

A SCIENTOMETRIC ANALYSIS OF IETE JOURNAL OF RESEARCH USING WEB OF SCIENCE DATABASE (2016-2020)

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Abstract :

The study aims to conduct a scientometric analysis of 914 articles published across five volumes of the IETE Journal of Research (IETE-JR) during the period 2016–2020. Data for the study were collected from the Web of Science database, while Microsoft Excel and Bibexcel were employed for the analysis. In the study, the maximum number of articles, 353, was published in 2020, whereas the minimum, 89, were recorded in both 2017 and 2018. In terms of authorship patterns, the largest share of publications, 430 articles, was produced under double authorship.

Keywords : IETE Journal of Research, Scientometric Analysis, Authorship Patterns, Degree of Collaboration

Introduction :

The evaluation of research productivity and scholarly communication has gained significant importance in recent years, particularly through the application of scientometric methods. Scientometric analysis serves as a valuable tool for measuring research output, assessing collaboration patterns, identifying publication trends, and examining the overall impact of scientific contributions within a particular discipline or journal.

The *IETE Journal of Research (IETE-JR)*, a peer-reviewed publication of the Institution of Electronics and Telecommunication Engineers (IETE), is a well-recognized forum for disseminating research in electronics, telecommunications, computer science, and allied areas. Over the years, the journal has published a wide range of scientific and technical research papers that contribute to the advancement of knowledge in these fields.

This study focuses on the scientometric analysis of articles published in the *IETE Journal of Research* during the period 2016–2020. The analysis covers various aspects such as publication growth, authorship patterns, degree of collaboration, authors' productivity, and reference trends. Data were sourced from the Web of Science database and analysed using Microsoft Excel and Bibexcel. Through this investigation, the study aims to highlight publication trends, collaborative research behaviour, and the overall impact of scholarly contributions made to the journal during this five-year span.

Review of Literature :

Ashoka and Harinarayana (2022) carried out a keyword-based analysis of research trends in the *Scientometrics* journal for the period 2014–2018, emphasizing the development of research topics and methodologies over time. **Kumar and Kumar (2021)** examined publication trends in the *Indian Journal of Engineering & Materials Sciences* from 2010 to 2019, with a focus on authorship patterns, citation analysis, and collaborative research practices. **Victoria (2021)** investigated publication trends in Information and Communication Technology (ICT) research during the same period, noting a rise in multi-authored papers and the prevalence of collaborative research. Similarly, **Sharma and Saini (2020)** performed a bibliometric study of the *International Journal of Electronics and Communication Engineering* (2010–2019), analysing publication growth, authorship trends, and citation patterns to evaluate the journal's impact. **Gupta and Sharma (2020)** assessed the publication patterns of the *IETE Journal of Research* from 2000 to 2019, focusing on annual publication growth, authorship trends, and citation metrics.

Objective of the Study :

- To examination of annual publishing patterns
- To study the patterns of author contribution
- To evaluate the degree of collaboration
- To identify the types of documents
- To find out the most prolific author of the journal.

Methodology :

The data used in this study were retrieved from the Web of Science database during 2016-2020. A collection of 914 records was obtained and organized into MS Excel and plain text files. For this study, VOSviewer and BibExcel were applied to produce network visualizations, while tables were constructed in Microsoft Excel.

Data Analysis :

Annual publication patterns :

Table 1 and Figure 1: Annual Publication Patterns

| Year | Publication | % of 914 |
|--------------|-------------|------------|
| 2016 | 103 | 11.27 |
| 2017 | 89 | 9.74 |
| 2018 | 89 | 9.74 |
| 2019 | 280 | 30.63 |
| 2020 | 353 | 38.62 |
| TOTAL | 914 | 100 |

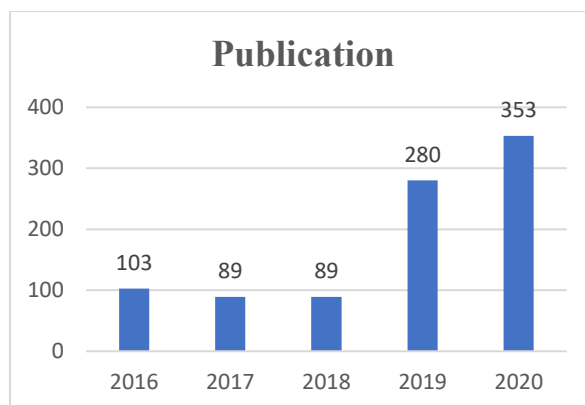


Table 1 and Figure 1 illustrate the annual publication trends of IETEJR between 2016 and 2020. A total of 914 papers were published during this period, with the highest output in 2020 (353 papers, 38.62%), followed by 2019 (30.63%) and 2016 (11.27%). The lowest publication output was observed in 2017 and 2018, each recording 89 papers (9.74%).

Author Pattern of Contribution :

Table 2: Author Pattern of Contribution

| No. of Authors | No. of Articles | % | Cumulative % |
|----------------|-----------------|------------|--------------|
| One | 87 | 9.52 | 9.52 |
| Two | 430 | 47.05 | 56.56 |
| Three | 220 | 24.07 | 80.63 |
| Four | 131 | 14.33 | 94.97 |
| More than four | 46 | 5.03 | 100.00 |
| TOTAL | 914 | 100 | |

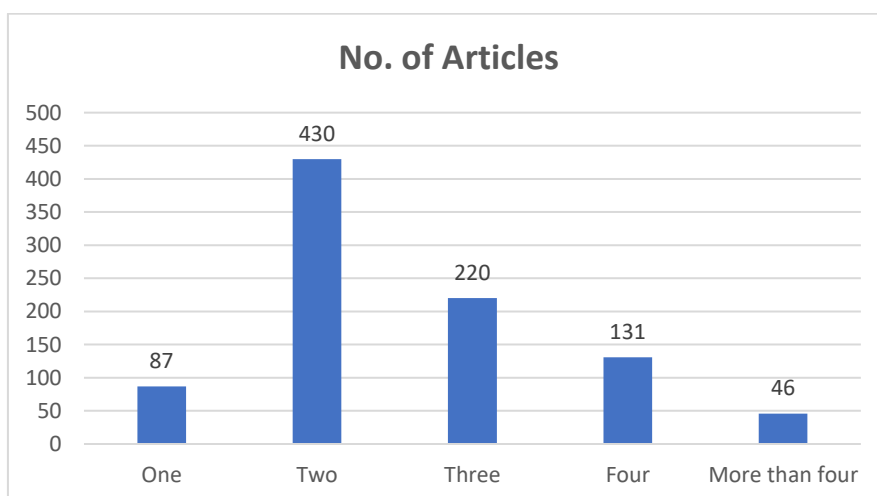


Figure 2: Author Pattern of Contribution

Table 2 and Figure 2 show that two-author contributions account for 430 papers (47.05%). This is followed by three-author papers with 220 (24.07%) and four-author papers with 131 (14.33%). Contributions with more than four authors total 46 (5.03%), which is lower than single-author papers, recorded at 87 (9.52%).

Degree of Collaboration :

Table 3: Degree of Collaboration

| Years | Single Author (Ns) | Collaborative Authors (Nm) | Total (Ns + Nm) | Degree of Collaboration (Nm / [Nm + Ns]) |
|--------------|--------------------|----------------------------|-----------------|--|
| 2016 | 6 | 97 | 103 | 0.94 |
| 2017 | 9 | 80 | 89 | 0.90 |
| 2018 | 10 | 79 | 89 | 0.89 |
| 2019 | 27 | 253 | 280 | 0.90 |
| 2020 | 35 | 318 | 353 | 0.90 |
| TOTAL | 87 | 827 | 914 | 0.90 |

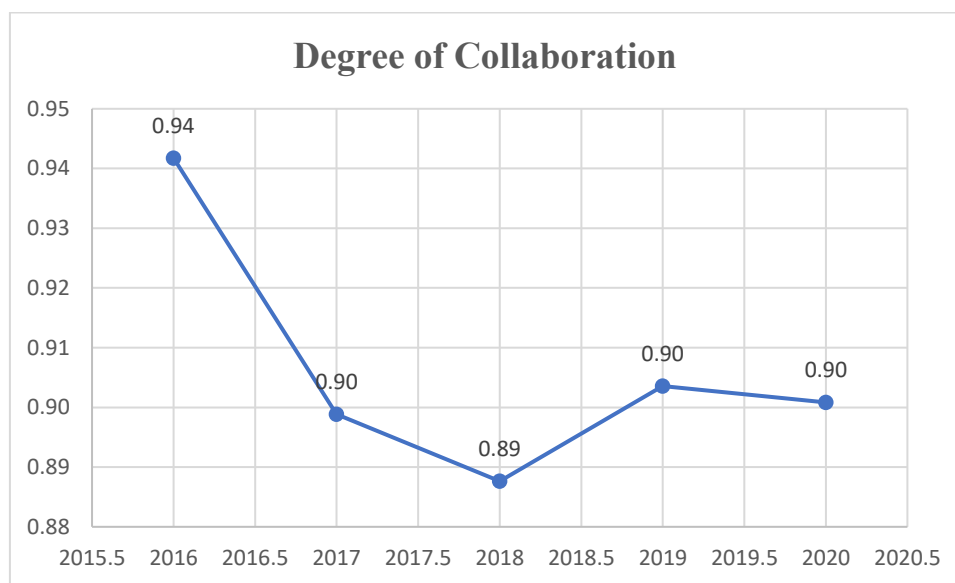


Figure 3: Degree of Collaboration

The degree of collaboration was recorded at 0.89 in 2018 and increased to 0.94 in 2016. The overall degree of collaboration (DC) among authors is calculated as:

$$DC = 827 / (87 + 827) = 0.90.$$

Types of Documents :

Table 4: Types of Documents

| Document Type | No. of Articles | Cumulative Articles | % |
|---------------------------|-----------------|---------------------|------------|
| Article | 793 | 793 | 86.76 |
| Article; Early Access | 52 | 845 | 5.69 |
| Review | 42 | 887 | 4.60 |
| Editorial Material | 22 | 909 | 2.41 |
| Review; Early Access | 4 | 913 | 0.44 |
| Book Review; Early Access | 1 | 914 | 0.11 |
| TOTAL | 914 | | 100 |

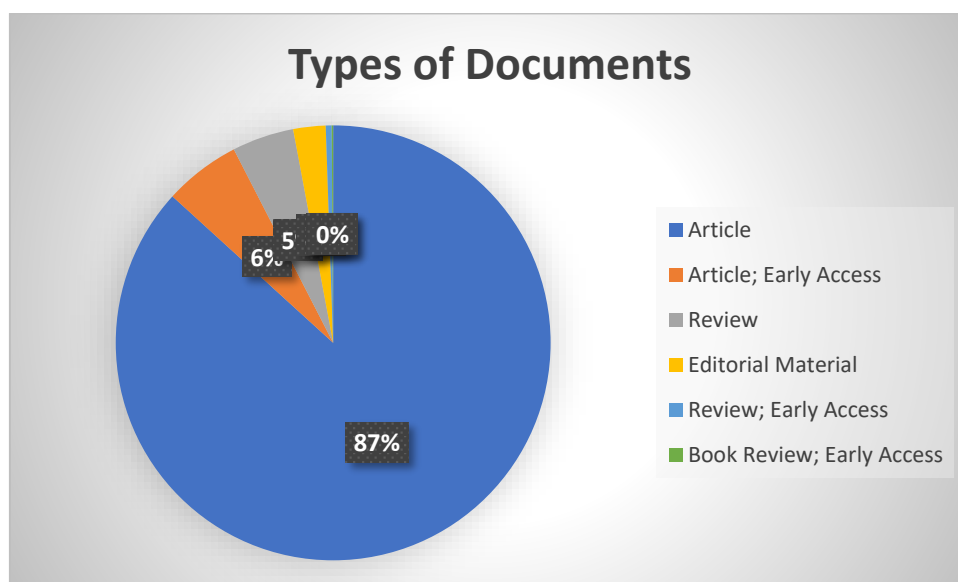


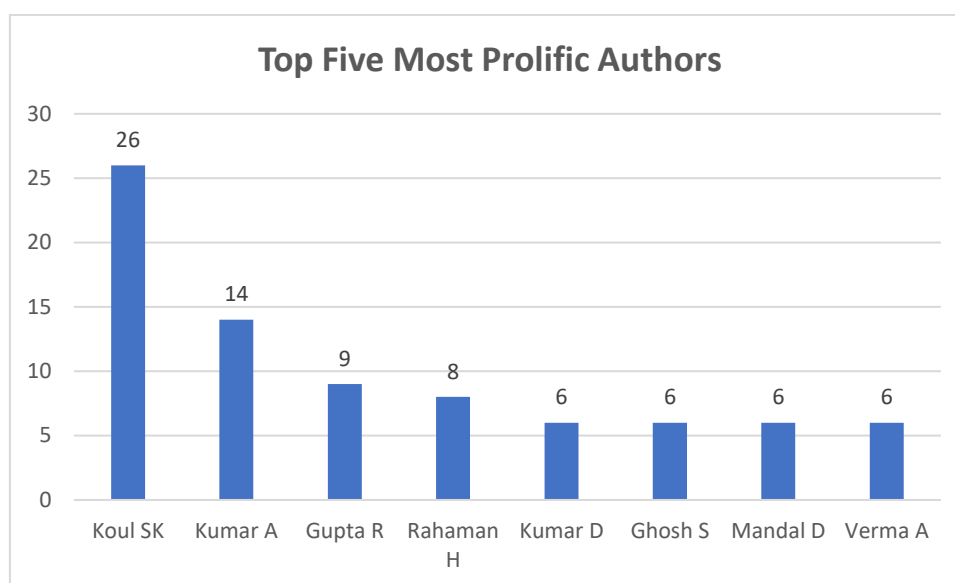
Figure 4: Types of Documents

The table above indicates that regular publications dominate with 86.76% of the total, followed by Articles in Early Access (5.69%), Reviews (4.60%), and Editorial Material (2.41%).

Top Five Most Prolific Authors :

Table 5: Top Five Most Prolific Authors

| Authors | Publication | % | Rank |
|--------------|-------------|------------|------|
| Koul SK | 26 | 32.10 | 1 |
| Kumar A | 14 | 17.28 | 2 |
| Gupta R | 9 | 11.11 | 3 |
| Rahaman H | 8 | 9.88 | 4 |
| Kumar D | 6 | 7.41 | 5 |
| Ghosh S | 6 | 7.41 | 5 |
| Mandal D | 6 | 7.41 | 5 |
| Verma A | 6 | 7.41 | 5 |
| TOTAL | 81 | 100 | |



The above table lists the top five contributors to the *IETE Journal of Research*. Among them, Kaul S. K. leads with 26 publications, followed by Kumar A. with 14 papers.

Conclusion :

This study analyses the scientometric trends of publication articles in the *IETE Journal of Research (IETE-JR)* over the period 2016–2020. This study examines the scientometric trends of publication articles in the *IETE Journal of Research (IETE-JR)* during the period 2016–2020. In 2020, the journal recorded its highest publication output with 353 articles (38.62% of the total), of which only 87 articles (9.52%) were authored by a single author.

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