
Publications of Anna University (Chennai) in Web of Science Database: Scientometric and Citation Analysis Approach

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Abstract

This paper examines the publications of Anna University (Chennai) indexed in Web of Science. The relevant data for the study have been extracted from the Web of Science database. The search term “Anna University” has been used as keyword .A total of 9649 unique records over the year 1989-2016 have been downloaded and analysed under various categories. Out of 9649 records, top 25 records alone have been considered for this study. Ms-Excel has been used to analysis the data using simple calculations. It is found that 357(10.77%) have been contributed by Ramasamy, P and his h- index is 35. It is also investigated that “Journal of Crystal Growth” has published more number of records e.g.230 (11.87%).In 2016, 1077 (11.16%) more number of records have been published.

Keywords

Web of Science; Anna University; Citation Analysis;
h-index.

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1. INTRODUCTION

The growing number of scholarly publications and the exponential increase in published literature in print and non-print form such as books, journals, research reports, online databases, DVDs, CDs and floppy disks are responsible for the rising cost of acquiring relevant literature needed in any academic institution. The publications of articles, research reports, papers in conference proceedings have been increased in all the fields of knowledge. Similarly, the opportunities for publishing in the peer-reviewed journals are also available at national and international levels.

Martin (1976)⁵ states that “Citation analysis is the part of the scholarly publication. According to Encyclopedia of Library and Information Science (1974)⁶ “Citation analysis makes use of bibliometric references, which are an essential part of scientific communication”. Nicholas & Ritchie (1978)⁷ in their study “Literature and Bibliometrics” explained the significance of citation analysis and its applications in LIS.

2. REVIEW OF LITERATURE

Arunachalam (1991)¹ found in the study that Liquid Crystal literature is developing and the share of Soviet Union is rising fast and the study was based on the bibliographic data from 430 journals articles on Liquid Crystals covered in “Physical Abstracts”. The analysis of 'Science Citation Index' annual files for the years 1987-1989 and 1992-1995 by Stefaniak (1998)² found that considerable increase in the number of publications were accompanied by the geographic development of co-authorship after the 1980's political changes in Poland.

Kumar (et.al), (2013)³ in this Paper analyses the growth and development of Bibliometric and Scientometric research in physics and engineering field as per Inspec Database (1999-2008) during 1999-2008. Authorship and Collaboration Trend was Towards Multi-Authored Papers. Regolini, Janne and Antony (2013)⁴ studied a Bibliometric study of first generation citations from formation science. Publication data from Scopus were used. This study confirms that it is possible to observe the evolution of a new discipline by analyzing the citations to papers from its flagship Journal.

3. OBJECTIVES OF THE STUDY

The following are the major objectives of the study

1. To analysis the publications of the faculty members, staff, research scholars, and the students of Anna University in Web of Science database.
2. To find out the h-index of top 25 authors' publications that are indexed in WOS
3. To investigate the publications that are published in the various journals
4. To analyze year wise distributions of the publications
5. To ascertain collaborative publications, country and funding agencies.

4. RESEARCH METHODOLOGY

The author affiliation is the basic unit of analysis of the study. The Scientometric analysis was used in this study to investigate publications related to "Anna University" that have been indexed by Web of Science. Web of Science provides researchers, administrators, academics and students with quick, powerful access to the world's leading citation database. In order to satisfy the objectives, the data were collected from the Web of Science database on 21-04-2017. "Anna University" is the search terms were used to retrieve the data from Web of Science database. A total 9649 unique records over the year 1989-2016 have been downloaded and analyzed under various categories. The study has considered only the top 25 publications/ results from each category and analyzed based on total number of records published by the staff members of various departments of Anna University and the same indexed in the Web of Science database. HistCite software has been used to extract the data from the database.

5. SCOPE AND LIMITATIONS OF THE STUDY

The present study is based on the records indexed in the web of Science database during the period 1989-2016. The researcher tried to analysis the research publication that has been published by Faculty members, research scholars, staff and students of Anna University, Chennai, India and indexed in Web

of Science database. The data were collected from the same database.

6. DATA ANALYSIS AND FINDINGS

The data extracted were analyzed based on total number of record included in the Web of Science database and Total number of Records appeared in top 25 publications and h-index of top 25 authors.

6.1. Contribution by Author

The study has analyzed the total number of publications of individual Staff member, which are indexed in Web of Science database along with h-index of the authors and the same is given in Table 1.

Table 1: Contribution by Author

S. No.	Authors	No. Of Records	%	h-Index
1	Ramasamy P	357	10.77	35
2	Jayavel R	287	8.66	29
3	Murugesan V	183	5.52	40
4	Alagar M	174	5.25	25
5	Kumar J	150	4.53	19
6	Gopalakrishnan R	145	4.38	23
7	Palanichamy M	139	4.19	29
8	Pandurangan A	138	4.16	26
9	Dhanasekaran R	127	3.83	16
10	BabuSm	126	3.80	14
11	Subramanian K	124	3.74	17
12	Chinnakali K	118	3.56	12
13	Fun Hk	111	3.35	12
14	Kannan P	110	3.32	19
15	Subramanian C	108	3.26	17
16	Sivakumar K	108	3.26	14
17	Rajendran N	105	3.17	23
18	Rajagopalan M	100	3.02	18
19	Nagarajan G	100	3.02	27
20	Sakthivel R	95	2.87	23
21	Nanjundan S	94	2.84	19
22	Sivanesan S	87	2.63	28
23	Palanivelu K	77	2.32	27
24	Baskar K	77	2.32	9
25	Mohan D	74	2.23	23
		9649		

It is found from Table 1 that the first author has contributed 357(10.77%) records in Web of Science database and ranked 1. It is followed by second author who published 287(8.66%) records and placed second rank. Third author has produced 183(5.52%),

174 (5.25%) and 150(4.53%) records were published by fourth and fifth authors respectively in the database. It is also analyzed that 100 and above documents produced/published in different journals and others were listed in Web of Science (WOS) database, it ranges from 100 to 357 during 1987 to 2017. Further, the study has also analyzed the impact of publications of the authors and the same is shown in the Table. It is found that publications of the third author were cited number of times by others and h-index is 40, it is followed by first author and h-index is 35 and third position in respect of h-index is shared by second and seventh author and their h-index is 29 each. The publications of the twenty second author have been cited number of times by others and his h-index is 4 and h-index 27 were

received by both 19th and 23rd authors for their works. The quality of the publications have been measured by its impact factor and in this study the even though, a good number of publications were produced by the first author, his h-index is come down to 2 position and the publications of third author were cited more number of times by others. Overall, the publications of Anna University indexed in Web of Science database received impact (h-index) from 9-40.

6.2. Publications in Journals

The study has further ascertained the number of records published in the various journals and the results are shown in Table 2.

Table 2: Publications in Journals

S.No.	Journals	Records	% of 1937	% of 9649	Rank
1	Journal of Crystal Growth	230	11.87	2.38	1
2	ActaCrystallographica Section E Structure Reports Online	116	5.99	1.20	2
3	RSC Advances	110	5.68	1.14	3
4	Crystal Research and Technology	103	5.32	1.07	4
5	ActaCrystallographica Section C Crystal Structure Communications	101	5.21	1.05	5
6	Journal of Applied Polymer Science	100	5.16	1.04	6
7	Materials Chemistry and Physics	91	4.70	0.94	7
8	Journal of Materials Science Materials in Electronics	80	4.13	0.83	8
9	Journal of Scientific Industrial Research	73	3.77	0.76	9
10	SpectrochimicaActa Part A Molecular and Biomolecular Spectroscopy	71	3.67	0.74	10
11	Materials Letters	71	3.67	0.74	11
12	Journal of Alloys And Compounds	70	3.61	0.73	12
13	Optik	69	3.56	0.72	13
14	Journal of Hazardous Materials	64	3.30	0.66	14
15	Journal of Nanoscience And Nanotechnology	62	3.20	0.64	15
16	Journal of Molecular Catalysis A Chemical	57	2.94	0.59	16
17	High Performance Polymers	57	2.94	0.59	17
18	Materials and Manufacturing Processes	56	2.89	0.58	18
19	Desalination and Water Treatment	54	2.79	0.56	19
20	Bio Resource Technology	54	2.79	0.56	20
21	Current Science	52	2.69	0.54	21
22	Asian Journal of Chemistry	51	2.63	0.53	22
23	Arabian Journal for Science and Engineering	49	2.53	0.51	23
24	Applied Surface Science	49	2.53	0.51	24
25	Applied Catalysis A General	47	2.43	0.49	25
		1937	100		

It is observed from Table 2 that more number of publications 230 (11.87%) were published in the journal “Journal of Crystal Growth”, which is followed by “ActaCrystallographica Section E Structure Reports Online” 116(5.99%), RSC

Advances 110 (5.68%), Crystal Research and Technology 103(5.32%), ActaCrystallographica Section C Crystal Structure Communications 101(5.21%) and Journal of Applied Polymer Science 100(5.16%).The result shows that less number of

publications were published in the following journals “Current Science” 52(2.69%), “Asian Journal of Chemistry” 51 (2.63%) , “Applied Surface Science” 49 (2.53%) and “Applied Catalysis A General” 47(2.43%).

6.3. Year wise Contributions

The year wise publications made by the staff members during the year 1989-2016 has been analyzed and shown in Table 3.

Table 3:Year wise Contributions

S.No.	Year	Records	% of 9649	Rank
1	2016	1077	11.16	1
2	2015	1064	11.03	2
3	2014	908	9.41	3
4	2013	769	7.97	4
5	2012	620	6.43	5
6	2011	551	5.71	6
7	2008	466	4.83	7
8	2010	457	4.74	8
9	2009	436	4.52	9
10	2007	381	3.95	10
11	2006	375	3.89	11
12	2005	331	3.43	12
13	2004	288	2.99	13
14	2003	248	2.57	14
15	2002	199	2.06	15
16	2001	177	1.83	16
17	2000	175	1.81	17
18	1999	164	1.70	18
19	1998	150	1.56	19
20	1996	143	1.48	20
21	1997	127	1.32	21
22	1995	100	1.04	22
23	1994	89	0.92	23
24	1993	81	0.84	24
25	1990	79	0.82	25
26	1992	73	0.76	26
27	1991	69	0.72	27
28	1989	52	11.16	28
	Total	9649	100	

6.4. Type of Documents

It is further analyzed the type of documents published by Faculty members, Staff and Research Scholars and others are shown in Table 4.

Table 4: Type of Documents

S.No.	Types of Document	No. of Records	% of 9649	Rank
1	Article	9257	95.94	1
2	Proceedings Paper	362	3.75	2
3	Others	30	0.31	3
	Total	9649	100	

It is revealed from Table 4 that majority of publications of Anna University indexed in Web of Science database were found articles 9257(95.93%) and placed in first rank and it is followed by Proceedings Paper 362(3.75%) and others 30(0.31%). It is understood that Anna University has involved in many projects sponsored by various Funding Agencies including global level, it is expected to publish more number of research/technical reports for further research in Science and Technology and also it would be an effective tool for research communities in the various domains.

6.5. Collaborative Publications

The authors in Anna University were published a good number of publication in collaboration with other leading education and research and the same is given Table 5.The Publications of Anna University, Anna University, Chennai and Anna University of Technology have been merged for the purpose of data analysis.

Table 5 shows that organizations collaborated with Anna University to produce publications.The above publications were produced by the author’s affiliation to Anna University. It is found from the above Table that Anna University affiliation alone has produced 9459 (98.03%) documents or records indexed in the Web of Science database. It is followed in collaboration with University of Madras 335(3.47%) and Indian Institute of Technology 240(2.49%). It is also found that less number of publications were produced in other institutions like Bharathidasan University 86 (0.89%), Alagappa University 85 (0.88%), CSIR 65 (0.67%) Madurai Kamaraj University 60(0.62%), National Physical Laboratory 57(0.59%) and Sathyabama University 54(0.56%). It is inferred that the institutions involved in research and development have to collaborative with other organizations to produce more number of research output for the benefits of the research communities.

Table 5: Collaborative Publications

S. No.	Organization	No.of Records	% of 9649
1	Anna University*	9459	98.03
2	University Madras	335	3.47
3	Indian Institute Technology	240	2.49
4	Sungkyunkwan University	164	1.70
5	Indira Gandhi Centre for Atomic Research	140	1.45
6	SSN College of Engineering	138	1.43
7	UniversitiSains Malaysia	124	1.29
8	Centre Leather Research Institute	116	1.20
9	Annamalai University	112	1.16
10	Presidency College	107	1.11
11	National Institute of Technology	99	1.03
12	National Institute of Mathematical Science	91	0.94
13	Bharathidasan University	86	0.89
14	Alagappa University	85	0.88
15	SRM University	83	0.86
16	Sri Venkateswara College Engineering	82	0.85
17	St Josephs College Engineering	78	0.81
18	VIT University	67	0.69
19	Thiagarajar College Engineering	66	0.68
20	CSIR	65	0.67
21	Madurai Kamaraj University	60	0.62
22	National Physical Laboratory	57	0.59
23	Sathyabama University	54	0.56

*Combination of Anna University+Anna University, Chennai+ Anna University of Technology

6.6. Collaborative Country

The authors are collaborated with other authors in the world to produce and make accessible to the scholarly content by any one from anywhere. Likewise, the authors of publications have collaborated with other authors spread over the world to produce the research publications and the same is given in Table 6.

Table 6: Collaborative Country

S. No.	Countries/ Territories	Records	% of 2063	% of 9649	Rank
1	South Korea	332	16.09	3.44	1
2	USA	299	14.49	3.09	2
3	Japan	291	14.11	3.01	3
4	Malaysia	200	9.69	2.07	4
5	Germany	164	7.95	1.7	5
6	England	93	4.51	0.96	6
7	Italy	88	4.27	0.91	7
8	Canada	71	3.44	0.73	8
9	Taiwan	70	3.39	0.72	9
10	Saudi Arabia	64	3.10	0.66	10
11	Peoples R China	60	2.91	0.62	11
12	France	53	2.57	0.54	12
13	Singapore	43	2.08	0.44	13
14	Portugal	31	1.50	0.32	14
15	Mexico	31	1.50	0.32	15
16	Sweden	29	1.41	0.30	16
17	Australia	29	1.41	0.30	17
18	Netherlands	20	0.97	0.20	18
19	Switzerland	18	0.87	0.18	19
20	Spain	18	0.87	0.18	20
21	U Arab Emirates	16	0.78	0.16	21
22	South Africa	15	0.73	0.15	22
23	Scotland	14	0.68	0.14	23
24	Croatia	14	0.68	0.14	24
		2063	100		

It is described from Table 6 that majority of the authors were collaborated with South Korea 332 (16.09%) to publish records and the same have been indexed in Web of Science. It is followed by 299 (14.49%), Japan 291(14.11%), Malaysia 200(9.69%) and Germany 164(7.95%). The authors in the countries listed from S.No.13 to 24 have produced the less numbers of publications and it ranges from 2.08% to 0.68.It is also found that there is a vast difference in respect of collaboration works made by authors among the countries and it ranges 16.09% to 0.68%.

6.7. Funding Agencies

The funding agencies are interested to provide the financial aids to the faculty members, research scholars and others to produce the scholarly contents in their respective domains. The present study is also analyzed the publications of the authors who produced with financial aids from funding agencies at national and international level and the same is given in Table 7.

Table 7: Collaborative Country

S.No.	Funding Agencies	No. of Publications/ Projects	%	Rank
1	CSIR	200	24.45	2
2	UGC	175	21.13	3
3	DST	390	47.69	1
4	Anna University	32	3.91	4
5	Korean Government	23	2.82	5
	Total	820	100	

It is found from Table 7 that publications produced by the authors of Anna University were collaborated with various funding agencies for their publications. Out of 820 publications in collaborations with funding agencies, the Department of Science and Technology(DST), Govt.of India has collaborated with Anna University to produce 390 (47.69%) publications /projects and placed in First rank, which is followed by Council for Scientific and Industrial Research(CSIR) and produced 200(24.45%) publications and ranked 2 position. Further, it analysed that the University Grants Commission UGC has also collaborated to produce 175 (21.13%) publications/projects. From the results, the authors of the publications/projects were not highly collaborated with own organization and international funding agencies to produce more number of publications. When the organization like Anna University is collaborating with both national and international funding agencies, the publications/projects will reach widely at all over the world.

6.8. Type of Documents

It is further analyzed the type of documents published and indexed in Web of Science database is given in Table 8

Table 8:Type of Documents

S. No.	Types of Document	No. of Records	% of 9649	Rank
1	Article	9257	95.94	1
2	Proceedings Paper	362	3.75	2
3	Others	30	0.31	3
	Total	9649	100	

It is found from Table 8 that 9257 (95.94%) of articles have been published than other documents. The remaining documents such Proceedings Papers, others have also been published and it ranges only from 362 to 30 (3.75 % to 0.31%).

6.9. Language wise Distribution

Table 9:Language wise Distribution

S.No.	Languages	No. of Records	% of 9649
1	English	9647	99.98
2	German	2	0.02
	Total	9649	100

It is observed from Table 5 that English is the highly used language to publish the documents. It is studied almost 9647 (99.98%) of documents have been published in English language and the same have indexed in Web of Science.

7. CONCLUSION

The research articles published in peer-reviewed journals will create a global impact on the institutions and authors. These contributions will help the research community to get required information for the research. Perhaps, the institutions as well as authors will get an opportunity to collaborate with national and international research institutions. Web of Science is one of most important research tools for collecting information for the research in all the domains.It provides the required information in various forms like articles, research reports, conference papers, bibliographic information etc.

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