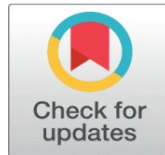


A SCIENTOMETRIC ANALYSIS OF IETE JOURNAL OF RESEARCH (1998 – 2008)

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ABSTRACT

This study looks at the IETE Journal of Research's research output between 1998 to 2008. The research utilized information from the Web of Science database. The primary aim of the study is to evaluate the scientific contributions of the article under consideration. The analysis includes the number of articles, the distribution of articles by year, and the authorship pattern that provides the largest contributions to the journal. The analysis found that over the study period, a total of 591 research papers were published in the journal. The study's findings were visually displayed using the VOSviewer tool.

Keywords: Scientometrics, Authorship Pattern, IETE Journal of Research, Degree of Collaboration, Relative Length Index.

1. INTRODUCTION

Established in 1953, the Institution of Electronics and Telecommunication Engineers (IETE) are the most prestigious professional organization in India dedicated to the development of IT, Telecommunication, and Electronics science and technology. The National Apex Professional Society for IT, computer, and electronics professionals is known as the IETE.

This study aims to conduct a scientometric analysis of the IETE Journal of Research by examining its publication trends, citation impact, authorship patterns, and research collaborations over a defined time frame. The goal of this study is to comprehend the journal's contribution to the advancement of scientific knowledge by examining bibliometric indicators including total publications, citations, most prolific authors, and highly cited papers. The results of this study will provide academic institutions, policymakers, and researchers with a better understanding of the journal's influence and ideas for further research.

2. LITERATURE REVIEW

Uzun (2004) investigated the trend of foreign authors in five prominent journals in the field of information science and scientometrics. Nattar, S. (2009) performed a scientometric study of 829 articles published in the "Indian Journal of Physics" from 2004 to 2008. According to his research, co-authors wrote the most papers, and Indian authors

contributed somewhat more to this journal than did authors from other nations. Rattan, G. K. and Gupta, K. (2012) conducted A bibliometric study of the "Malaysian Journal of Library and Information Science 2007-2011." According to their research, out of 100 articles, 27 (27%) were written by a single author, while the remaining 73 (73%) were written by a joint author. Vijay determined that nearly 93% of the articles in the Journal of Food Science and Technology, released from 2000 to 2004, were authored by multiple individuals. Durgannavar Gururaj F. et al In their 2022 study, they used a variety of scientometric variables to quantitatively analyse 1,706 scholarly publications that were published in the Journal of Documentation over a 50-year span, from 1970 to 2019.

3. METHODOLOGY

Research and review articles published in the original publication between 1998 to 2008 were included in this analysis, which looked at the full journal issue. A total number of 66 issues from 11 volumes, starting from 1998 to 2008 is taken data from the Web of Science database. For the purpose of making observations, data on each article was noted, including the title, authors' names, affiliations, country of origin, and page length.

4. OBJECTIVES

- To understand the distribution of the IETE Journal of Research by year-wise from 1998 to 2008.
- To research the articles' geographic distribution.
- To determine the productivity of the authorship.
- To examine the average length of papers and the productivity of authors.

5. RESULTS AND DISCUSSION

Year-wise Distribution of Publication:

Table 1 Year-wise Distribution of Publication

Sr. No.	Year	No. of Articles	Average No. of Articles	Percentage
1	1998	35	16.89	5.92
2	1999	58	10.19	9.81
3	2000	65	9.09	11.00
4	2001	47	12.57	7.95
5	2002	61	9.69	10.32
6	2003	51	11.59	8.63
7	2004	51	11.59	8.63
8	2005	57	10.37	9.64
9	2006	54	10.94	9.14
10	2007	59	10.02	9.98
11	2008	53	11.15	8.97
TOTAL		591	1.00	100.00

Figure 1

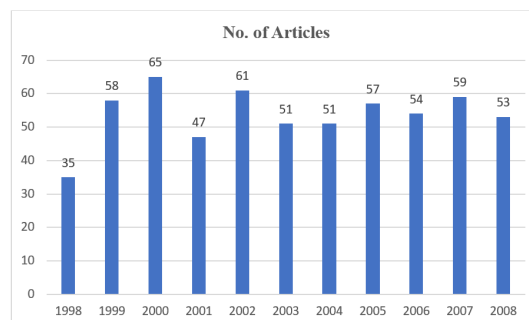


Figure 1 Year-wise Distribution of Publication

The IETE Journal of Research published a total of 591 articles from 1998 to 2008. Table 1 presents the distribution of articles by year along with the average number of articles. The greatest number of these articles 65, or 11% of the total were released in 2000. With 38 articles, or 10% of the total, 1998 was the year with the fewest articles.

Type of Documents:

The distribution of documents published in the IETE Journal of Research is shown in table 2.

Table 2 Types of Documents

Document Type	No. of Articles	Cumulative Articles	%
Article	545	545	92.22
Editorial Material	34	579	5.75
Review	10	589	1.69
Article; Proceedings Paper	2	591	0.34
TOTAL	591		100

Figure 2

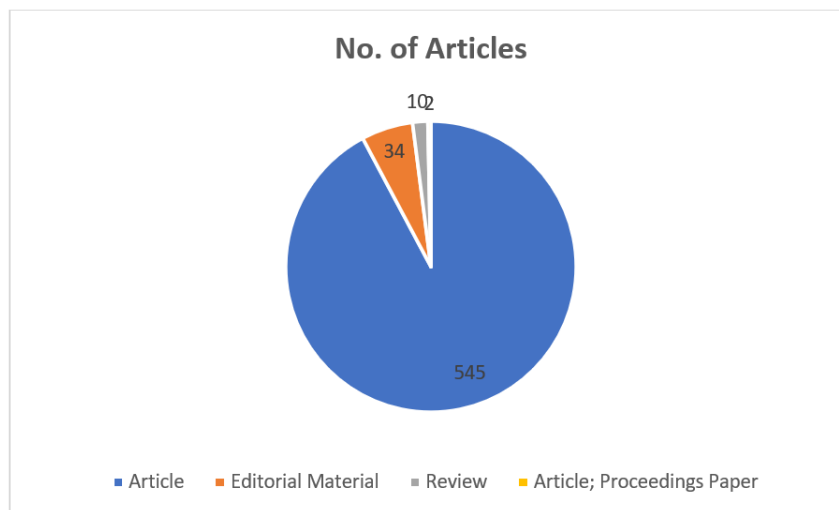


Figure 2 Distribution of Literature Output

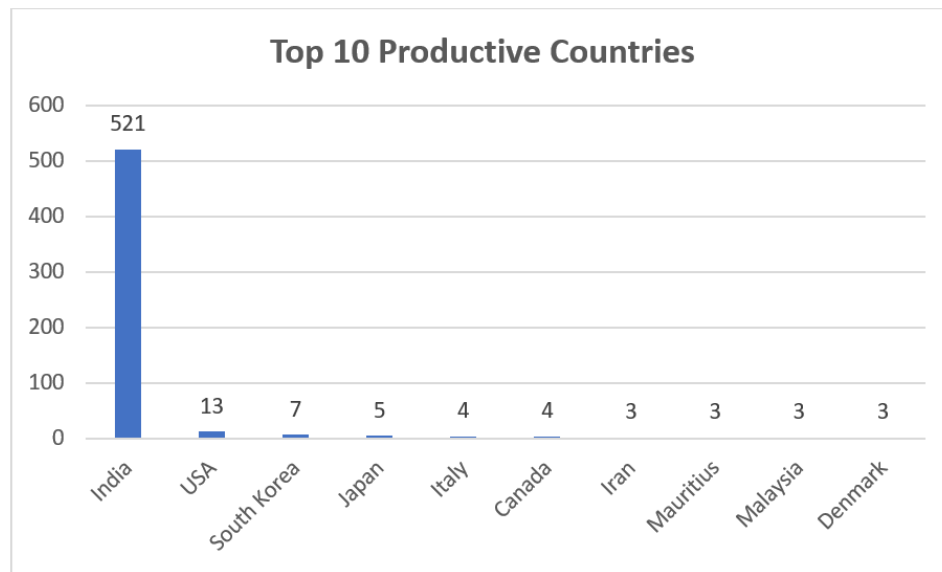
The Above table and Figure show that the number of documents published has been Article (92.22%) are well ahead of all other categories of publications, followed by Editorial Material (5.75%), Review (1.69%), Article; Proceedings Paper (0.34%).

Geographical Distribution of Publications:

Table 3 Geographical Distribution of Publication

Sr. No.	Country	No. of Articles	Percentage
1	India	521	88.16
2	USA	13	2.20
3	South Korea	7	1.18
4	Japan	5	0.85
5	Italy	4	0.68
6	Canada	4	0.68
7	Iran	3	0.51
8	Mauritius	3	0.51
9	Malaysia	3	0.51
10	Denmark	3	0.51
11	UK	3	0.51
12	France	3	0.51
13	Iraq	2	0.34
14	Australia	2	0.34

15	Finland	2	0.34
16	Singapore	1	0.17
17	Russia	1	0.17
18	Taiwan	1	0.17
19	Tunisia	1	0.17
20	Sweden	1	0.17
21	Germany	1	0.17
22	Jordan	1	0.17
23	Austria	1	0.17
24	Bangladesh	1	0.17
25	Pakistan	1	0.17
26	Peoples R China	1	0.17
27	Mexico	1	0.17
28	Norway	1	0.17
TOTAL		591	100.00

Figure 3**Figure 3** Top Ten Productive Countries

There are 21 countries involved in the study period. Table 3 shows that India has contributed 521 articles (88.16%), followed by 13 articles by the USA (2.20%), 7 articles by South Korea (1.18%), 5 articles by Japan (0.85%), 4 articles by Italy and Canada (0.68%) and so on.

Authorship Pattern:

Table 4 Authorship Pattern

Authors	No. of Articles	Cumulative No. of Articles	Percentage	Cumulative Percentage
Single	103	103	17.43	17.43
Double	252	355	42.64	60.07
Three	160	515	27.07	87.14
Four	47	562	7.95	95.09
Five	22	584	3.72	98.82
Six	4	588	0.68	99.49
Seven	1	589	0.17	99.66
Nine	2	591	0.34	100.00

Figure 4

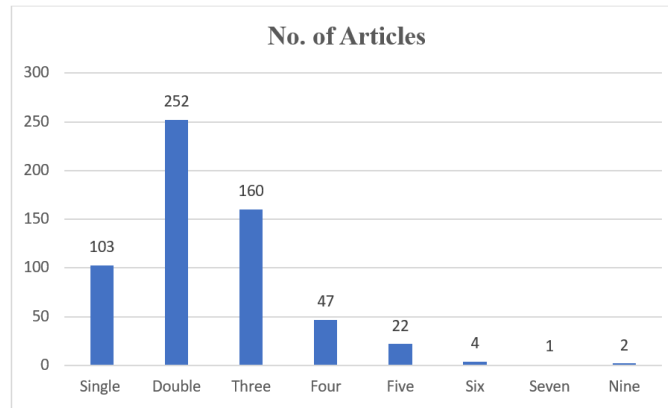


Figure 4 Authorship Pattern

According to Table 4, the majority of contributions have been double-authored, with 252 research articles (42.64%), closely followed by research papers with three authors, 160 (27.07%). There are 103 (18.14%) single-authored research publications and 22 (3.72%) five-authored research papers.

Degree of Collaboration:

The formula proposed by Subramaniam, K. has been used to calculate the degree of Collaboration (DC):

$$DC = Nm / (Nm + Ns)$$

Here,

DC: Degree of Collaboration

Nm: The number of papers with more than one author.

Ns: Number of Single-Author Papers

Table 5 Degree of Collaboration

Years	Single Author (Ns)	Collaborative Authors (Nm)	Total (Nm + Ns)	Degree of Collaboration (Nm / [Nm + Ns])
1998	12	23	35	0.66
1999	16	42	58	0.72
2000	13	52	65	0.80
2001	7	40	47	0.85
2002	9	52	61	0.85
2003	12	39	51	0.76
2004	6	45	51	0.88
2005	9	48	57	0.84
2006	10	44	54	0.81
2007	11	48	59	0.81
2008	7	46	53	0.87
TOTAL	112	479	591	0.81

In the present study,

Nm = 479

Ns = 112

Thus C = 479 / 479 + 112 = 0.81

The collaboration scenario of the IETE Journal of Research authors from 1998 to 2008 is shown in Table 5. This journal's degree of collaboration fluctuated erratically over the duration of the study, ranging from 0.66 to 0.88. Although impressive (0.81), the average level of collaboration is neither overwhelming nor outstanding.

Average and Productivity per Author:

In their paper published in the journal *Scientometrics*, Yoshikane et al. (2009) and Yoshikane, Nozawa, Shibui, & Suzuki (2009) presented formulas to evaluate author productivity, such as Average Author Per Work (AAPP) and Productivity Per Author. The following is the mathematical expression for the formula.:

Average Author per Paper = No. of Authors / No. of Papers

Productivity per Author = No. of Papers / No. of Authors

Table 6 Average and Productivity per Author

Years	No. of Articles	No. of Authors	Average Author Per Paper	Productivity Per Author
1998	35	62	1.77	0.56
1999	58	144	2.48	0.40
2000	65	142	2.18	0.46
2001	47	105	2.23	0.45
2002	61	150	2.46	0.41
2003	51	104	2.04	0.49
2004	51	124	2.43	0.41
2005	57	142	2.49	0.40
2006	54	135	2.50	0.40
2007	59	138	2.34	0.43
2008	53	142	2.68	0.37

The average number of authors per paper and author productivity metrics are shown in Table 6. According to the data, the average number of authors per paper for the 53 papers published during the research period was 2.68, with values ranging from 1.77 to 2.68. Author productivity varied between 0.37 and 0.56 from 1998 to 2008. The average was 0.56.

Length of Articles:

The number of articles by length is displayed in following Table 7. The 591 published articles have a total of 4499 pages. The highest average number of pages per article is 9 in 2007, while the lowest average number of pages per article is 6 in 1999 and 2001. An article's average length is 8. It recommended the following page index, which is based on Price's (1981) Activity index.

$$RLI = (PG_{ij} / PP_{io}) / (PG_{oj} / PP_{\infty})$$

Here,

RLI = Relative Length Index,

PG_{ij} = Number of pages in a year

PP_{io} = Number of papers in a year

PG_{oj} = Total number of pages

PP_{oo} = Total number of Papers

Table 7 Length of Articles

Years	No. of Articles	Total Pages	Average Pages Per Article	RLI
1998	35	261	7	0.98
1999	58	346	6	0.78
2000	65	463	7	0.94
2001	47	289	6	0.81
2002	61	479	8	1.03
2003	51	400	8	1.03

2004	51	407	8	1.05
2005	57	450	8	1.04
2006	54	454	8	1.10
2007	59	543	9	1.21
2008	53	407	8	1.01
TOTAL	591	4499	8	1.00

Figure 5

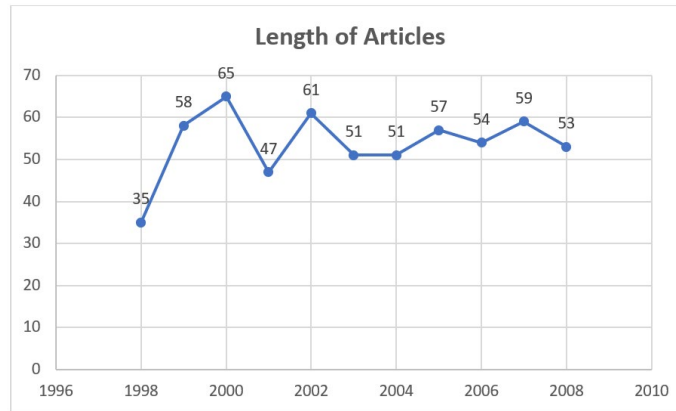


Figure 5 Length of Articles

After calculating the relative length index for each year, it was found that articles published from 2002 to 2008 had higher RLI values than the global average, whereas those published in the other years had lower RLI values.

6. KEYWORDS MOST PREFERRED FOR PUBLICATION

Table 8 Most 10 Keywords Preferred for Publication

Keywords	No. of Articles	Percentage
DESIGN	20	24.10
MODEL	11	13.25
SYSTEM	9	10.84
PERFORMANCE	8	9.64
SEGMENTATION	7	8.43
RECOGNITION	6	7.23
NETWORKS	6	7.23
ALGORITHM	6	7.23
ARRAY	5	6.02
SYSTEMS	5	6.02
TOTAL	83	100.00

Figure 6

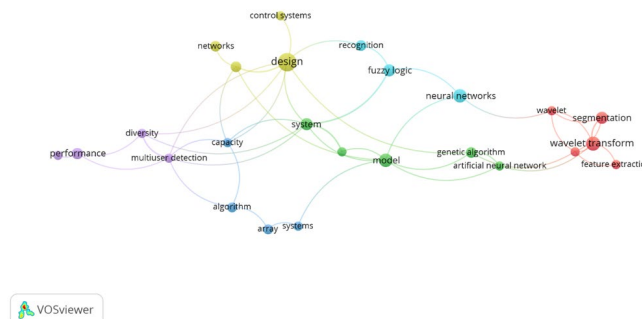


Figure 6 Network of Keywords

7. FINDINGS

- According to the study, the IETE Journal of Research published 591 articles in 66 issues in 11 volumes between 1998 to 2008. The year 2000 showed the highest number of articles published, a total of 65 (11.0%), while the year 1998 showed the lowest number, with 35 (5.92%) of all articles published.
- There are showed that the number of documents published has been Article (92.22%) are well ahead of all other categories of publications, followed by Editorial Material (5.75%), Review (1.69%), Article; Proceedings Paper (0.34%).
- During the study period, 21 countries are participated. The USA supplied 13 papers (2.20%), South Korea contributed 7 articles (1.18%), Japan contributed 5 articles (0.85%), Italy and Canada contributed 4 articles (0.68%), while India published 521 articles (88.16%).
- With 252 research articles (42.64%), double-authored contributions represent the majority. Three-author research papers, with 160 (27.07%), come in second. There are 22 (3.72%) five-authored research papers and 103 (18.14%) single-authored research publications.
- Over the period of the study, the journal's degree of collaboration varied wildly, ranging from 0.66 to 0.88. The average level of collaboration is neither exceptional nor overwhelming, despite being impressive (0.81).
- The mean number of authors per article for the 53 publications released during the study period was 2.68, ranging from 1.77 to 2.68. The productivity per author ranged from 0.37 to 0.56 between 1998 to 2008. The average was 0.56.
- The 591 published articles have a total of 4499 pages. In 1999 and 2001, the average number of pages per article was 6 whereas in 2007, the average number was 9. The average length of an article is 8.
- Articles published between 2002 to 2008 had greater relative length index (RLI) values than the worldwide average, whereas those published in the other years had lower RLI values, according to the relative length index calculation for each year.

8. CONCLUSION

Between 1998 to 2008, 591 papers were published in the "IETE Journal of Research." The year 2000 is when the most contributions were made (11%). All of the papers combined were 8 pages long on average. This suggests that co-authored publications, rather than single-authored papers, are what primarily define the collaborative pattern in the IETE Journal of Research. The percentage of publications with a single author is 17.43%, whereas 82.57% of papers are multi-authored. According to the study, Indian authors contribute well to the IETE Journal of Research, which also takes in foreign authors to publish their work.

CONFLICT OF INTERESTS

None.

ACKNOWLEDGMENTS

None.

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