0%)

The above Table 9 reveals the level of satisfaction in regard of availability of content, user interface, easy to use and search results of Web of Science. Out of total respondents, 49.7% of the respondents are satisfied/highly satisfied with the available contents on Web of Science whereas 14.4% are dissatisfied/highly dissatisfied with the contents available on Web of Science whereas 35.9% respondents chosen can't say option.

Similarly in respect of User Interface of Web of Science 44.1% respondents are satisfied whereas 7.7% are highly satisfied while 13.8% respondents are not satisfied while 34.4% are not sure and hence chose 'Can't say' option. In response to the next query 'Easy to Use', 46.7% respondents found Web of Science very easy in use whereas 10.2% find difficulty in using Web of Science while 43.1% chosen can't say option. In response to the level of satisfaction with the search result they get, 53.9% are satisfied with the result they get after search whereas 13.3% are not satisfied with the result while 32.8% are were not sure and chosen can't say option.

Table 10: Need of User Awareness Programme by Research Scholars

Training needed	No. of Respondent	Percentage
Yes	130	66.7
No	65	33.3
Total	**195**	**100.0**

Table 10 indicates that the 66.7.0% research scholars said user awareness programme is needed to access Web of Science while 33.3% research scholars do not need any kind of training or user awareness programme.

8. Conclusion

This study clearly shows that though different difficulties and problems faced by the scholars in using Web of Science but the ease of access, its rich content coverage increases its use day by day. It was also found that 68.7% research scholars have used Web of Science and maximum scholars are using Web of Science for searching the article (55.9%). Similarly 57.44% respondents used Web of Science and found it useful. While 66.7% research scholar's wants that training programme should be conducted to ensure more use of Web of Science.

This study shows that Web of Science is very useful for the research as a very high number of responses are in favour of using Web of Science. Authorities of the academic library as well as the faculties should guide scholars to use and ensure maximum use of this database and library should also conduct regular orientation and training programmes to ensure the maximum use of e-resources and Web of Science effectively.

References

1. About Web of Science Retireved from https://en.wikipedia.org/wiki/Web_of_Science on 25.06.2017.
2. Facts about Web of Science. Retrieved from http://clarivate.com/?product=web-of-science on 25.06.2017.
3. Boyle, F., & Sherman, D. (2006). Scopus: The product and its development. *The Serials Librarian, 49*(3), 147-153. http://dx.doi.org/10.1300/J123v49n03_12.
4. Garfield, E. (1990). How ISI selects journals for coverage - Quantitative and qualitative considerations. *Current Contents*, 22, 5-13.
5. About Banaras Hindu University. Retrieved from http://www.bhu.ac.in/aboutus/history.php on 25.06.2017.
6. About Institute of Science. Retrieved from http://www.bhu.ac.in/science/ on 25.06.2017.
7. Adriaanse, L.S.,& Rensleigh, C. (2013). Web of Science, Scopus and Google Scholar: A content comprehensiveness comparison.*The Electronic Library*, *31*(6), 727–744. DOI: http://dx.doi.org/10.1108/EL-12-2011-0174.
8. Amara, N.,& Landry, R. (2012). Counting citations in the field of business and management: why use Google Scholar rather than the Web of Science. *Scientometrics*, 93(3), 553–581. DOI: http://dx.doi.org/10.1007/s11192-012-0729-2.
9. Chadegani,A. A., Salehi, H., Md Yunus, M. M., Farhadi, H., Fooladi, M., Farhadi, M., & Ale Ebrahim, N. (2013). A comparison between two main academic literature collections: Web of science and scopus databases. *Asian Social Science*, *9*(5), 18–26. DOI: https://doi.org/10.5539/ass.v9n5p18
10. Mongeon, P., & Paul-Hus, A. (2016). The journal coverage of Web of Science and Scopus: a comparative analysis. *Scientometrics*, *106*(1), 213–228. DOI: https://doi.org/10.1007/s11192-015-1765-5.

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