

INDIAN JOURNAL OF CHEMISTRY: A SCIENTOMETRIC ANALYSIS

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ABSTRACT

Scientometric analysis of 454 articles published in the Indian Journal of chemistry(Section A) during the year January 2006 –December 2008 are taken up to observe the distribution of contributions, authorship pattern, geographical distribution of contributions. Results indicate that highest numbers of papers have been written by co-authors. The contributions in this journal from India are slightly more than those from the other countries. The growth and popularity of this journal is found to show an upward trend.

Keywords: Scientometrics, Distribution of Contributions, Geographical distribution, Indian Journal of chemistry.

1. INTRODUCTION

Scientometrics is a branch of science. Scientometricians explain about input and outputs resource in terms of organizational structure. They develop benchmarks to evaluate the quality of information resources and packages of information for decision making in science. It provides a key opportunity to the researcher to publish their articles with new strategies, innovations, new methods and new ideas. Indian journal of Chemistry highly helpful in the field of Inorganic, Bio-inorganic, Physical, Theoretical & Analytical. They define appropriate data aggregation producers and methods for diachronic analysis. They empirically describe the constantly changing relationships between science, technology and the market. They forecast productivity of scientists, so that dynamics of scientific research and technological development can be understood. This consequently sheds more light on our knowledge of the structure of subject of literature and better organization of information resources which can ultimately be effectively used. In this paper an attempt has been made by the research to reveal the trends towards the increase and quality of research articles in Science discipline.

2. SOURCE JOURNAL

Indian Journal of Chemistry (Section A) has been selected as the source journal for the present study. The Indian Journal of Chemistry is published by National Institute of Science Communication And Information Resources, CSIR New Delhi. The monthly issue of this journal contains Full papers, short notes, rapid communications and Review Articles. The articles published in this journal cover all areas of research in Chemistry viz inorganic, bio-inorganic, physical, theoretical and analytical.

3. OBJECTIVES OF THIS STUDY

The following objectives were formulated for the present study:

- to examine the authorship pattern of the contribution;
- to sketch the volume wise distribution of contribution and to find out the average number of contributions per volume;
- to indicate volume wise geographical distribution of contributions;
- to find out the research productivity count of the contributions on the basis of geographical distribution both at national and international levels;
- to observe the number of pages used in different volumes.

4. SCOPE OF THIS STUDY

An attempt has been made to analyse the contributions in 36 issues of 3 volumes of the Indian Journal of Chemistry in the field of inorganic, bio-inorganic, physical, theoretical & analytical during the year from January 2006 to December 2008.

5. METHODOLOGY

The data pertaining to Indian journal of chemistry regarding 454 contributions made from volume 45A in January 2006 to volume 47A in Dec 2008. The analysis made an authorship (Volume wise and issue wise); authorship pattern, geographical distribution in national and international wise, citation of publication and number of pages of Indian journal of Chemistry. The authorship pattern has been analysed by using K. Subramaniam's degree of collaboration in quantitative terms. All the data were subsequently examined, observed, analysed and tabulated for making observations.

6. DATA ANALYSIS

6.1 Table 1 shows the distribution of contributions volume-wise

Table 1
Distribution of Contributions (Volume- wise)

Year	Vol. No	No. of issues	No. of Contributions	%
2006	45A	12	165	36.35
2007	46A	12	150	33.03
2008	47A	12	139	30.62
		36	454	100

Table 1 portrays that out of 454 contributions, 36.35 per cent of them were contributed in 2006, 33.03 per cent of them were published in 2007, And the rest of them were published in the year 2008. It is inferred from the table of distribution of contributions from 2006 to 2008 that the level of the percentage of distribution has decreased. A notable attribute of the study is that the year 2006 shows the maximum number of contributions.

Table 2 shows the distribution of contributions (Issue - wise)

Table 2
Distribution of Contributions (Issue - wise)

Month	Volume Number		
	45A	46A	47A
January	22	14	13
February	14	13	13
March	13	12	11
April	15	13	12
May	13	13	10
June	13	15	10
July	14	13	12
August	12	11	11
September	15	12	12
October	11	12	12
November	12	10	11
December	11	12	12
Total	165	150	139

Table 2 exhibits monthly wise contributions of journals. Volume No: 45A shows the highest number of total contributions. Next to Volume No: 46A and 47A. Monthly-wise distribution of contributions was more in Volume No: 45A. The contributions in Volume No: 45A were more in January.

6.2 AUTHORSHIP PATTERN

Table 3 shows the Authorship pattern of Contributions

Table 3
Authorship Pattern of Contributions

No. of Authors	No. of Contributions	Total No. of Authorship	%
Single Author	18	18	4.0
Two Authors	130	260	28.6
Three Authors	145	434	31.9
Four Authors	89	356	19.6
Five Authors	52	260	11.5
Six Authors	16	96	3.5
Seven Authors	4	28	0.9
	454	1452	100

Table 3 explicates the authorship pattern of contributions. Out of 454 contributors, a single author has contributed 4 per cent of the total articles. 28.6 per cent of the contributions were published with two authors, 31.9 per cent of the contributions were contributed by three authors. 19.6 percent of the contributions were published by four authors, 11.5 per cent of the contributions were published by five authors, 3.5 per cent of the contributions were published by six authors and 0.9 per cent of the contributions were published by seven authors. A significant note of the study is that the majority of the articles are contributed by co- author.

The following Charts shows the Authorship pattern of Contributions

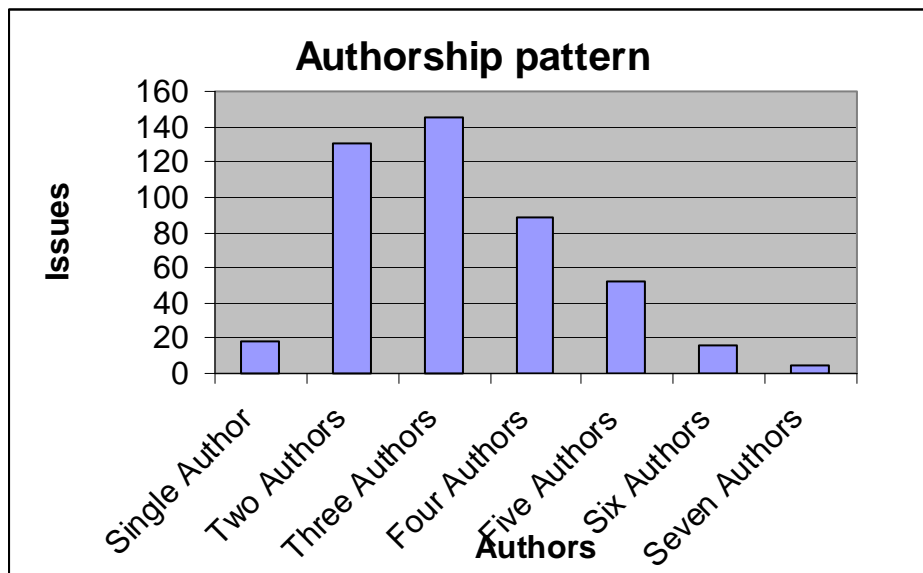


Fig.1: Authorship pattern of contributions

Degree of collaboration in the Indian journal of Chemistry

The formula given by K Subramanyam is useful for determining the degree of collaboration in quantitative terms. The study followed the same formula which is mathematically put as:

$$C = \frac{NM}{NM + NS}$$

Where C = Degree of Collaboration

NM = Number of Multi authored papers

NS = Number of single authored papers.

In the present study

NM = 436

NS = 18

Thus C = **0.96**

Thus the degree of collaboration in Indian journal of physics is **0.96** which clearly indicates its dominance upon individual contribution.

Table 4 shows the Authorship pattern of Contributions (Volume - wise)

Table 4
Authorship Pattern of Contributions (Volume - Wise)

Vol. No	Single Author	Two Author	Three Author	Four Author	Five Author	Six Author	Seven Author
45A	2	49	58	27	19	8	2
46A	11	43	47	28	16	3	2
47A	5	38	40	34	17	5	--
Total	16	130	145	89	52	16	4

Table 4 depicts that authorship pattern of contributions volume wise. Regarding contributions by a single author, volume no 46A records the highest percentage. Regarding the two author contributions, Volume No 45A shows the maximum percentage. Regarding the three author contributions, Volume No 45A depicts the highest percentage. Regarding the four author contributions, Volume No 47A reflects the maximum percentage. Anyhow it may be concluded that the Co - author contributions has the maximum percentage.

6.3 Geographical distribution of contributions is discussed in Table 5 shows the contributors institution - wise

**Table 5
 Contributors (Institution - wise)**

Vol. No	Year	University	Institution	College	Total
45A	2006	402	128	19	549
46A	2007	362	59	35	456
47A	2008	361	72	14	447
		1125	259	68	1452

Table 5 depicts the geographical distribution of Contributions University - wise at the national level, followed by Institutions and colleges. It is inferred from the above table that University-wise contributions were the maximum.

Table 6 depicts the Geographical distribution of contributions in India

**Table 6
 Geographical distribution of contributions in India**

Sl. No	Name of the State	No. of Contributions	Percentage
1	Uttar Pradesh	137	12.86
2	West Bengal	131	12.3
3	Rajasthan	116	10.89
4	Madhya Pradesh	112	10.5
5	Andhra Pradesh	106	9.95
6	Tamilnadu	88	8.26
7	Karnataka	69	6.47
8	Maharashtra	68	6.38
9	New Delhi	59	5.53
10	Himachal Pradesh	25	2.35
11	Jammu & Kashmir	24	2.25
12	Assam	24	2.25
13	Gujarat	23	2.16
14	Orissa	19	1.78
15	Kerala	17	1.59
16	Punjab	15	1.41
17	Bihar	10	0.94
17	Chandigarh	6	0.56
18	Haryana	5	0.46
19	Goa	5	0.46
20	Meghalaya	2	0.18
20	Tripura	2	0.18
21	Pondicherry	2	0.18
		1065	

Table 6 explains that, a study of the 1065 contributions made reveals first position of Uttar Pradesh with 12.86 per cent. Regarding the states like Meghalaya, Pondicherry and Tripura the contribution share was of less percentage. A significant observation of the study is that Uttar Pradesh dominates the number of contributions.

Table 7 shows the Geographical distribution of contributions at International level.

Table 7
Geographical distribution of contributions at International level

Sl.No	Name of the Country	No. of Contributions	%
1	India	1065	73.35
2	China	226	15.56
3	Turkey	35	2.41
4	Iran	29	2.00
5	Malaysia	13	0.90
6	Serbia	13	0.90
7	Egypt	9	0.62
8	UK	7	0.48
9	France	6	0.41
10	Bangladesh	6	0.41
11	USA	6	0.41
12	Korea	5	0.34
13	Japan	4	0.27
14	Slovenia	4	0.27
15	Germany	3	0.21
16	Soudi Arabia	3	0.21
17	Italy	3	0.21
18	Colombia	3	0.21
19	Taiwan	2	0.14
20	Belgium	2	0.14
21	Spain	2	0.14
22	Israel	1	0.069
23	Taipei	1	0.069
24	South Africa	1	0.069
25	Ethiopia	1	0.069
26	Poland	1	0.069
27	Slovak Republic	1	0.069
	Total	1452	

Table 7 shows that 73.35 per cent of contributions came form India; 15.56 percent of contributions came from China; 2.41 Percent of contributions came from Turkey; 2 Percent of contributions came from Iran and 0.89 Percent of contributions came from Malaysia Countries.

However, it is inferred that out of the above mentioned twenty seven countries, India gives priority for research when compared to other countries.

Table 8. Types of Publications Cited (volume-wise)

Vol. No	Books	Journals	Others	Total
45A	968	3160	824	4952
46A	898	2546	709	4153
47A	721	2021	554	3296
Total	2587	7727	2087	12401
%	20.86	62.31	16.83	

Table 9 Average Citation per Contribution in Each Volume

Vol. No	No. of Contributions	No. of Citations	Average
45A	165	4952	39.93
46A	150	4153	33.49
47A	139	3296	26.58
3 Volumes	454	12401	

Table 8 shows that thirty six issues of three volumes of Indian Journal of Chemistry contained 12401 citations. Based on analysis it was found that chemistrians make use of journals articles the most that is 7727 (62.31%) citations. This is due to the fact that journals are the premier vehicle of nascent information transfer / dissemination. This is followed by books 2587 (20.86 %) citation. The remaining 2087 (16.83%) citations are from other sources, which include conference proceedings theses and dissertations personal notes etc.

7. FINDINGS:

From the observation made in this study, the following points may be inferred:

- Majority of the contributions in the journal are by a two author's presumably one being a research scholar and the other is his/her guide.
- The degree of collaboration in Indian Journal of Chemistry is 0.96 which clearly indicates its dominance upon individual contribution.
- Volume Number 45A (2006) has maximum articles contributed.
- Among the contributions, the maximum number of contributors is from the Universities at the national level.
- All the contributions are with citations. It is observed that the journals are more cited documents.

8. CONCLUSION

The publishing trend totally depends on the productivity of contributors, pattern of contributions and the quality of information. In the year 2006 shows the maximum of contributions made in this journal. A significant note of the study is that the majority of the articles are contributed by co-author and that the University –wise contributions were the maximum. In India Uttar Pradesh dominates the number of contributions than any other states. The geographical distributions of international level shows among the 27 countries, India gives priority for research when compared to other countries. A notable attribute of this study is that, this journal really stipulates / induces fruitful research for the researcher. Today, we see that research is done in almost all the branches of knowledge, especially in science and technology.

REFERENCE

1. DUTTA (Bidyarthi) and SEN (B K). Indian Journal of pure and applied mathematics: An analysis. IASLIC Bulletin. 46, 4 (2001) 221-226.
2. EGGHE (L). Methodological aspects of bibliometrics. Library Science. 25, (1998) 179-191
3. Evaluation of Trans-National Research, Scientometrics, 21: 223-244.
4. Pritchard (A). Statistical Bibliography or bibliometrics? Journal of Documentation 25, 4 (1969) 348-349.
5. Pritchard, Allen and Writing, G R, Bibliometrics: a bibliography and index (1874-1959). Wettford: AAIH Books.
6. Persson, O., W. Glänzel, & R. Danell. 2003. Inflationary Bibliometric Values: The Role of Scientific Collaboration and the Need for Relative Indicators in Evaluative Studies. Paper presented at the 9th International Conference on Scientometrics and Informatics, Beijing
7. Rip, A. 2007. Qualitative Conditions for Scientometrics: The New Challenges, Scientometrics, 38(1): 7-26.
- (1) Rip, A. 2007. Qualitative Conditions for Scientometrics: The New Challenges, Scientometrics, 38(1): 7-26.