

Scientometric Analysis of Contributions to the Journal Interlending & Document Supply

Vaishali. B Kanekar*, Vaishali S. Khaparde**

Abstract

Scientometric analysis of 315 research articles published in Interlending & Document Supply has been carried out. Ten Volumes of the journal containing 40 issues from 2005 – 2014 have been taken into consideration for the present study. The mean doubling time for the first five years (i.e. 2005 to 2009) is only (0.71) which is increased to (0.12) during the last five years (2010 to 2014) the study revealed that most of the papers 184 (58.4%) of papers were contributed by single authors. UK is the top producing country with 104 (33.0%) publications of the total output. The highest range being articles in the range of 11-20, 188 (59.6%).

Keywords: Scientometrics, Interlending, Document

Interlending & Document Supply

Interlending & Document Supply was selected as the source journal for the present research study. The journal was started in 1983. It's published from UK. Its publication frequency is four issues per year. It covers a wide range of activities relating to document provision and supply, from traditional approaches to the use of advanced technology, both within and between countries worldwide. It publishes articles which have been accepted by the editor after consultation with appropriate experts including Editor Advisers.

Review of Literature

Alhamdi, Khaparde and Wankhade (2014) have conducted a Scientometric analysis. The study revealed that most of the papers (71.4%) are contributed by multiple authors. USA is the top producing country with 8 (14.3%) papers. All the articles were in English language. The mean doubling time for the first five years (i.e. 2004 to 2008) is only (1.05) which is increased to (6.07) during the last five years (2009 to 2013).

Jadhav and Khaparde's (2011) study attempts on citation analysis of all the journal articles published in the journal 'University News' from January 2004 to December 2008. The journal is carried out in 5 volumes and 261 issues in its 1949. The citations taken for the study are 5968. It revealed that the maximum number of citations was referred in 2007 to 2008, the most cited type of document is book 1549 (26.39%), the maximum number of citations was from India, that is 3675 (62.61%), in authorship pattern solo author citations are dominant more than others.

Introduction

Scientometrics is the branch of science that describes the output traits in terms of organisational research structure, resource inputs and outputs, and develops benchmarks to evaluate the quality of information output (Ramachandran, 2012), Scientometrics is the quantitative study of the disciplines of science based on published literature and communication (Venkatesan & Thanuskodi, 2014). It is a discipline which analyses scientific publications to explore the structure and growth of science. The bibliometric/scientometric/informetric techniques used to analyse various quantitative or qualitative aspects of a publication. It is a scientific field that studies the evolution of science through some quantitative measures of scientific information, as the number of scientific articles published in a given period of time, their citation impact, etc. The history of science and technology, philosophy of science and sociology of scientific knowledge are the related fields of Scientometrics.

* M.Phil. Research Student, Dept. of Library & Information Science, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra, India. Email: kanekarvaishali86@gmail.com

** Professor and Head, Dept. of Library & Information Science, Dr. Babasaheb Ambedkar Marathwada University, Aurangabad, Maharashtra, India. Email: khapardevaishali@gmail.com

Khparde (2011) stated in study “Bibliometric Study of Electronic Journal of Academic and Special Librarianship.” that single author contributions have dominated the journal with 47.95% of contributions, and in geographical based distribution of articles, India have occupied the top position with 28.41% publications. Thanuskodi (2011) too in his study “Library Herald Journal: A bibliometric study” opined that 52.17% authors prefer single author contribution. Foreign author contribution to this journal is comparatively less with 10.15%.

Khparde and Pawar (2013) studied the authorship pattern and author’s collaborative research in Information Technology with a sample of 17917 articles collect from LISA during 2000-2009. The average number of authors per article is 1.80. In the study the degree of collaboration (C) during the overall 10 years (2000-2009) is 0.71 but the year wise degree of collaboration is almost same in all the years of mean value 0.49. According to 10 years of period, the multi- authorship articles are higher and predominant on single authorship. The study found that the researches in Information Technology are keep toward team research or group research rather than solo research.

Sagar, Kademani, Garg and Kumar’s (2010) study performs a scientometric analysis of all Tsunami related publications. USA topped the list with 1081 (24.92%). The most cited authors in Tsunami publications was K. Satake who obtained 868 citations, while Geophysical Research Letters was recorder with 130 publications. The authorship and collaboration trend is towards multi-authored papers.

Research Methodology

The survey, sampling, and scientific research method are being adopted for the collection data. These methods areas recognised and accepted function of gathering information, and also help of field and table research prepared table.

Objective

1. To identify the number of references per article.
2. To know relative growth and doubling time of publication.
3. To identify the authorship pattern of references per articles.
4. To identify the year-wise degree of collaboration.

5. To know the organisation wise contribution of articles.
6. To find out the country wise distribution of cited articles.
7. To find out the lengths of articles.

Data Analysis

Table 1: Average No. of References Per Article

Year	Volume No.	No. Of Articles	No. of References	% of Articles
2005	33 (1-4)	36	431	11.4
2006	34 (1-4)	30	411	9.52
2007	35 (1-4)	34	557	10.7
2008	36 (1-4)	32	415	10.1
2009	37 (1-4)	34	412	10.7
2010	38 (1-4)	35	340	11.1
2011	39 (1-4)	30	405	9.52
2012	40 (1-4)	30	410	9.52
2013	41(1-4)	21	223	6.66
2014	42(1-4)	33	467	10.4
		315	4071	100

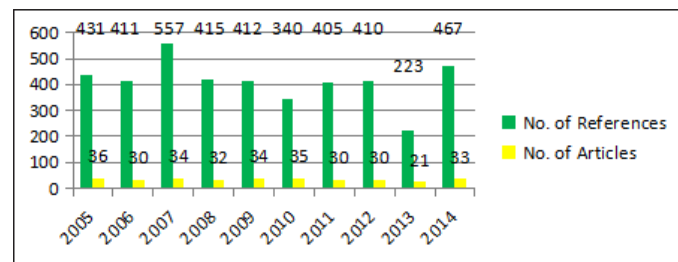


Fig. 1: Average Number of References per Articles

From Table 1 and Fig. 1, an attempt was made to find out the references per article during 2005 to 2014, which came to be 4071. It is observed that the highest number of references per articles is in 2007 i.e. 557, followed by 467 citations in the year of 2014, while the lowest number of references per article is showed in 2013.

Relative Growth Rate [R(P)] And Doubling Time [Dt(p)]

Relative Growth Rate (RGR) is a measure to study the increase in number of articles/pages per unit of articles/

pages per unit of time (Mahapatra, 1985).

The Relative Growth Rate [R(P)] and Doubling Time [Dt(P)] of publications are derived and presented in Table 2 and Fig. 2. It can be noticed that the Relative Growth Rate of publications [R(P)] decreased from 2.63 in 2006 to 0.11 in 2014. The mean relative growth for the first five years

(i.e. 2005 to 2009) showed a growth rate of 0.71 whereas the mean relative growth rate for the lowest five years (i.e. 2010 to 2014) reduced to 0.12. The corresponding Doubling Time for different years [Dt(P)] gradually increased from 0.26 in 2006 to 6.3 in 2014.

Table 2: Relative Growth Rate [R(P)] And Doubling Time [Dt(p)] for Publication

Year	No. Of Publication	Cumulative no. of Publication	Log _e 1 ^p	Log _e 2 ^p	[R(P)]	Mean [R(P)]	[Dt(P)]	Mean [Dt(P)]
2005	36	36	-	1.55	-	0.71	-	1.47
2006	30	66	1.55	4.18	2.63		0.26	
2007	34	100	4.18	4.60	0.42		1.65	
2008	32	132	4.60	4.88	0.28		2.47	
2009	34	166	4.88	5.11	0.23		3.01	
2010	35	201	5.11	5.30	0.19	0.12	3.64	5.86
2011	30	231	5.30	5.44	0.14		4.95	
2012	30	261	5.44	5.56	0.12		5.77	
2013	21	282	5.56	5.64	0.08		8.66	
2014	33	315	5.64	5.75	0.11		6.3	

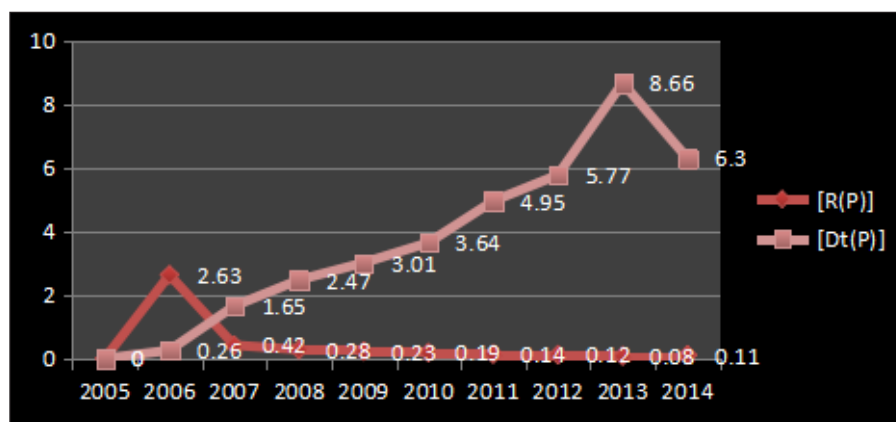


Fig. 2: Relative Growth Rate & Doubling Time of Publication

Table 3: Authorship Patterns

Authorship Pattern	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Single	28 77.7	15 50	23 67.6	18 56.2	22 64.7	15 42.8	18 60	15 50	15 71.4	15 45.4	184 58.4
Two	6 16.6	9 30	4 11.7	13 40.6	8 23.5	16 45.7	9 30	13 43.3	4 19.0	10 30.3	92 29.2
Three	2 5.55	4 13.3	4 11.7	-	3 8.82	2 5.71	2 6.66	2 6.66	2 9.52	6 18.1	27 8.57
More than Three	-	2 6.66	3 8.82	1 3.12	1 2.94	2 5.71	1 3.33	-	-	2 6.06	12 3.80
Total	36	30	34	32	34	35	30	30	21	33	315

Table 3 and Fig. 3 identified the distribution of articles according to the number of contributors. It shows that the number of single authors is 184 (58.4) and more than three is the lowest authors 12 (3.80).

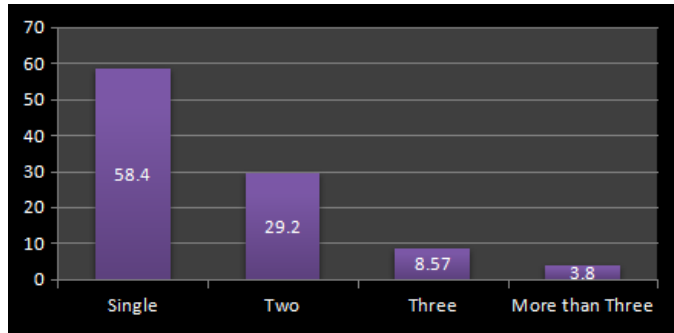


Fig. 3: Authorship Pattern

Categories of Authors and Collaborative Researchers

The degree of authors' collaboration is shown in Table 4. Various methods have been proposed to calculate the

degree of research collaboration. Here in this study the formula proposed by Subramanyam (1983) has been used.

$$C = \frac{NM}{Nm+Ns}$$

The degree of collaboration

where,

C=degree of collaboration

Nm= number of multi author

Ns=number of single author

$$C = \frac{131}{184+131} = 41.5$$

So, the degree of collaboration during the overall 10 years (2005-2014) is 41.5.

Table 4 shows that the single author articles are higher than multi-author articles. The single author articles are highest in the year 2005 i.e. 28 (8.88%) and highest multi

Table 4: Year-Wise Degree of Collaboration

Year	Total No of Article	No. of Authors	Total No. of Single Author	% of article	No. of Multi Articles	% of articles	Degree of Collaboration
2005	36	46	28	8.88	8	2.53	0.22
2006	30	53	15	4.76	15	4.76	0.5
2007	34	55	23	7.30	11	3.49	0.32
2008	32	48	18	5.71	14	4.44	0.43
2009	34	51	22	6.98	12	3.80	0.35
2010	35	61	15	4.76	20	6.34	0.57
2011	30	46	18	5.71	12	3.80	0.4
2012	30	47	15	4.76	15	4.76	0.5
2013	21	29	15	4.76	6	1.90	0.28
2014	33	61	15	4.76	18	5.71	0.54
Total	315	497	184	58.4	131	41.5	0.41 (Mean)

Table 5: Organisational Contributions of Articles

Organisation	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
University	25 69.4	21 70	22 64.7	20 62.5	28 82.3	28 80	21 70	19 63.3	17 80.9	27 81.8	228 72.3
Research Institute	11 30.5	9 30	12 35.2	12 37.5	6 17.6	7 20	9 30	11 36.6	4 19.0	6 18.1	87 27.6
Total	36 11.4	30 9.52	34 10.7	32 10.1	34 10.7	35 11.1	30 9.52	30 9.52	21 6.66	33 10.4	315 100

Country wise	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total
Tehran	-	-	1	-	-	-	-	-	-	-	1(0.31)
Toronto	-	-	-	-	1	-	-	-	-	-	1(0.31)
Uganda	-	-	-	-	1	-	-	-	-	-	1(0.31)
Israel	-	-	-	-	1	-	-	-	-	-	1(0.31)
Switzerland	-	-	-	-	-	1	-	-	-	-	1(0.31)
Russia	-	-	-	-	-	1	-	-	-	-	1(0.31)
Serbia	-	-	-	-	-	1	-	-	-	-	1(0.31)
Portugal	-	-	-	-	-	1	-	-	-	-	1(0.31)
Japan	-	-	-	-	-	-	1	-	-	-	1(0.31)
Oman	-	-	-	-	-	-	-	-	-	1	1(0.31)
Unidentified	-	1	-	-	-	-	-	1	-	1	3(0.95)
Total	36	30	34	32	34	35	30	30	21	33	315

Table 7: Length of Articles

No. of Pages	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	Total	%
01 - 10	8	1	5	7	4	6	4	3	20	31	89	28.2
11 - 20	25	22	23	19	23	25	22	26	1	2	188	59.6
21 - 30	3	6	5	6	7	4	4	1	-	-	36	11.4
31 - 40	-	1	1	-	-	-	-	-	-	-	2	0.63
Total	36	30	34	32	34	35	30	30	21	33	315	100

Out of 315 contributions, 89 contributions (28.2%) have page length of 1-10 pages while 188 (59.6%) have length of 11-20 pages. The lowest number of articles are recorded in the range of 21-30 and 31-40 with 36 (11.4%) and 2 (0.63%) respectively.

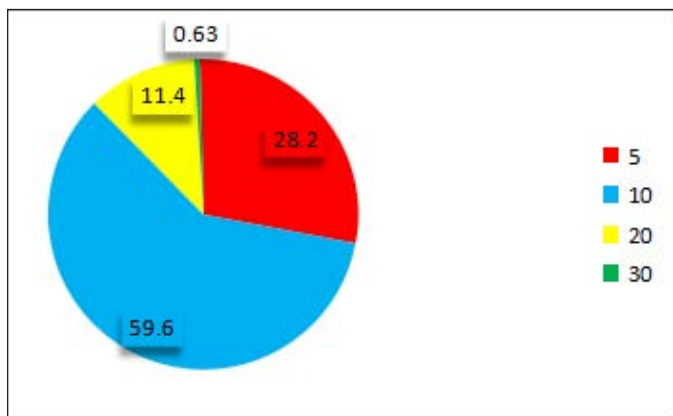


Fig. 5: Length of Articles

Finding and Conclusion

The findings are based on the analysis of collected data appended in 315 articles and 4071 references in Interlending & Document Supply.

1. The highest number of references per articles is in the year of 2007.
2. The mean relative growth for articles during the first five years, i.e. 2005 to 2009 is 0.71% which reduced to 0.12% during 2010 to 2014.
3. The number of articles by single authors is 184 (58.4%) and by more than three authors is 12 (3.80%) which is the lowest.
4. The single author articles are higher and predominant than multi-author articles.
5. Universities are the major contributors with 228 contributions (72.3%) from 2005 to 2014 and fol-

lowed by research institute with 87 contributions (27.6%).

6. UK, USA, and China have the majority of most cited records in 'Interlending & Document Supply'.
7. 188 (59.6%) publications have page length from 11 to 20, followed by 89 (28.2%) which have page length from 1 to 10.

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