

Bibliometric Study of Textiles Research Literature of IJFTR

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Abstract

This bibliometric study of 'Indian Journal of Fibre and Textile Technology' (IJFTR) was undertaken to understand the year-wise distribution of articles, authorship pattern of articles and geographical distribution of affiliations of the authors of articles, to calculate the average number of authors per article and to identify the top authors in terms of articles contributed. Based on the data collected for the study, it has been found that the number of articles published every year increased, that multi-authored articles outnumbered single-authored articles indicating a collaborative research and publishing pattern, that share of authors affiliated in India was about two-third of all authors with authors from as many as 23 countries contributing an article. The average number of authors per article was 2.94, and, Das, A. from Indian Institute of Technology Delhi (India) was the top author with as many as 14 article contributions.

Keywords: Authorship Pattern, Bibliometrics, Journal Productivity, Textile Literature

1. Introduction

Science is growing at a fast pace (Price, 1963) because research is being conducted across the world for fulfilling various objectives. As a result, there is a huge amount of literature generated and communicated, contributing to the growth of science. Journals came into existence as a speedy solution for scholarly communication of research results. With time, science progressed and newer subjects evolved. This led to creation of newer journals that catered to specialized subject disciplines. Journal is still a preferred medium among the researchers for the communication of their research results.

The quantitative study of media of communication is bibliometrics. Pritchard (1969) coined the term 'bibliometrics' to mean 'the application of

mathematics and statistical methods to books and other media of communication'. Likewise, Sengupta (1988) defined 'bibliometrics' as 'organization, classification and quantitative evaluation of publication patterns of all micro and macro communications along with their authorships by mathematical and statistical calculus'. This caused an urge to apply bibliometrics to the medium of scholarly communication, that is, a journal.

Since National Institute for Science Communication and Information Resources (NISCAIR), an Institute under the Council for Scientific and Industrial Research (CSIR) of the Government of India publishes about 18 different journal titles (NISCAIR, 2015), it was thought prudent to use one of them for this study. Accordingly, one journal title was randomly selected, and, it turned out to be the Indian Journal of Fibre and Textile Research (IJFTR).



2. Review of Literature

There have been bibliometric studies of journals from various disciplines reported in the published literature. A selection of such studies published in the recent past is reviewed and presented here chronologically.

Sivasubramanian (2000) conducted a bibliometric study of 334 papers published during 1989-1998 in the journal 'Indian Coffee' to find that most papers were single-authored contributions, that most papers were between 1-3 pages in length. Likewise, Suryanarayana (2000) carried out bibliometric analysis of 321 contributions to the journal 'Tobacco Research' published during 1987-1997 to analyse the contributing institutions, authorship pattern and to prepare list of core journals.

The bibliometric and citation analysis of 370 articles and 4290 references from 'Indian Journal of Environmental Protection' published during the years 1994, 1999 and 2004 respectively revealed that multi-authored publications were more in numbers than single-authored ones indicating prevalence of team research, and, most contributions originated from universities followed by colleges and research institutions respectively (Biradar, 2006).

Dixit and Katare (2007) in their bibliometric and citation study analyzed the 327 articles and 3521 reference citations appearing in the 'Journal of the Indian Society for Cotton Improvement' during the period 1995-2004 to study the pattern related to authorship, contributing institutions, documentary forms of citations and subjects to find that most articles had three or more authors, a multi-organizational body involving State Agricultural Universities and Departments of Agriculture contributed most articles. Similarly, the bibliometric

study of the 779 articles contributed in the 'Journal of Food Science and Technology' during 2000-2004 revealed that collaborative research was more prevalent as most contributions were two-authored, that nearly 85% articles originated from India, and that Karnataka had the highest contributions among Indian states (Vijay and Raghavan, 2007).

Kumar, et al. (2008) analyzed the publications in 'Pramana – Journal of Physics' for the period 1982-2006 using the data from the Science Citation Index database on CD-ROM to find the impact factor, authorship pattern, institutional collaboration of authors, institutional affiliations of authors, countries of authors among other things and found that most papers were multi-authored indicating higher extent of collaboration, India had the most papers and University of Delhi was the top Institute in terms of papers contributed.

The bibliometric analysis of 'Indian Journal of Pharmaceutical Education and Research' by Kulkarni, Poshett and Narwade (2009) involving 309 articles published during 1996-2006 reveals that multi-authored articles outnumber single-authored ones, though, most papers were single-authored followed by two-authored papers, etc., that India's contribution was much more than those from foreign countries and that there was time lag between receipt and publication of paper in the journal.

Wang, Yu and Ho (2010) conducted bibliometric analysis of articles in the journal 'Water Research' published during 1967-2008. It revealed that authors from as many as 114 countries contributed the articles, and, USA affiliated authors contributed most articles.

A bibliometric analysis of 2519 research reports, topical reviews and case reports published in the

journal 'Physical Therapy' during the period 1980-2009 was conducted by Coronado, et. al. (2011) to reveal among other things the most prolific author, most prolific organization, most cited journals, etc.

Garg and Anjana (2014) carried out a bibliometric study of the 'Journal of Intellectual Property Rights' involving 605 papers published during 1996-2012 to find that the average number of references per paper is 23, that most papers were single-authored, that about 71% papers were contributed by authors affiliated in India. They also indentified the most prolific Indian state, author and institution respectively in terms of papers contributed.

Rao, Sharma, Devi and Muralidhar(2014) conducted bibliometric analysis of 4047 articles published in 'Journal of Propulsion and Power' during 1985-2013, and, found that multi-authored articles were more in numbers than single-authored ones, with most articles being two-authored, that USA contributed the most articles among all countries. The study also revealed the most prolific Institute and author respectively based on the number of articles contributed.

3. Objectives of the study

The present study was undertaken with following objectives,

1. To know the year-wise distribution of articles published.
2. To find out the average number of authors per article.
3. To understand the authorship pattern of published literature.

4. To know the geographical distribution of authorship of published literature.
5. To identify out the top authors in terms of their contributions to the journal.

4. Scope of the study

The scope of the present study is limited to the articles published in the five volumes (v.35-39) of the journal 'Indian Journal of Fibre and Textile Research' during the 5-year period from 2010 to 2014.

5. Methodology

The data was collected from each article published in every quarterly issue of the 5 volumes of the journal 'Indian Journal of Fibre and Textile Research' during 2010 to 2014. In all, there were 300 articles published during the period of study. The data collected for each article included number of authors, names and affiliation of each of the authors as provided in article. When the author had multiple affiliations, only the first mentioned affiliation was considered for that author. The affiliating country and the affiliating Institute were further classified for later analysis.

6. Results and Discussion

6.1 Year-wise distribution of articles

The Table 1 gives the year-wise distribution of articles published in the journal during the period of study. The lowest number of articles (53) were published in 2010, while, the highest number (66) was published in 2014.

Table 1: Year-wise Distribution of Articles

Year	Volume	No. of Articles	% of Articles	Annual % Change	No. of Articles Per Issue
2010	35	53	17.67	--	13.25
2011	36	58	19.33	9.43	14.50
2012	37	59	19.67	1.72	14.75
2013	38	64	21.33	8.47	16.00
2014	39	66	22.00	3.13	16.50
		300	100.00		

It can be observed from Table 1 that the number of articles published every year during period of study is increasing. This is also exhibited from the positive values of the annual percentage change in the number of articles published every year. But the rate of change is not consistent and varies between 1.72 to 9.43%.

6.2 Average Number of Authors Per Article

The Table 2 provides the total number of authors per volume and average number of authors per article based on the data for this study.

In all there were 300 articles with 882 authors. It is found that the average number of authors per article is 2.94. It is observed that the average number of authors per article increased from 2.85 in 2010 to 3.08 in 2013 and 2014 respectively hinting at prevalence of collaborative publishing trend. This will be revealed in the analysis of authorship pattern of articles.

6.3 Authorship Pattern of Articles

The authorship pattern of the articles is exhibited in Table 3. It shows that on one hand there are solo-authored articles while on the other hand there are articles with as many as seven and eight authors together contributing an article respectively.

Table 2: Average Number of Authors Per Article

Year	Volume no.	Total no. of Articles (A)	Total no. of Authors (B)	Average no. of Authors per Article (B/A)
2010	35	53	151	2.85
2011	36	58	157	2.71
2012	37	59	174	2.95
2013	38	64	197	3.08
2014	39	66	203	3.08
		300	882	2.94

Table 3: Authorship Pattern of Articles

No. of Authors	No. of Articles	% of Articles	Cumulative no. of Articles	Rank
1	29	9.67	29	4
2	91	30.33	120	2
3	96	32.00	216	1
4	52	17.33	268	3
5	21	7.00	289	5
6	9	3.00	298	6
7	1	0.33	299	7
8	1	0.33	300	7
	300	100.00		

It is clear from Table 3 that solo-authored articles (9.67%) are hugely outnumbered by multi-authored articles (90.33%). This confirms that team research and collaboration is greatly prevalent in the field of Fibres and Textiles technology. Most articles are three-authored (32%) followed by numbers of articles with two-authors (30.33%) and four-authors respectively.

6.4 Geographical Distribution of Authorship

The data analysis revealed that authors from as many as 23 different countries contributed articles in the journal during the period under study. The Table 4 provides a list of countries ranked according to the numbers of affiliated authors.

Table 4: Geographical Distribution of Authorship

Sr. No.	Country	Number of Authors	% share of Authors	Rank
1	India	579	65.65	1
2	China	70	7.94	2
3	Egypt	65	7.37	3
4	Iran	50	5.67	4
5	Pakistan	27	3.06	5
6	Turkey	26	2.95	6
7	Malaysia	11	1.25	7
8	United States of America	11	1.25	7

Sr. No.	Country	Number of Authors	% share of Authors	Rank
9	Bangladesh	8	0.91	9
10	France	8	0.91	9
11	Tunisia	6	0.68	11
12	Canada	3	0.34	12
13	Lithuania	3	0.34	12
14	Mauritius	3	0.34	12
15	Czech Rep	2	0.23	15
16	Kazakhstan	2	0.23	15
17	Macedonia	2	0.23	15
18	Japan	1	0.11	16
19	Poland	1	0.11	16
20	Romania	1	0.11	16
21	Slovenia	1	0.11	16
22	South Korea	1	0.11	16
23	Spain	1	0.11	16
		882	100.00	

It is observed from Table 4 that India tops the ranked list with a share of 65.65% affiliated authors. This is along expected lines since IJFTR is an Indian journal. China (7.94%), Egypt (7.37%), Iran (5.67%), Pakistan (3.06%) and Turkey (2.95%) take the second, third, fourth, fifth and sixth rank respectively in terms of author share.

6.5 Top Contributing Authors

The data analysis revealed that there were as many 882 authors who contributed the 300 articles. The Table 5 shows the top 7 authors, along with their stated affiliations, ranked according to the number of articles contributed by each of them.

Table 5: Top Contributing Authors

Sr. No.	Author	Affiliation	No. of Articles	Rank
1	Das, A	Indian Institute of Technology Delhi, New Delhi	14	1
2	Tyagi, G K	The Technological Institute of Textile and Sciences, Bhilwara	9	2
3	Gupta, D	Indian Institute of Technology Delhi, New Delhi	8	3
4	Hasani, Hossein	Department of Textile Engineering, Isfahan University of Technology, Isfahan	7	=4
5	Ramchandran, T	Department of Textile Technology, PSG College of Technology, Coimbatore	7	=4
6	Thilagavathi, G	Department of Textile Technology, PSG College of Technology, Coimbatore	7	=4
7	Saravanan, D	Department of Textile Technology, Bannari Amman Institute of Technology, Sathyamangalam	6	7

It can be observed from Table 5 that Das, A. (from Indian Institute of Technology Delhi, New Delhi) contributed the highest number of articles followed Tyagi, G.K. (from The Technological Institute of Textile and Sciences, Bhilwara) and Gupta, D. (from Indian Institute of Technology Delhi, New Delhi) at second and third ranks respectively.

It can also be observed from Table 5 that though the top three ranks are taken by authors from India there is one author (Hasani, Hossein) from Iran sharing fourth rank with two other authors from India. Also, just a single article separates the authors at second to seventh ranks from their next lower ranked neighbour.

This apart the data analysis also revealed that there were 8 authors contributing 5 and 4 articles each respectively, 35 authors with 3 articles each, 79 authors with 2 articles each and 489 authors with 1 article each.

7. Conclusion

The following conclusions can be drawn from the study,

- ❖ The number of articles published every year during the period of study was found to be increasing. This indicates that the field of research in Fibre and Textile Technology is flourishing.
- ❖ The average number of authors per article was 2.94. This suggested prevalence of collaborative research. Further, the authorship pattern confirmed the prevalence of collaborative research and publishing trend in the field of Fibres and Textiles Technology.
- ❖ A little over one-third contributions are from authors outside India. This is a decent share for an Indian journal publication, and, indicates that the journal is a well placed choice of foreign researchers in the field of Fibres and Textiles technology.

- ❖ The ranked list of top 7 authors based on the number of articles contributed is dominated by authors from India. Das, A. from Indian Institute of Technology Delhi, New Delhi leads the list of top authors.

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