CITATION ANALYSIS OF WEBOLOGY

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Abstract: Research activities lead to the development of existing Knowledge domain in order to redress different problems and situations concerning a particular knowledge domain. The Research impact now a day is clearly indicated by analyzing the citations received by a particular publication over specific period of time. Citation analysis observes the frequency, patterns, citation and graphs of citations in articles and books (**Garfield, 1983**). Webology is an international online journal in English provides a vehicle for the latest research and ongoing developments in today's digital library and information environments in different countries, and offers practical advice, useful information and descriptions of specific applications around the globe.

Keywords: Webology, citation analysis, DOAJ and Bibliometrics

1.0 Introduction

Research Publications reveal the intellectual output of any research and scientific organization. The impact of research excellence on different fields of knowledge and on teaching and learning process cannot be ignored. Research includes creative work carried out on a systematic basis in order to increase the stock of knowledge and the use of this store of knowledge to develop new applications (**Organization for Economic Co-operation and Development [OECD], 2002**). It is used to approve facts, confirm the results of previous works, solve existing or new problems and develop new theories. The key purpose of basic research is documentation, clarification, discovery, development and advancement of human knowledge. In the broadest sense research comprises any collection of data, information and facts for the development of knowledge (**Rajasekar, Philominathan, and Chinnathambi, 2013**).

The Research impact now a day is clearly indicated by analyzing the citations received by a particular publication over specific period of time. Citation analysis is the investigation of the occurrence, patterns and graphs of citation in articles and books (**Garfield, 1998**). Citation analysis is extensively used method of bibliometrics. Mechanical citation indexing has improved the nature of citation analysis research allowing millions of citations to be analyzed for huge scale patterns and knowledge discovery. The first example of mechanical citation indexing was cite seer. Citation analysis is called citation counting. When we count the number of times an article or journal has been cited in published research we gain information about the article's influence on its discipline (**Bensman, 2007**).However citation analysis tools count citation from different sets of publications. Different tools help to find out how many times a specific article, journal or author has been cited. Tools like web of science, Scopus, Google scholar etc. can be used to count the citation of an articles, journal or author **Meho, Lokman& Yang(2007).**

According to (**Mahapatra, 2000**) Citation analysis is most significant and old divisions of bibliometrics study given by Eugene Garfield. It studies the different degrees, their patterns and graphs of citations given in review papers, articles, technical communication, theses and books. Citations are used to create links to other works and researchers, which forms a part of principal rational communication in a geographical proximity (**Binwal, Chandel, &Saraf, 1990**). Citation Analysis isa tool mostly used in library and information science for research evaluation(**Singh, Kumar, Sharma, Jyoti, &Kaur,2011**).

In citation analysis studies, citations in research articles, often published in journals, are explored as artifacts of scholarly communication representing the citing authors' use of the earlier published work. "The choice of works to be cited in a scholarly paper is artificial to reflect the organization of a scientific community and its knowledge base, as perceived by the citing authors, and the value placed by the community on previous offerings" (**McCain, 1990**).Citation analysis can help understand scholarly communication designs and also help to identify major aids and contributors. The chief advantages of citation analysis are its high reliability and

unobtrusiveness **(Harter & Kim, 1996).**A careful assessment of periodical literature may specify a complete picture of the discipline. Citation analysis reveals interesting information about knowledge inventors in terms of their information seeking behavior and procedure of various information sources. It can highlight the awareness, and usage of knowledge producers regarding the online and print information sources**(Adams, 2005).**

The dynamic feature of citations is that each reference is a caption **(Latour&Woolgar, 1986,)** describing a certain text by a consistent code. Although different publication handbooks give different symbols and many publishers use their own ideals, these instructions and standards generally instruct the author to write his or her positions as a combination of author name, title, journal name, year of publication, and page figures. References themselves are texts filling to other texts but this does not demand that the cited texts are always to be found where the citing texts say they are **(Wouters, 1998).**

According to **(Latour& Woolgar,1986)** the successful scientist makes use of many persuasive exchanges when writing research. According to this view, when authors cite, they are marshaling previous documents in such a way as to persuade readers of the goodness of their claims. The consequences of citation analysis would seem to be of great potential value in the managing of library journal collections. Measures of citation frequency and influence factor should be helpful in control optimum make up of specific overall collections (**Adler, Ewing & Taylor, 2008).** The present study is carried to conduct citation analysis of reputed Journals in the field of Library and Information Science namely Webology published from Iran . The Journal Title was identified from Directory of Open Access Journals (DOAJ) which was launched in 2003 at Lund University, Sweden, with 300 open access journals and today contains more than 10000 open access journals covering all areas of science, technology, medicine, social science and humanities.

2.0 Citation Analysis

Citation Analysis has evolved as an analytical tool whose results are used for many purposes, for example, to determine the impact of specific articles or journals on subsequent research and to document the interdisciplinary applicability of various journals **(Desai, 2003)**.This technique is helpful tool for the library management in the selection and weeding of materials in the face of ever expanding information environment. Citation analysis is extensively used method of bibliometrics and the first verified citation analysis was done by (**Gross & Gross,1927**).Citations in scholarly works are used to create relations to other works**(Gooden, 2001)**.Citations are used in scholarly works to create relations to other works and researchers, which forms a part of main scientific communication in a geographical proximity **(Binwal, Chandel, &Saraf, 1990)**.It is further used to study the development and arrangement of literature of any subject in tools like web of science, Scopus, Google scholar etc. and can be used to count the citation of an articles, journal or author (**Meho, Lokman& Yang2007).**Citation analysis reveals interesting information about knowledge producers in terms their information seeking behavior and usage of various information sources. It can highlight the awareness, familiarity and usage of knowledge resources in online and offline formats **(Johnson & Kaye, 2014).** The Journal titles is having International Scope and bi-annual periodicity. The study period was confined from 2010-2014 to maintain uniformity and accuracy for comparisons. A brief introduction about this is given as under:

3.0 Directory of Open Access Journals (DOAJ) (https://doaj.org/about)

The Directory of Open Access Journals was launched in 2003 at Lund University, Sweden, with 300 open access journals and today contains more than 10000 open access journals covering all areas of science, technology, medicine, social science and humanities. It is a white list of open access journals and aims to be the starting point for all information searches for quality, peer reviewed open access material. It assists libraries and indexers in keeping their lists up-to-date. It aims to increase the visibility and ease of use of open access scientific and scholarly journals, thereby promoting their increased usage and impact. It also aims to be comprehensive and cover all open access scientific and scholarly journals that use a quality control system to guarantee the content.

4.0 Brief introduction of open access journals selected for the study:

Webology (http://www.webology.ir)

Webology is an international online journal in English devoted to various fields of Library and Information Science and the World Wide Web. It publishes scholarly articles, essays and reviews, and encourages the participation of academics and practitioners. It provides a vehicle for the latest research and ongoing developments in today's digital library and information environments in different countries, and offers practical advice, useful information and descriptions of specific applications around the globe. It is published biannually and is a highly regarded journal in the field of LIS, publishes mainly new research, and is known to receive a high number of citations.It is published biannually since 2009 and was earlier published quarterly 2004-2008. The journal is listed in the online catalogues and directories of open access journals of several prestigious

university libraries around the world. Webology is indexed by Scopus: Elsevier Bibliographic Databases, ProQuest Advanced Technologies & Aerospace Journals, ProQuestComputer Science Collection, ProQuest Library Science, ProQuest SciTech Collection,ProQuest Technology Collection, EBSCO, EBSCO E-journals, LISA: Library & Information Science Abstracts, LISTA: Library, Information Science & Technology Abstracts etc. It is a leading biannual online journal since 2009. – (Quarterly 2004-2008) edited by Alireza Noruzi, and is published English language from Iran.

5.0 Problem

Research contributions in different subject areas reveal the growth and development in intellectual output at different levels. The modern day research community gives due credit to the qualitative research contributions carried out on different aspects concerning a particular area of study. The work is duly cited, acknowledged and referred by the researchers that have led to the concept of analyzing the quality of such contribution by way of carrying study like bibliometrics, Citation Analysis, Impact factor studies, h-Index studies etc. This type of study has resulted in revealing the growth and use of different information resources and the establishment of qualitative norms at different levels. As such bibliographical references or citations have attained considerable importance especially in presentation of research papers, project reports, theses or dissertation. Therefore Citation analysis is an important tool widely used to analyze the growth and usefulness of research output over time and to understand the information seeking behavior of the users. The present study as such is carried to conduct citation analysis of one reputed Journal in the field of Library and Information Sciences namely Webology to analyze the source cited by the authors so to reveal the information seeking and usage patterns through electronic or print mediums.

6.0 Scope

The Scope of this study is confined to the citation of sources cited by contributors in various articles of Library and Information Science Journals namely Webology over a time span of five years i.e 2010-2014.

7.0 Objectives

The main objectives of this study are:
1. To identify one Open Access Journals in the field of Library and Information Science.
2. To analyze the authorship patterns followed in different contributions.
3. To reveal the quantitative growth of articles by volume.
4. To understand distribution of references by volume.
5. To determine the consultation frequency of print-citations (p-citations) or electronic-citations (e-citations).

8.0 Methodology

For Objective 1 Directory of Open Access journals (DOAJ) was consulted to identify open access journals having same periodicity, publication language and subject area.

For objective 2-5 identified online open access journals namely webology was consulted to access various issues for revealing trends in article publications, authorship patterns, referencing and citation patterns, etc. The reference lists were examined for revealing the use of print or electronic resources and each instance of consultation frequency of e or p-citations was recorded. Further the citations were also analyzed to reveal the resource type consultation in terms of books, journals, and other formats in their contributions. The data was tabulated to draw necessary inferences and conclusions.

9.0 The Data Analysis of Webology Journal

9.1 Frequency Distribution by Volume

It is clearly evident from Table1 that a total of 61 articles were published over a span of 5 years in Webology Journal. The highest number of publications can be seen for the year 2014 equaling to a total of 16 articles followed by 2013 and 2012 with a total of 13 and 12 publications respectively. The least number of articles are published in 2010.

Table 1. Frequency Distribution by Volume

Year	Volume	No. of articles	Cumulative total
2010	7	9	9
2011	8	11	20
2012	9	12	32
2013	10	13	45

| 2014 | 11 | 16 | 61 |

9.2 Authorship Pattern

Table 2 reveals the authorship pattern found in different contributions published in Webology Journal during 2010-2014. In a total of 61 contributions by 121 authors, 24(19.83%) are two author contributions followed by 23(19%) single author contributions. A least of 14(11.57%) have been submitted by more than two authors. The data clearly depicts that multi-author contributions are preferred modes of author works with a total of 38 contributions. The detailed year wise analysis indicates that in 2011 and 2012 single author contributions are either more than multi-author contributions or almost same.

Table 2. Authorship pattern during different years

Year	Number of Authors	Single Author	Two author	More than two	Number of contributions
2010	16	3(18.75)	5(31.25)	1(6.25)	9
2011	23	6(26.08)	1(4.34)	4(17.39)	11
2012	20	6(30)	4(20)	2(10)	12
2012	29	3(10.34)	7(24.13)	3(10.34)	13
2014	33	5(15.15)	7(21.21)	4(12.12)	16
Total	**121**	**23(19)**	**24(19.83)**	**14(11.57)**	**61**

*(The figures in parentheses indicate percentage)

9.3 Composition of overall Citations in Webology

Fig.1. shows the total number of e and p-citations received by the articles published in different volumes of Webology during 2010-2014. A total of 1397 citations were recorded with 249 P-citations and 1148 e-citations. This clearly indicates that electronic resources are mostly cited resources.

9.4 Composition of P-Citations

Table 3 indicates that publicationsin all the 5 volumes of the Journal covered during 2010-2014 received 249 p-citations appended to the 61 articles. Out of 249 p- citations, volume 8receivedthe highest number of 70 (28.11%) citations, followed by volume 11, 9 and 7 with 58, 49 and 41 p-citations respectively. Volume 10 has the lowest number i.e. 31 (12.44%) p-citations. While analyzing P-citations for different contribution types Journals received 85 followed by conference proceeding 29 and others including books, news items, reports etc. received 135 P-citations.
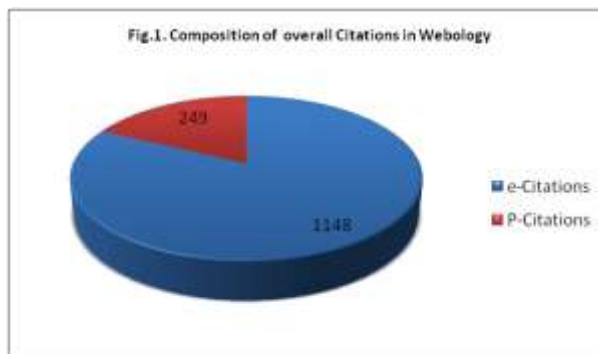

Fig.1. Composition of overall Citations in Webology

Table3. Composition of P-Citations

Year	Volumes	Conference proceedings	Journals	Others	Total p-citations
2010	7	5(12.19	16(39.02)	20(48.78)	41
2011	8	8(11.42)	12(17.14)	50(71.42)	70
2012	9	6(12.24)	23(49.93)	20(40.81)	49
2013	10	4(12.9)	15(48.38)	12(38.7)	31
2014	11	6(10.34)	19(32.75)	33(56.89)	58
Total	**5**	**29**	**85**	**135**	**249**

10.0 Findings and Conclusion

Research contributions are deemed important for progress and prosperity of any nation and as such institutions of higher educations are laying more emphasis on qualitative research activities in different knowledge domains. The research output is in the form of theses and dissertations, Journal contributions, data sets, reports, etc. Like any other subject research trends in the field of library and information Science has gained momentum with the advancements in technology. The literature in the field is multiplying with more content being added and made available through open as well as commercial publisher sites. There is evidently increasing number of Journals being consulted by students, researchers and professionals in Open Access mode and consequently more citations are being received by Open content. The study as such was an attempt to explore and analyze the citation patterns of research contributions in the field of library and information science contributed in reputed international, open access journals webology .

The study reveal that in open access journals webology ,61 publications of papers were published . However while analyzing the authorship trend the titles vary to a greater extent with webology clearly depicting the trend towards collaborative works. While analyzing the citation patterns the data visibly shows the trend towards e-citations. in both the titles wherein a total of 1582 e-citations were recorded and only 563 P-citations.

In a total of 61 articles published during 5 years in Webology Journal. It was observed that the highest number of publications were in the year 2014 equaling to a total of 16 articles followed by 2013 and 2012 with a total of 13 and 12 publications respectively. Among the61 contributions by 121 authors, 38(62.29%) were collaborative contributions followed by 23(19%) single author contributions. The study clearly depicts that multi-author contributions are preferred modes of author works with a total of 38 contributions. The detailed year wise analysis indicates that in 2011 and 2012 single author contributions are either more than multi-author contributions or almost same. The trend is clearly towards e-citations as more number of citations is received by electronic resources. A total of 1397 citations were recorded with 249 P-citations and 1148 e-citations. Out of 249 p- citations, volume 8 received the highest number of 70 (28.11%) citations, followed by volume 11, 9 and 7 with 58, 49 and 41 p-citations respectively. Volume 10 has the lowest number i.e. 31 (12.44%) p-citations. While analyzing P-citations for different contribution types Journals received 85 followed by conference proceeding 29 and others including books, news items, reports etc. received 135 P-citations. While as the journal received 1148 e-citations appended to the 61 articles. Volume 9 received the highest number of300 (26.13%) e-citations, followed by volume 10 and 11 with 253 and 245 e-citations respectively. Volume 8 has the lowest number i.e.170 (14.80%) e-citations. While analyzing e-citations for different contribution types Journals received 699 e-citations followed by conference proceeding 94 and others including books, news items, reports, etc received 355 e-citations.

The study of this type provides an insight into the growth, selection and utilization of resources by the research community. This study can act as a guide towards selecting quality materials for the library by analyzing the trends in information seeking and utilization.

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