

University of Nebraska - Lincoln

DigitalCommons@University of Nebraska - Lincoln

---

Library Philosophy and Practice (e-journal)

Libraries at University of Nebraska-Lincoln

---

Winter 1-8-2020

## Bibliometric Analysis of Contributions to Journal of Ornithology

Vellaichamy Alagarsamy

*NPR College of Engineering and Technology, Natham, vellaichamy19@gmail.com*

Follow this and additional works at: <https://digitalcommons.unl.edu/libphilprac>



Part of the [Library and Information Science Commons](#)

---

Alagarsamy, Vellaichamy, "Bibliometric Analysis of Contributions to Journal of Ornithology" (2020).

*Library Philosophy and Practice (e-journal)*. 3846.

<https://digitalcommons.unl.edu/libphilprac/3846>

# **Bibliometric Analysis of Contributions to Journal of Ornithology**

**Dr. A.Vellaichamy**

Librarian, NPR College of Engineering and Technology  
Natham, Dindigul – 62440, Email: [vellaichamy19@gmail.com](mailto:vellaichamy19@gmail.com)

&

**Dr. R. Jeysankar**

Assistant Professor, Department of Library & Information Science  
Alagappa University, Karaikudi-630 003, Email: [jeysankar71@gmail.com](mailto:jeysankar71@gmail.com)

## **Abstract**

This paper deals with the analysis of the 1353 contributions of the journal entitled 'Journal of Ornithology' published during 2000-2015. It examines the year-wise distribution of publications, Relative Growth Rate and Doubling time, authorship pattern, degree of collaboration, document-wise publication, language-wise publication, most productive authors and country-wise contributions etc. The study shows that majority of the contributions were contributed by three authors and country-wise distribution shows that majority of the papers were contributed from Germany. From top 10 ranked lists of authors, Wink, M (Institute of Pharmacy and Molecular Biotechnology, Heidelberg University, Germany) has contributed highest number of papers.

**Keywords:** Research Publications, Relative Growth Rate, Doubling Time and Degree of Collaboration

## **Introduction**

A single journal bibliometric study that helps to discover the research trends of a particular field of research i.e. year wise research output, pattern of authorship, trends of research collaboration, subject wise distribution of contribution and prolific authors. Alan Pritchard (1969) defined the term Bibliometric as the application of statistical and mathematical methods to books and other communication<sup>1</sup>. The *Journal of Ornithology* was a scientific quarterly journal published by Springer Science+Business Media on behalf of the Deutsche Ornithologen-Gesellschaft. It was founded by Jean Cabanis in 1853, becoming the official journal of the *Deutsche Ornithologen-Gesellschaft* in 1854. In *Journal Citation Reports*, the journal had a 2012 impact factor of 1.632.

## Literature Review

In recent times surveyed on single journal bibliometric studies were conducted by Memon (2019)<sup>2</sup> conducted a study on bibliometric analysis of the Journal of Pakistan Medical Association during the period from 1965 to 2018. The total number of documents identified was 8,521 and 7,245 (85.03%) were included in the analysis. Articles were the most common category of the documents articles published in the journal were articles (n=6,721; 78.88%). The highest number of publications (n=441) was recorded for 2016 and citations (n=3,060) for 2017.

Raza and Malik (2019)<sup>3</sup> carried out a bibliometric analysis of the journal of knowledge management. The study found that total of 1214 authors from 57 countries and 584 institutions published 508 papers in the journal from 2009 to 2016. Articles formed the most dominant type of document with the highest CPP of 11.34. A contribution from USA & UK was found to be 126 (24.8%) publications collectively.

Vijayakumar, Sivasubraminiyan and Rao (2019)<sup>4</sup> reported that the highest number of publications registered in 2016 (250 articles, 12.79%) and the lowest was in 2008 (132 articles, 6.76%). The annual average growth rate of 7.32% and the highest growth rate are in the year 2013 with 51.70%. The degree of collaboration is 0.97 and out of a total 1954 articles 1890 (96.72%) are joint authored publications and only 64 (3.28%) are single author contribution. Indian researchers have contributed 72.62 percentages during the period.

Zeleznik, Vosner and Kokol (2017)<sup>5</sup> in their study pointed that, a positive trend in literature production, although recently, the number of articles published in Journal of Advanced Nursing has slightly decreased. The most productive institutions are from the United Kingdom, which ranks in the highest place in terms of successful publishing in the journal.

Tsay and Li (2017)<sup>6</sup> did a bibliometric analysis of the journal literature on women's studies. The results found that most of the document types in the area of women's studies are in the form of research articles, review articles and book reviews. The United States of America and the United Kingdom contribute the largest number of articles. One hundred and seventeen core journals containing 33% of the women's studies journal articles have been identified through the application of Bradford's law on journal distribution.

A bibliometric study done by Vellaichamy & Jeysankar (2015)<sup>7</sup> investigated that a total of 158 papers were published in the Journal of Webology from 2004-2013. The study showed that web analysis (24.68 %) and social media (15.82 %) papers are the top most publications in subject-wise analysis.

Sujatha and Padmini (2015)<sup>8</sup> investigated that a 3442 papers were published in the journal of IEEE Transactions on Antennas and Propagation from 2010-2014. The degree of collaboration ranges between 0.92 to 0.96 and its average value is found to be 0.94. Most of the contributions were contributed from USA followed by India stands in the 21st position with 52 articles.

Thavamani (2013)<sup>9</sup> in his study found that the year 2008 was most participating year during the study period 2007 - 2011. The Relative Growth Rate (RGR) was high in terms of literature productivity and Degree Collaboration (DC) was also high in terms authorship pattern i.e., 108 out of 194 (0.556).

A bibliometric study done by Rajendran, Jeysankar and Elango (2011)<sup>10</sup> examined that the author productivity is 0.34 and the average number of authors per paper is 2.95 and the study also analysed majority (72.99%) of the contributions are by Indian authors.

Thanuskodi (2011)<sup>11</sup> pointed that highest number of articles have appeared in the area of library automation in library and information science and most of the contributions are from India with 89.85 %, while foreign contribution is very less. The study revealed that the highest contributions were from universities with 38 (27.54%).

In another study done by Thanuskodi (2010)<sup>12</sup> pointed out that the highest number of articles had appeared in the area of economics. The study also found that maximum number of contributors was two authors with 44.33 % and also most of the contributions were from foreign 78.39% while Indian contribution was less.

### **Objectives of the Study**

1. To analyse the research productivity of the Journal of Ornithology, 2000-2015
2. To measure and calculate Relative Growth Rate (RGR) and Doubling Time (DT)
3. To calculate degree of collaboration
4. To identify form-wise classification of papers
5. To identify most predominant language and
6. To identify most prolific authors

## Methodology

Publications count and analysis is one of the bibliometric/scientometric analytic techniques. It involves studying the number of publications in a given field, or productivity of literature in the field, with the aim of comparing “the amount of research in different countries, the amount produced during different periods, or the amount produced in different subdivisions of the field” (Hertzal, 1987)<sup>13</sup>. Using that technique, the study reported here analyse the single journal study namely ‘*Journal of Ornithology*’. A total of 1353 records were downloaded in the SCOPUS database for the period of sixteen years 2000-2015. Of these publications were transferred into Microsoft Excel 2007, which are ultimately used for examining the data from different viewpoints.

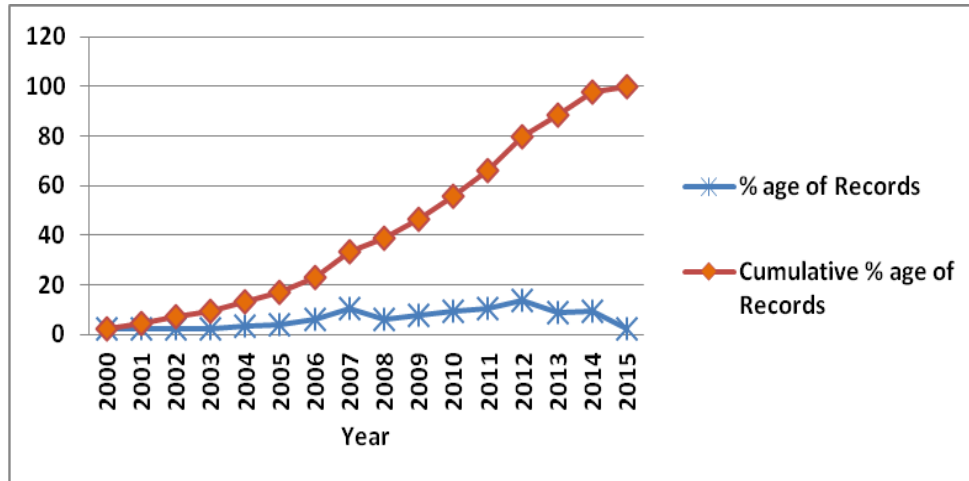
## Analysis and Interpretation of Data

### Growth of Literature

Many studies have been made on the growth pattern of the Publications. There are various types of growth studies such as exponential Growth, linear growth, logistic growth, relative growth rate and doubling time. To conduct such analysis the number of articles appeared in various periodicals during different years of study are analyzed.

**Table 1: Growth of Literature on Journal of Ornithology**

Sl. No	Year	No. of Records	Percentage	Cumulative Percentage
1	2000	31	2.29	2.29
2	2001	32	2.37	4.66
3	2002	32	2.37	7.02
4	2003	33	2.44	9.46
5	2004	48	3.55	13.01
6	2005	53	3.92	16.92
7	2006	81	5.99	22.91
8	2007	139	10.27	33.18
9	2008	79	5.84	39.02
10	2009	101	7.46	46.49
11	2010	123	9.09	55.58
12	2011	141	10.42	66.00
13	2012	185	13.67	79.67
14	2013	116	8.57	88.25
15	2014	129	9.53	97.78
16	2015	30	2.22	100.0
<b>Total</b>		<b>1353</b>	<b>100.0</b>	



**Figure 1: Growth of Literature on Journal of Ornithology**

Table 1 shows the growth of research productivity on Journal of Ornithology. Totally, 1353 research papers were published during the period 2000-2015. The analysis shows the upward trend for the periods from 2000-2007, and also 2008 onwards increasing trend up to 2012. The last two years (2013 & 2014) research productivity is too low compared to previous years. It is observed from the table, majority of the publications are produced in the year of 2012 and lowest productivity in the year 2015.

### **Relative Growth Rate & Doubling Time**

The changes in the size of literature over specific period may be termed as growth of literature. In this section the study focused on the growth pattern of articles to the journal of Ornithology 2000-2015. The relative growth rate was calculated for the articles and the doubling time (DT) against each year study was also determined. The growth of publications was analyzed by using two parameters Relative Growth Rate and Doubling time (Mahapatra 1985)<sup>14</sup>. RGR is a measure to study the increase in number of articles of time. Doubling time is the time required for each doubling of a Quantity in exponential growth. It has been directly related to Relative Growth Rate.

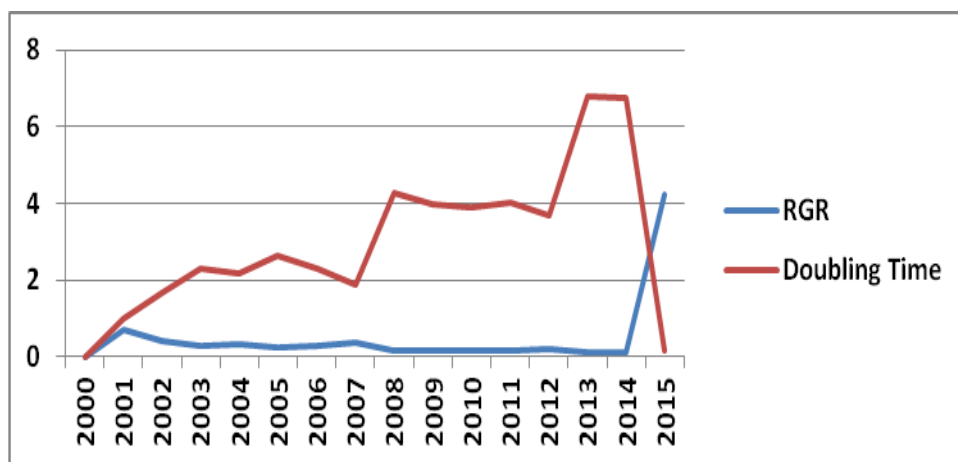
$$\text{Relative Growth Rate (RGR)} = \frac{\text{Log } e \text{ } 2W - \text{Log } e \text{ } 1W}{2T - 1T}$$

$$\text{Doubling time (DT)} = 0.963$$

-----  
R

**Table –2: Relative Growth Rate (RGR) and Doubling Time (Dt)**

S. No	Year	No. of Records	Cumulative Records	W1	W2	RGR	Dt
1	2000	31	31	-	3.43	-	-
2	2001	32	63	3.43	4.14	0.71	0.98
3	2002	32	95	4.14	4.55	0.41	1.69
4	2003	33	128	4.55	4.85	0.30	2.32
5	2004	48	176	4.85	5.17	0.32	2.18
6	2005	53	229	5.17	5.43	0.26	2.63
7	2006	81	310	5.43	5.74	0.30	2.29
8	2007	139	449	5.74	6.11	0.37	1.87
9	2008	79	528	6.11	6.27	0.16	4.28
10	2009	101	629	6.27	6.44	0.18	3.96
11	2010	123	752	6.44	6.62	0.18	3.88
12	2011	141	893	6.62	6.79	0.17	4.03
13	2012	185	1078	6.79	6.98	0.19	3.68
14	2013	116	1194	6.98	7.09	0.10	6.78
15	2014	129	1323	7.09	7.19	0.10	6.75
16	2015	30	1353	3.00	7.21	4.21	0.16



**Figure 2: Relative Growth Rate (RGR) and Doubling Time (Dt)**

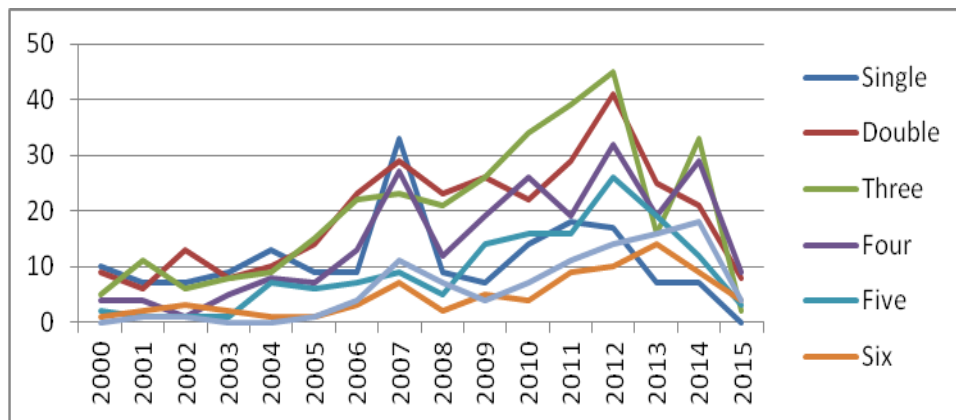
### Authorship Pattern

Authorship studies provide valuable information concerning characteristics of authors, their collaboration, assessing and monitoring research activities among others (Kwadzo and Grace, 2008)<sup>15</sup>. Collaboration among scientists implies that they are working together and pursuing a common scientific goal (Kundra, 1996)<sup>16</sup>.

**Table –3: Year-wise Authorship Pattern**

S. No	Year	Number of Authors							Total
		Single	Double	Three	Four	Five	Six	>Six	
1	2000	10	9	5	4	2	1	0	31
2	2001	7	6	11	4	1	2	1	32
3	2002	7	13	6	1	1	3	1	32
4	2003	9	8	8	5	1	2	0	33
5	2004	13	10	9	8	7	1	0	48
6	2005	9	14	15	7	6	1	1	53
7	2006	9	23	22	13	7	3	4	81
8	2007	33	29	23	27	9	7	11	139
9	2008	9	23	21	12	5	2	7	79
10	2009	7	26	26	19	14	5	4	101
11	2010	14	22	34	26	16	4	7	123
12	2011	18	29	39	19	16	9	11	141
13	2012	17	41	45	32	26	10	14	185
14	2013	7	25	16	19	19	14	16	116
15	2014	7	21	33	29	12	9	18	129
16	2015	0	8	2	9	3	4	4	30
<b>Total</b>		176	307	315	234	145	77	99	1353
<b>% age</b>		13.01	22.69	23.28	17.29	10.72	5.69	7.32	100.00

Table 3 shows that highest number of publications published in collaborative research in the Journal of Ornithology. Majority of the papers published in three authored (315), followed by two authored (307), four authored (234), single authored papers (176), five authored papers (145), above six authored (99) and the least number of papers contributed to the journal of six authored publications.



**Figure 3: Year-wise Authorship Pattern**



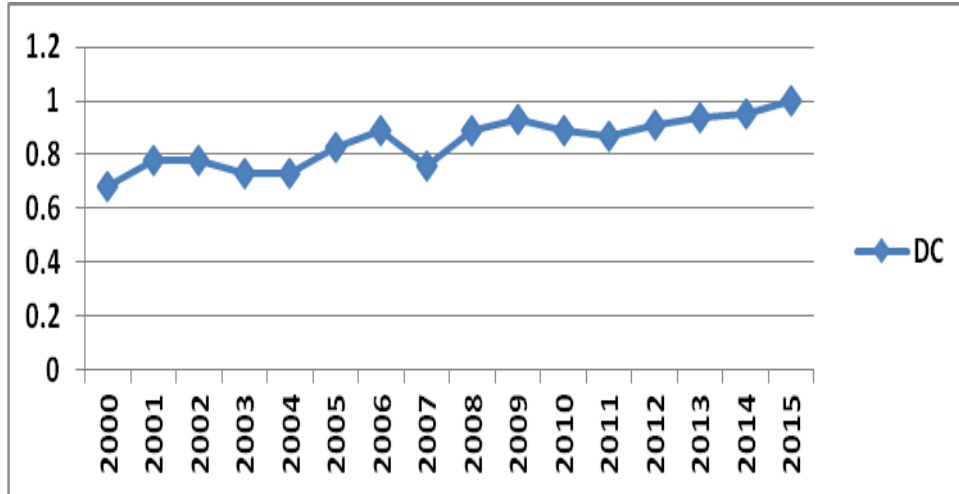
## Degree of Colloboration

In order to determine the strength of Collaboration (DC), the following formula Suggested by Subramanyam (1983)<sup>17</sup> has been employed. The degree of collaboration in different years calculated as per the equation is presented in Table 4 and it shows that the degree of collaboration ranges from 0.68 to 0.95. The mean value is found to be 0.84.

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

**Table - 4: Degree of Colloboration among Authors**

S. No	Year	Ns	Nm	Ns+Nm	DC
1	2000	10	21	31	0.68
2	2001	7	25	32	0.78
3	2002	7	25	32	0.78
4	2003	9	24	33	0.73
5	2004	13	35	48	0.73
6	2005	9	44	53	0.83
7	2006	9	72	81	0.89
8	2007	33	106	139	0.76
9	2008	9	70	79	0.89
10	2009	7	94	101	0.93
11	2010	14	109	123	0.89
12	2011	18	123	141	0.87
13	2012	17	168	185	0.91
14	2013	7	109	116	0.94
15	2014	7	122	129	0.95
16	2015	0	30	30	1
<b>Total</b>		<b>176</b>	<b>1177</b>	<b>1353</b>	<b>0.85 (MV)</b>
Ns-Number of Single Authors; Nm- Number of Multi Authors; DC-Degree of Colloboration; MV-Mean Value					



**Figure 4: Degree of Collaboration among Authors**

### Form -wise Publications

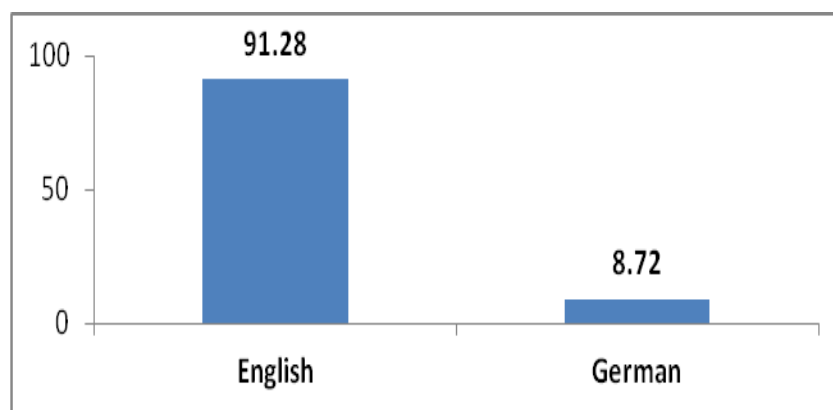
The table 5 categorizes the forms of publications under nine broad headings namely Articles, Reviews, Conference Papers, Article in Press, Erratums, Letters, Short Surveys and Notes. There are 1353 publications in total. The maximum numbers of publications are found in the form “Articles” with 1174 publications (86.77%) followed by Reviews 91 (6.73%), Article in Press (3.84%), Conference Papers (3.84%) and the least number of publications are found in the form “Editorials, Short Surveys, Notes. It was clearly advocates that contributors are showing more interest in publishing journal articles compared to other forms.

**Table 5: Form – wise publications output**

Sl. No	Document Type	No. of Records	Percentage
1	Articles	1174	86.77
2	Reviews	91	6.73
3	Article in Press	52	3.84
4	Conference Papers	8	0.59
5	Erratums	8	0.59
6	Editorials	7	0.52
7	Letters	6	0.44
8	Notes	6	0.44
9	Short Surveys	1	0.07
<b>Total</b>		<b>1353</b>	<b>100.0</b>

### Language-wise Publications

Figure 5 depicts that language-wise publications output of Journal of Ornithology. It was observed that huge number of the publications are published from the English language (n=1235, 91.28%) followed by German (n=118, 8.72%).



**Figure 5: Language-wise Publications**

### Most Productive Authors

Table 6 highlights about the publications of top ten authors. The highest number of publications contributed by M. Wink (21) publications, followed by F. Bairlein with 18 (1.36%) publications, P.H. Becker has contributed 17 (1.28%) papers, M. Guillemain, (1.21%) and T. Piersma has published 15 papers and others are published with less than one percentage of total output.

**Table 6: Most productive authors and their affiliation**

Author Name	Affiliation	Records	% age
Wink, M.	Institute of Pharmacy & Molecular Biotechnology, Heidelberg Univ., Germany	21	1.55
Bairlein, F.	Institute of Avian Research, Wilhelmshaven, Germany	18	1.33
Becker, P.H.	Institute of Avian Research, Wilhelmshaven, Germany	17	1.26
Guillemain, M.	Office National de la Chasse et de la Faune Sauvage, CNERA Avifaune Migratrice, France	16	1.18
Piersma, T.	Centre for Ecological and Evolutionary Studies, University of Groningen, Netherlands	15	1.11

Hobson, K.A.	Environment Canada, Canada	13	0.96
Segelbacher, G.	Vogelwarte Radolfzell, Max Planck Institute for Ornithology, Germany	12	0.89
Wingfield, J.C.	Department of Biology, University of Washington, United States		
Mayr, G.	Forschungsinstitut Senckenberg, Sektion Ornithologie, Germany		
Lifjeld, J.T.	Natural History Museum, University of Oslo, Norway		

### Geographical Affiliation of Authors

Table 7 shows that that majority of the papers contributed from Germany (359 papers), followed by U.S.A (210 papers), United Kingdom (148 papers), Spain (139 papers) and France (113 papers) and also other countries are contributed less than hundred papers respectively.

**Table 7: Geographical Affiliation of Authors**

Sl. No	Country	No. of Records	Percentage
1	Germany	359	26.53
2	United States	210	15.52
3	United Kingdom	148	10.94
4	Spain	139	10.27
5	France	113	8.35
6	Canada	80	5.91
7	Switzerland	75	5.54
8	Netherlands	74	5.47
9	Poland	71	5.25
10	Sweden	62	4.58

### Summary and Conclusion

The publishing trend totally depends on the output of contributors, patterns of contributions and the quality of research. The year 2012 exhibited the maximum number of contributions to the journal of ornithology. This study reveals that the categories of article distributions are remarkable in this research journal. The majority of the articles were

contributed by three authors; and most authors were librarians, faculty members or researchers affiliated with academic or research institutions. It is registered that Wink, Bairlein, Becker, and Guillemain were most proliferate authors who have contributed twenty-one articles, eighteen articles; seventeen and sixteen articles each. The majority of papers were published in the form of articles and it share 87 percent in to the total output. The more distribution of publications was contributed from the Germany that is 359(26.53%). Though authors from the Germany were contributed highest number of papers. The maximum number of publications of an author in the field to communicate their research works and English was the most predominant language in which 91.28 percentages of the articles were published.

## References

1. Pritchard, A. (1969). Statistical bibliography or bibliometrics?. *Journal of Documentation*, 25 (4), 1348-349.
2. Memon, A. R. (2019). Bibliometric analysis of the Journal of Pakistan Medical Association during the period from 1965 to 2018. *The Journal of the Pakistan Medical Association*, 69(8), 1150-1158.
3. Raza, A., & Malik, B. A. (2019). A bibliometric analysis of the journal of knowledge management. *Journal of Indian Library Association*, 54(2), 91-99.
4. Vijayakumar, P., Sivasubraminiyan, G., & Rao, S. (2019). Publication Output of Journal 'Veterinary World' (2008-2017): A Bibliometric Analysis. *Library Philosophy and Practice*, 1-15.
5. Zeleznik, D., Blazun Vosner, H., & Kokol, P. (2017). A bibliometric analysis of the Journal of Advanced Nursing, 1976–2015. *Journal of advanced nursing*, 73(10), 2407-2419.
6. Tsay, M. Y., & Li, C. N. (2017). Bibliometric analysis of the journal literature on women's studies. *Scientometrics*, 113(2), 705-734.
7. Vellaichamy, A. & Jeysankar, R. (2015). Bibliometric analysis of the Journal Webology from 2004-2013. *Journal of Advances in Library and Information Science*, 4(1), 7-13.

8. Sujatha, D. & Padmini, K. (2015). IEEE Transactions on Antennas and Propagation: A Bibliometric Study. *DESIDOC Journal of Library & Information Technology*, 35(6), 443-449.
9. Thavamani, K. (2013). Bibliometric analysis of the DESIDOC Journal of Library & Information Technology for the year 2007- 2011. *International Journal of Information Dissemination and Technology*, 3(1), 38-41.
10. Rajendran, P., Jeyshankar, R., & Elango, B. (2011). Scientometric analysis of contributions to journal of scientific and industrial research. *International Journal of Digital Library Services*, 1(2), 79-89.
11. Thanuskodi, S. (2011). Library Herald journal: a bibliometric study. *Journal of Arts Science & Commerce*, 2(4), 68-76.
12. Thanuskodi, S. (2010). Journal of Social Sciences: A Bibliometric Study. *Journal of Social Sciences*, 24(2), 77-80.
13. Hertzfel, D. H. (1987). Bibliometrics, history of the development of ideas in. A. Kent, (Ed.), *Encyclopedia of Library and Information Science icinde* (s. 144-219).
14. Mahapatra M. (1985). On the validity of the theory of exponential growth of scientific literature. *Proceedings of the 15<sup>th</sup> IASLIC Conference, Bangalore*, pp. 61-70.
15. Kwadzo, G. & Grace, A. (2008). Authorship Trends in Ghana Journal of Agricultural Sciences: A Bibliometric Study. *Ghana Library Journal*, 19 (1), 41-64.
16. Kundra, R. (1996). Investigation of collaborative research trends in Indian Medical Sciences: 1900-1945. *Scientometrics*, 36 (1), 69-80.
17. Subramanyam, K. (1993). "Bibliometric Study of Research Collaboration: A Review". *Journal of Information Science*, 6 (1), 33-38.