

Bibliometric Study of Cited References in Journal of Biosciences

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Abstract

The purpose of the present paper is to describe the bibliometric analysis of cited references of published articles in Journal of Biosciences during the period 2011 to 2015. The references provided by the authors at the end of their articles are the basis of citation analysis. Citation traces a connection between two documents, one which cites and the other which is cited. Citation analysis is one of the popular methods applied to derive the following benefits. The Journal of Biosciences published 12901 citations during the period of study i.e. from 2011 to 2015. It is observed from the study that journals are most preferred channels of information in journal of biosciences. Journal literature comprised the highest citation 11476 (88.95%) of the total 12901 citations. Study also shows the head wise distribution of articles. The content pages were studied carefully in order to analyses various heads under which the articles are covered.

Keywords: Bibliometric Study, Journal of Biosciences, Degree of collaboration, Citation Analysis, Scientometric Study

dissemination of information to library information users. These studies also help scholars in understanding and using information resources optimally. Librarians should be in a better position to rectify their journal subscription policy with their limited financial resources. This is possible by subscribing to a handful of core journals which cover maximum segment of contemporary literature. Further it is possible to provide correct and pin-pointed services. Likewise, the researchers and investigators will be kept abreast of the recent trends in their research field. The study covers different aspects like types of year-wise distribution of citations, growth pattern, authorship pattern, geographic distribution, age of document, collaboration trends, etc.

Citation Analysis

The references provided by the authors at the end of their articles are the basis of citation analysis. Citation traces a connection between two documents, one which cites and the other which is cited. Citation analysis is one of the popular methods applied to derive the following benefits.

Introduction

Bibliometric analysis studies help library managers in effective collection development, organization and

Table 1: Year-wise Distribution of Citations

Year	No. of Issues	No. of citations	Cumulative citations	Percentage	Cumulative Percentage
2011	5	2413	2413	18.70	18.70
2012	6	3062	5475	23.73	42.44
2013	5	2386	7861	18.49	60.93
2014	5	2786	10647	21.60	82.53
2015	5	2254	12901	17.47	100.00
Total	26	12901		100.00	

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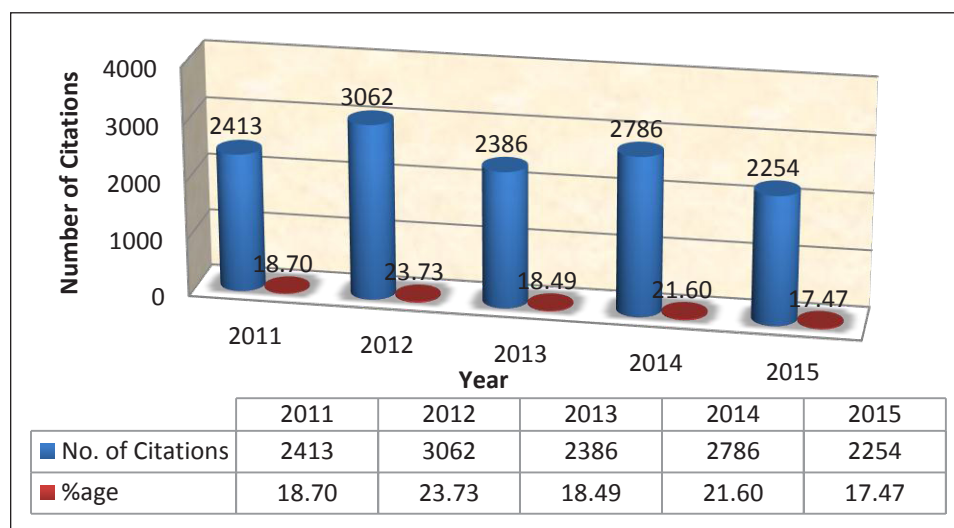


Fig. 1: Year-wise Distribution of Citations

Table 1 showed that maximum number of citations, i.e. 3062 (23.73 %) was produced in 2012. followed by 2786 (21.60%) citations in 2014, 2413 (18.70%) citations in 2011, 2386 (18.49%) citations in 2013, and 2254 (17.47%) citations in the year 2015

Types of Document

Every research depends on the information on the sources used by the researchers. Therefore, it is necessary to study the different information sources used by researchers to properly frame the acquisition policy of library. Table 2 presents the different information sources used by the researchers in the Journal of Biosciences during 2011 to 2015.

Table 2: Form of Document Cited

Sr. No.	Forms of Document	Total	Percentage
1	Journals	11476	88.95
2	Govt. or Institution Publications	537	4.16
3	Books	351	2.72
4	Research Reports	148	1.15
5	Seminars, Conferences, Proceedings	29	0.22
6	Dissertations	22	0.17
7	Handbooks and Manuals	16	0.12
8	Websites	13	0.10
9	Abstracts	8	0.06
10	Others	301	2.33
	Total	12901	100.00

Table 2 shows the number of citations pertaining to various types of publications like journals, books, research reports, conference proceedings, websites, etc. It is observed that journal literature comprised the highest citation 11476 (88.95%) of the total 12901 citations. The citations from govt. or institution publication occupy second highest position i. e. 537 (4.16%) followed by books 351 (2.72%), other documents 301 (2.33%), research reports 148

(1.15%), seminar, conferences, proceedings 29 (0.22%), dissertations 22 (0.17%), handbooks and manuals 16 (0.12%), websites 13 (0.10%), and abstracts 8 (0.06%).

This indicates that journals, govt. or institution publications and books are the most preferred channels of information in journal of biosciences. These three types of documents covered 95.83% of total citations.

Chronological Distribution of Citation

Year-wise distribution of citations helps to test the recentness in citation. The table presents the year-wise distribution of citations.

Table 3 revealed that maximum number of citations accounted in the period 2001-2010, i.e. 6709 (52.00%) followed by 3025 (23.45%) in 1991-2000, 1328 (10.29%) in 2011-2015, 980 (7.60%) in 1981-1990, 432 (12.66%) in 1971-1980, 233 (1.81%) in 1961-1970, 106 (0.82%) in before 1950, and 88 (0.68%) in 1951-1960.

Table 3: Age of Cited References

Year	No. of	Commu.	Percentage	Commu.
Before 1950	106	106	0.82	0.82
1951 - 1960	88	194	0.68	1.50
1961 - 1970	233	427	1.81	3.31
1971 - 1980	432	859	3.35	6.66
1981 - 1990	980	1839	7.60	14.25
1991 - 2000	3025	4864	23.45	37.70
2001 - 2010	6709	11573	52.00	89.71
2011 - 2015	1328	12901	10.29	100.00
Total	12901		100	

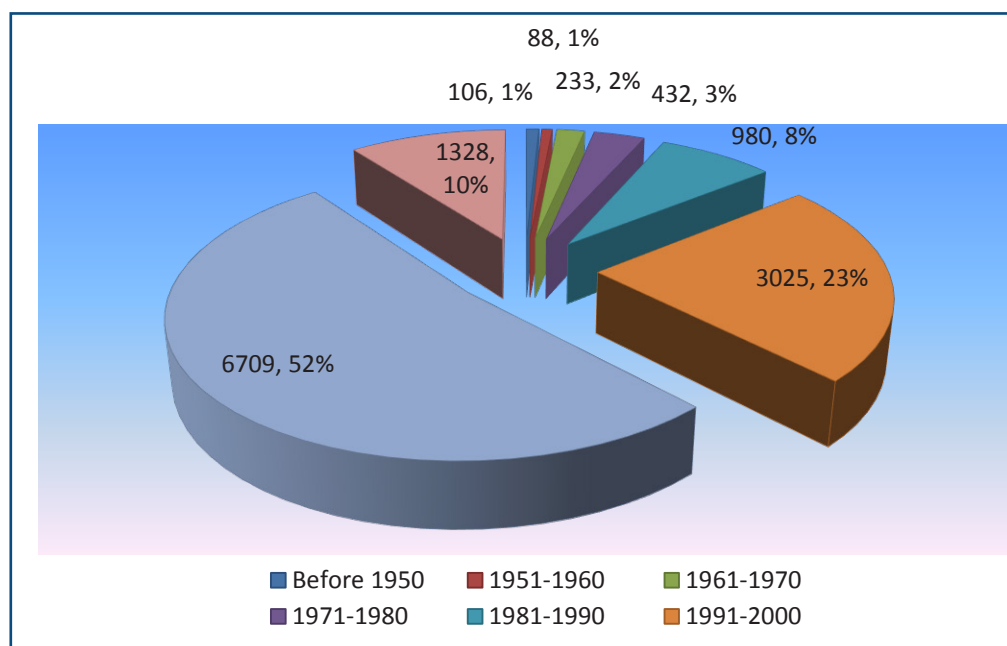


Fig. 2: Age of Cited References

Authorship Pattern

With a view to identifying the extent of individual and collaborative research the number of authors named in the

author statement are counted and analysed. Table 4 gives the distribution of cited references.

Table 4: Authorship Pattern of Cited References

Sr. No.	No of Authors	Total	Cumulative Total	Percentage	Cumulative Percentage
1	One Author	1881	1881	14.58	14.58
2	Two Authors	2739	4620	21.23	35.81
3	Three Authors	2167	6787	16.80	52.61
4	Four Authors	1736	8523	13.46	66.06
5	Five and More	4378	12901	33.94	100.00
	Total	12901		100	

On analysing the extent of collaborations, it was found that only (1881) 14.58% citations involved single authors, followed by (2739) 21.23% citations involved two

authors, (2167) 16.80% citations involved three authors, (1736) 13.46% citations involved four authors, and (4378) 33.94% citations involved five and more authors.

Table 5: Year-wise Authorship Pattern

Sr. No.	No. of	2011	2012	2013	2014	2015	Total	Percentage
1	Single	315	430	311	497	328	1881	14.58
2	Joint	2098	2632	2075	2289	1926	11020	85.42
	Total						12901	100.00

Table 5 showed that out of 12901 articles, single author contributed 1881 (14.58%) articles while the rest 11020 (85.42%) articles were contributed by joint authors. The data given in the above table shows that the largest contributions has been made by joint authors 85.42% in journal of biosciences.

Geographical Distribution of Book Citations

From the citations, the country of their origin can be identified in all types of materials like journals articles, books, reports etc. In many subject areas, U. S. publications are found to be used more heavily.

Table 6: Geographical Distribution of Book Citations

Sr. No.	Name of Country	No. of Citations	Cumulative Total	Percentage	Cumulative Percentage
1	USA	81	81	23.08	23.08
2	UK	52	133	14.81	37.89
3	India	18	151	5.13	43.02
4	Japan	7	158	1.99	45.01
5	Australia	11	169	3.13	48.15
6	New Zealand	8	177	2.28	50.43
7	Others	174	351	49.57	100.00
	Total	351		100.00	

The most cited country under book citations in Journal of Biosciences from 2011 to 2015 is the USA (23.08%). The second rank goes to the publications from the UK

(14.81%) and third position goes to the publications from India (5.13%).

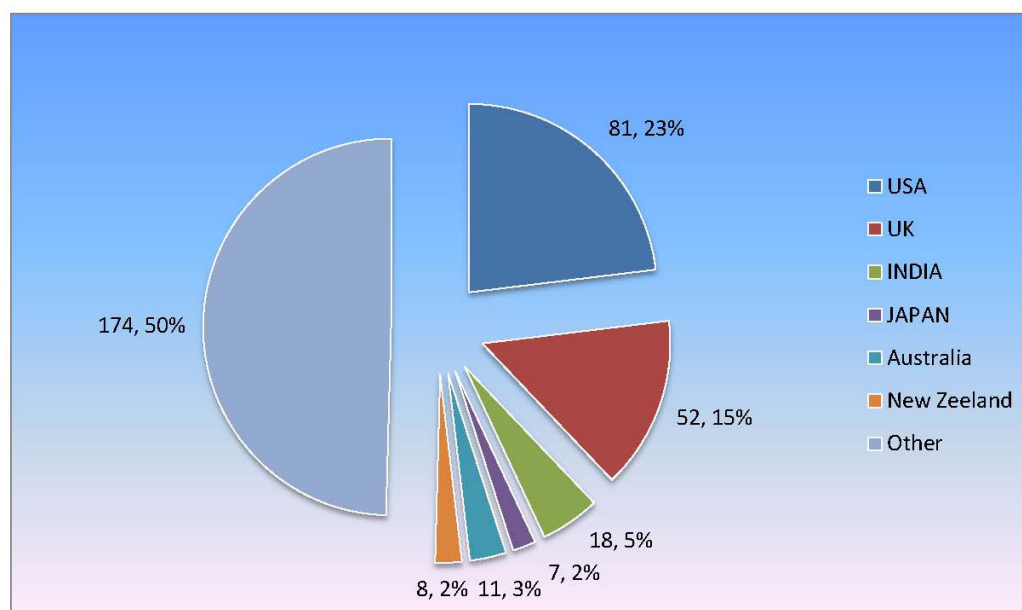


Fig. 3: Geographical Distribution of Book Citations

Head-wise Distribution of Article

The content pages were studied carefully in order to analyse various heads under which the articles are covered. It has been observed that the articles are included under ten major heads viz. clipboards, commentary, editorial, perspective, side lights, series, brief communication, articles, reviews, and mini reviews. Year-wise analysis is shown in Table 7. Detailed analysis of each head is covered in subsequent study.

Table 7: Head-wise Distribution of Articles

Heads	2011	2012	2013	2014	2015	Total
Clipboards	4	4	0	5	1	14
Commentary	5	4	3	2	1	15
Editorial	2	4	2	2	1	11
Perspective	3	2	1	0	2	8
Side lights	0	1	0	1	0	2
Series	4	3	3	3	4	17
Brief Communication	6	3	9	3	2	23
Articles	62	74	69	66	60	331
Reviews	12	11	12	9	11	55
Mini reviews	2	2	2	1	0	7
Total	100	108	101	92	82	483

Total 14 clipboards articles were observed during the period 2011-15 and maximum commentary articles i.e. 5 were published in 2014 followed by 4 commentary articles each in 2011 and 2012, 1 in 2005, and the least i.e. only zero commentary articles in 2013.

Total 15 commentary articles were observed during the period 2011-15 and maximum commentary articles i.e. 5 were published in 2011 followed by 4 articles in 2014, 3 in 2013, 2 in 2012, and 1 in 2011.

It is observed from Table 7 that during 2011-2015, total 11 articles were published under the editorial section. The maximum editorial articles were published in 2012 i.e. 4 followed by in the year 2011, 2013 and 2014 i.e. 2 in each year, and 1 in 2015. During the period 2011-15, total 8 perspective articles were published. Maximum perspective articles were published in 2011 i.e. 3, followed by 2 each in 2012 and 2015, 1 in 2013, and the least i.e. only zero articles in 2014. Table 7 reveals that total 2 side lights articles were published during the period 2011-15.

Total 17 series were published during 2011-15. In this period maximum series i.e. 4 were published in 2011 and 2015 followed by 2012, 2013 and 2014 series 3 in each year.

Total 23 brief communications were published during the year 2011-2015. Maximum brief communications i.e. 9 were published in 2013 and minimum were published in 2015.

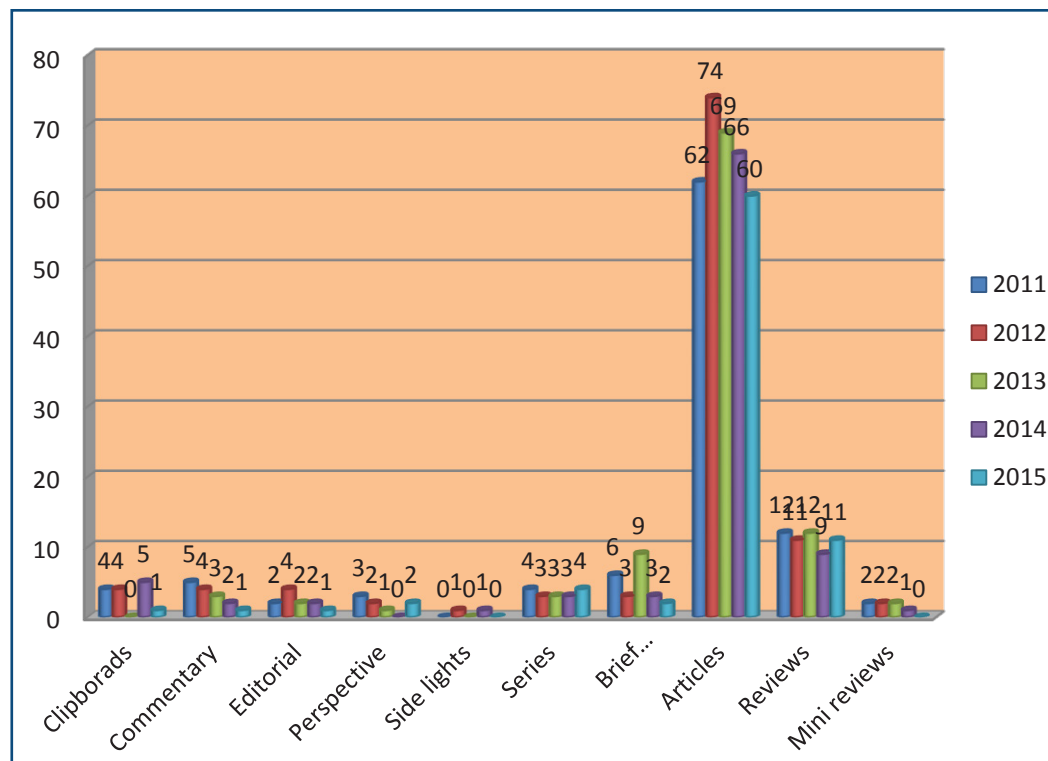


Fig. 3: Head-wise Distribution of Articles

Article section is the most important section from the viewpoint of subject specialists. This section covers the intellectually rich and valuable articles devoted to library and information science discipline contributed by eminent professional, scientists and research scholars in the field of library and information science. This section quotes the highest rank in popularity and used by the maximum number of users. The detail analysis of articles has been carried out during the study. It is observed that during last five years (2011-2015) total 331 articles were published. The maximum number of articles was published in 2012 i.e. 74 articles followed by 69 in 2013, 66 in 2014, 62 in 2011, and the minimum number of articles was observed i.e. 60 in 2015.

Total 55 reviews were published during 2011-2015. The maximum 12 each articles were published in 2011 and 2013, followed by 11 each in 2012 and 2015, and minimum i.e. 9 reviews were observed in 2014.

Total 7 mini-reviews were published during 2011-2015. The maximum 2 each articles were published in 2011, 2012 and 2013, followed by 1 in 2014, and least that is only zero in 2015.

Conclusion

The distribution of citations among the different types of documents indicates that journals are the most favoured category of documents of the researchers. The distribution of citations in article 331 total articles published in Journal of Biosciences during 2011 to 2015. It is observed that maximum contributions are given in 2012 i.e. 74 (22.36%). It is concluded that single authorship is dominant in journals due to joint research activities. Out of 12901 citations, only 1881 citations are from single author with percentage 14.58% and remaining 85.42% percent citations are from co-authorship. The year-wise distribution of journals indicated that journals published from 2001 – 10 are highly preferred and its percentage is 52.00. This indicates the recentness of citations. The country-wise distribution reveals that USA, UK, and India are preferred countries while citing journal citation. This is due to major research activities being carried out in these countries. The distribution of citations in published papers in the Journal of Biosciences reveals that maximum citation are given in 2012 i. e. 3062 (23.73%).

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