10-4-2013

Citation Analysis of Information Research: An International Electronic Journal

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Abstract

The present study is citation analysis of articles appeared in the online journal, Information Research: an international electronic journal (IR) during the period 2008-2012. The maximum number of articles (57) as well as maximum number of citations (2324) was published in 2008. The average number of citations per article was 43.21. Also, the maximum numbers of articles (92) were having citations between 26-50. As for as form of citations is concerned, Journals were the most preferred form of citations by IR scholars while writing their papers. More than half of the citations (51.44%) were multi-authored, whereas 48.56% of citations were single-authored. Journal of the American Society for Information Science and Technology was the most cited journal. The half period life of citations of this journal was about 9 years. In the end, ranked list of the most cited journals has also been given.

Keywords: Bibliometric technique; Citation analysis; Information research; Half period life.

I.   Introduction

Citation analysis is a bibliometric technique of counting citations. Researchers may need to gauge the importance of their publications by this method of citation analysis. They may gain information about that article's impact on its discipline simply by counting the number of times it has been cited in research publications. An article having high citation count may be concluded that it has been the subject of discussion or criticism in its discipline. Above all finding the list of articles that have cited an article can help you to find more information about your research topic, a process called "citation chasing".

Garfield (1979), "citation links provide quantitative picture of journal utility and relationships that are useful". Smith (1981), Citation analysis is now commonly used to determine what titles to purchase, to discontinue, or to weed. The Main idea of citation analysis is that citations reflect the real impact of published scientific results. It also represents the passage of ideas within and among academic disciplines. This exchange process has the potential to enhance or expand a field's knowledge development. Moreover, majority of the important information will be found in the core, highly cited journals.

Reitz (2004-2013), Citation analysis may be defined as "a bibliometric technique in which works cited in publications are examined to determine patterns of scholarly communication, for example, the comparative importance of books versus journals, or of current versus retrospective sources, in one or more academic disciplines. The citation in student research papers, theses, and dissertations are also examined by librarians for purposes of collection evaluation and development".

This technique has been widely used to empirically investigate the structure of scholarly activities in many disciplines. It has been used for the research pattern, core journal lists for collection development etc. The present paper analyses citations appearing in Information Research: an international electronic journal (IR) in order to find out average number of articles and citations per year, different form of citations, most preferred form of citations etc.

II. Literature survey

Herring (2002) conducted citation analysis on the research articles published in electronic journals during 1999-2000. This study focused on the extent to which scholars were using those resources and the types and subject areas of those online resources that were being referred. The results showed a growing trend of using online resources and a high use of interdisciplinary references.

Sharif and Mahmood (2004) selected eight volumes each of Pakistan Development Review (PDR) and Pakistan Economic and Social Review (PESR) to find the citation pattern of articles. PDR has been the most cited journal in both. Mean score of citations per article remained insignificantly different in the two journals. More than 50% of the citations of both the journals were single authored and from non-journal sources, mainly books. About 47% of the total citations of the PDR were up to five years old as compared to PESR citations, where only 25% fell into this category. The top most cited journals in both the cases were from USA.

Ozcinar (2009) examined citations in research publications and trends in instructural design appearing in journals indexed in Web of Science covering the period 1980-2008. A total of 758 documents were analysed to find out journal of publication, document type, year of publication, citations, h-index etc. About 87% of the total authors were from seven countries.

Hussain and Swain (2011) carried out a study to evaluate the top papers of Computer Science as reflected in Science Direct. It aims to find out authorship pattern, ranking of authors, ranking of country productivity, ranking of journals and highly cited papers covering 20 issues of alert service beginning from

January/March 2005 to October/December 2010 containing a total number of 495 articles. Out of these, three authored articles are little ahead of two authored articles, followed by four authored articles. As for author contribution is concerned, USA is at top, followed by UK, Taiwan and Canada. European Journal of Operational Research occupies the top position followed by Computers in Human Behaviour and Pattern Recognition.

Singh, Sharma and Kaur (2011) analysed journal articles published in Journal of Documentation from 1996-2010.The journal contained 15587 citations during this period and average citation per article was maximum in 2009. Single author citations were dominant (49%) than others. Journal of Documentation was the most preferred used by authors for citation. The ten core periodicals covered more than 51% of references.

Swain, Jena and Mahapatra (2012) intended to evaluate journal - Inter Lending & Document Supply (ILDS) from 2001 to 2010 to find out the number of citations and their forms, number of authors and names of journals. Lotka law of productivity of authors and Bradford Law to ascertain scattering of journals were applied. Highest number of articles was single authored contributions. The authorship productivity pattern partially complied with law. UK leaded the table of author productivity, followed by USA and France. Half period life of documents cited is one year, which shows that authors have cited recent literature.

Gupta and Khare (2013) addressed to research performance of researchers of Dr. Harisingh Gour University, Sagar using citation analysis of 7284 citations and evaluated different aspects of citation study. The most of the cited sources were journals. Cited books preferred to single authorship (77.73%), followed by two authors (18.67%). The study revealed that most of the contributions of journals were from USA. The most cited journal is IASLIC Bulletin (11.89%), followed by ILA Bulletin (9.35%), University News (6.37%) and Herald of Library Science (5.99%) at 2nd, 3rd and 4th rank respectively.

III.   Objectives of the study

The present study intends to analyse citations behaviour of Information Research journal. The specific objectives of the study are to find out:

- growth of articles and citations
- distribution of citations according to their frequency and forms
- authorship pattern of citations
- age of cited documents and half period life of citations
- list of most cited journals

IV. Methodology and Scope

For analysis of the study, five volumes (13-17) containing twenty issues of the e-journal "Information Research: an international electronic journal" during the period 2008-2012 have been selected. These volumes have been accessed in the month of May-June, 2012 and March, 2013 from the web page of the journal available at http://informationr.net/ir/. The details of each article published, such as number of articles in each issue of the journal, number of citations, form of citations etc. for each article have been recorded and analysed for making observations. The collected data has been organized and analysed using MS-Excel spread sheets. The tables have been generated in accordance with the objectives of the study.

V. Analysis and Discussion

(a) Distribution of articles and citations

Table 1 represents the year wise distribution of articles and citations scattered during the period 2008 to 2012. It is clear that the percentage of articles as well as citations is the maximum in 2008, whereas the percentage of articles and citations are the minimum in the 2010 and 2009 respectively. The average number of articles and citations per year are 39.4 and 1702.6 respectively. However average number of citations per article comes out to be 43.21.

Table 1: Year-wise distribution of articles and citations

Year	No. of articles	%age (Articles)	No. of citations	%age (Citations)
2008	57	28.94	2324	27.3
2009	34	17.26	1300	15.27
2010	28	14.21	1474	17.32
2011	46	23.35	1920	22.55
2012	32	16.24	1495	17.56
Total	197	100	8513	100

(b) Distribution of articles by frequency of citations

Table 2 reveals that out of 197 articles, the maximum (92) articles are having citations between 26-50 followed by 47 articles having citations between 0-25, 42 articles having citations between 51-75 and so on. Only one article is having the maximum citations between 226-250.

Table 2: Distribution of articles by frequency of citations

No. of citations	2008	2009	2010	2011	2012	Total
Nil	0	0	0	1	0	1
0-25	19	7	6	14	1	47
26-50	20	20	15	19	18	92
51-75	13	5	3	10	11	42
76-100	2	2	1	1	1	7
101-125	3	0	1	0	1	5
126-150	0	0	0	0	0	0
151-175	0	0	1	0	0	1
176-200	0	0	0	1	0	1
201-225	0	0	0	0	0	0
226-250	0	0	1	0	0	1

(c) Form of citations

From table 3 it is evident that journals are the most preferred source by IR scholars while writing their research papers. About 3/5th (maximum) of citations are journals (59.97%), followed by books (23.06%), conferences/workshops (6.06%), websites (6.03%) and others as shown in the table.

Table 3: Forms of citations

Form of citation	2008	2009	2010	2011	2012	Total	%age
Journals	1319	707	866	1210	1003	5105	59.97
Books	647	238	346	436	296	1963	23.06
E-books	46	64	29	3	19	161	1.89
Conferences/Workshops	145	127	73	95	76	516	6.06
Websites	79	104	129	132	69	513	6.03
Theses/Dissertations	11	8	0	9	2	30	0.35
Unpublished theses/Dissertations	26	10	5	13	13	67	0.79
Reports	16	12	7	3	2	40	0.47
Online reports	14	4	4	3	2	27	0.32
Handbooks	1	0	1	7	0	9	0.11
E-mail messages	4	1	2	0	0	7	0.08
Digests	2	0	0	0	0	2	0.02
Standards	2	2	0	0	1	5	0.06
Dictionaries	1	0	0	1	0	2	0.02

Online dictionaries	2	1	0	0	0	3	0.03
Encyclopedias	0	1	4	2	4	11	0.13
Online encyclopedias	2	2	0	0	2	6	0.07
Speeches	1	0	0	0	0	1	0.01
Rapport	2	0	0	0	0	2	0.02
Papers presented	1	0	1	2	0	4	0.05
Unpublished papers	1	0	0	0	0	1	0.01
Others	2	1	0	1	3	7	0.08
Manuals	0	2	2	0	0	4	0.05
Yearbooks	0	15	0	0	0	15	0.18
Surveys/Online surveys	0	1	0	1	2	4	0.05
Manuscripts	0	0	1	0	1	2	0.02
Documentaries	0	0	2	0	0	2	0.02
Projects	0	0	2	2	0	4	0.05
Total	2324	1300	1474	1920	1495	8513	100

(d) Authorship pattern

It is evident from table 4 that more than half of the authors prefer to work in collaboration as 51.44% of citations are multi-authored, whereas 48.56% authors prefer to work in isolation.

Table 4: Authorship pattern

Authors	No. of citations	%age
1 Author	4134	48.56
2 Authors	2352	27.63
3 Authors	984	11.56
> 3 Authors	660	7.75
Institutions	335	3.94
NA	48	0.56
Total	8513	100

(e) Ranked list of most cited journals

The ranked list of journals is practical tool to select journals of maximum utility in relation to the coverage of vital literature in a particular discipline. Table 5 shows that Journal of the American Society for Information Science and Technology is the most cited journal by scholars (341 times), followed by

Information Research (279 times), Journal of Documentation (207 times) and so on as reflected in the table.

Table 5: Ranked list of most cited journals

Sr. No.	Title of Journal	No. of times cited (%)	Rank
1	*Journal of the American Society for Information Science and Technology*	341 (6.68)	1
2	*Information Research*	279 (5.47)	2
3	*Journal of Documentation*	207 (4.06)	3
4	*Information Processing & Management*	148 (2.9)	4
5	*Library & Information Science Research*	126 (2.47)	5
6	*Annual Review of Information Science and Technology*	83 (1.63)	6
7	*Journal of Information Science*	64 (1.25)	7
8	*Library Quarterly*	60 (1.18)	8
9	*Information & Management*	55 (1.08)	9
10	*Communications of the ACM*	52 (1.02)	10
11	*Organization Science,*	50 (0.98)	11
12	*MIS Quarterly*	49 (0.96)	12
13	*The New Review of Information Behaviour Research*	49 (0.96)	12
14	*Scientometrics*	48 (0.94)	13
15	*First Monday*	34 (0.67)	14
16	*D-LibMagazine*	33 (0.65)	15
17	*Library Trends*	32 (0.63)	16
18	*Aslib Proceedings*	30 (0.59)	17
19	*Journal of Knowledge Management*	28 (0.55)	18
20	*College and Research Libraries,*	25 (0.49)	19
21	*Journal of Computer-Mediated Communication*	25 (0.49)	19
22	*Libri,*	24 (0.47)	20
23	*Harvard Business Review*	23 (0.45)	21
24	*Informing Science*	23 (0.45)	21
25	*Journal of Management Information Systems*	23 (0.45)	21
26	*Research Policy*	23 (0.45)	21
27	*Journal of Medical Internet Research*	22 (0.43)	22
28	*Management Science*	21 (0.41)	23
29	*Information Systems Research*	20 (0.39)	24

(f) Age of cited documents and Half period life of citations

The age of the citations is calculated by noting down the difference between the year of the publication of the citing article and of cited documents. The analysis of the age of the cited documents helps to determine the useful life of information resources in any discipline. It is also used by an academic librarian to maintain or discard monographs or serials in the library, which would no longer be needed by researchers (Sharma, 2009). Table 6 depicts the age of citations and half period life of citations. It is found that 0.19% of citations belong to the maiden publishing year and 0.87% to next year publications and so on. The half period life of citations is about 9 years.

Table 6: Age of citations and half period life of citations

Sr. No.	Age of citations	No. of citations	%age of citations	Cumulative % of citations
1	0	16	0.19	0.19
2	1	58	0.68	0.87
3	2	244	2.87	3.74
4	3	380	4.46	8.2
5	4	545	6.4	14.6
6	5	599	7.04	21.64
7	6	645	7.58	29.22
8	7	655	7.69	36.91
9	8	572	6.72	43.63
10	9	536	6.3	49.93
11	10	504	5.92	55.85
12	11	431	5.06	60.91
13	12	474	5.57	66.48
14	13	385	4.52	71
15	14	285	3.35	74.35
16	15	237	2.78	77.13
17	16	227	2.67	79.8
18	17	175	2.06	81.86
19	18	132	1.55	83.41
20	19	127	1.49	84.9
21	20	92	1.08	85.98
22	21	132	1.55	87.53
23	22	80	0.94	88.47

24	23	75	0.88	89.35
25	24	60	0.7	90.05
26	25	66	0.78	90.83
27	26	53	0.62	91.45
28	27	57	0.67	92.12
29	28	52	0.61	92.73
30	29	62	0.73	93.46
31	30	59	0.69	94.15
32	31	40	0.47	94.62
33	32	35	0.41	95.03
34	33	26	0.31	95.34
35	34	31	0.36	95.7
36	35	40	0.47	96.17
37	36-100	296	3.48	99.65
38	Not available	30	0.35	100

VI.   Conclusion

Citation analysis of IR reveals that the mean score of citations per article is found to be 39.4. The maximum number of articles (92) are having citations between 26-50. About 60% of citations are from journals and more than 50 percent of citations are multi-authored. Journal of the American Society for Information Science and Technology is the most cited journal. As for as age of cited journal is concerned, about 43 % of the cited documents are 8 year old and half period life of the journal is about 9 years.

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