Research Contributions of Bharathidasan University: with special reference to Dimensions Database

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Abstract

This paper examines the research publications of Bharathidasan University. The data were taken from Dimensions database (https://app.dimensions.ai/). The search term "Bharathidasan University" has been used as keyword. A total of 10,167 records have been retrieved from Dimensions. Ms-Excel has been used to analysis the data using simple calculations. It is found that "Muthusamy Lakshmanan" contributed 321 (3.16%) publications and received 6,850 citations. It is found that "Acta Crystallographica Section E: Crystallographic Communications" journal published 376 (3.70%) publications and also investigates that "Stimuli responsive polymers for biomedical applications" article received 1152 citations. In 2018, 1,086 (10.68%) publications have been published.

Keywords: Dimensions, Bharathidasan University, Research Performance, Citations.

1. Introduction

Dimensions is a dynamic, easy to use, linked-research data platform that re-imagines the way research can be discovered, accessed and analyzed. Within Dimensions, users can explore the connections between grants, publications, clinical trials, patents and policy documents. Dimensions developed by Digital Science and had a vision for a modern research system where data is democratized and the lens through which we measure research outputs broadened.

2. Review of Literature

Hasan, Nabi & Sing, Mukhtiar. (2017)[1] evaluated the trend of research output of five top ranked Indian Institutes of Technology (IITs) on the basis of research papers/articles indexed in Web of Science online database for the five years' period of 2009-13. A total of 215,019 records were retrieved for India which are 2.72% of the global records for the period 2009-13. The records of articles from top five IITs were scanned which accounted to 9.32% of total records of India. A maximum of 22.27% articles have been indexed in 2013 against 18.41% in 2009. A scientometric assessment of the trend of research papers has been presented in the study by way of analyzing; year-wise distribution of publications among IITs vs total Indian research output, Institutional distribution, degree of collaborations with other countries and with the institutions from India, etc. The results of the study would be useful to subject specialists, analysts, researchers, students and policy makers to look into the trends and to make effective policies on the basis of inferences drawn. **Jeevan V. K.J & Sen B.K. (2017)[2]** studied based on the journal publications generated by the Nuclear Science Centre (NSC) [now known as Inter University Accelerator Centre] and the Accelerator Group at the Tata Institute of Fundamental Research (TIFR) during 1997-1999. The data was collected from the annual reports of the two institutions and analyzed using scientometric tools and techniques. The impact was examined with the help of Science Citation Index (SCI). The analysis highlights yearly output, publications in national and international journals, number of papers in SCI-journals and non-SCI journals, normalized impact factor (NIF) per paper, category-wise distribution of papers in different NIF ranges, the proportion of high NIF papers, papers above the average NIF. NSC is a facility exclusive for accelerator research and its Annual Report gives clear indication of the different specializations, hence the data for NSC is further analyzed in three subdivisions of nuclear physics, material science, radiation biology and others. However, such an analysis for TIFR was not attempted due to the lack of such informations in its Annual Report. From the study one can have an idea about the performance and impact of the research conducted in the two institutions. **Sivakumaren, K. S. (2017)[3]** examined the publications of Anna University (Chennai) indexed in Indian Citation Index (ICI). The relevant data for the study have been extracted from ICI. The search term "Anna University" has been used as the keyword. A total of 1,780 unique records in the period of 2004-2017 have been downloaded and analyzed under various categories. Out of 1,780 records, top 10 records alone have been considered for this study. Microsoft Excel has

been used to analysis the data using simple calculations. It is found that 37(17.30%) publications of Kanmani, S has been indexed. 504 (26.53%) publications by Anna University faculty members were on science and technology. In collaboration with other institutions, 223 publications have been published in addition to 1,780 publications of Anna University. **Gautam, V., & Mishra, R. (2015)[4]** attempted to measure year-wise distribution of publication output, co-authorship index, collaborative co-efficient collaborating universities/institutes/colleges, states and countries. The result indicates that research productivity of Banaras Hindu University is increasing at the average rate of 104.1 publications per years, most of the researches are contributed by joint authors, 404 (39 %) articles published in SCIE indexed journals and 637 (61 %) articles published in non SCIE-indexed journals. **Chaurasia, Neeraj Kumar & Chavan, Shankar B. (2014)[5]** described the growth, contribution and impact of research carried out by the faculty members and researchers of IIT Delhi. It also attempts to analyze the growth and development of research activity of IIT Delhi as reflected in publications output covered by ISI Web of Science during the year 2001 to 2010. The study attempt to examine the content of papers published, including the annual average growth rate percent, authorship pattern, author productivity, subject-wise rank distribution of publications, degree of collaboration, Source title in terms of number of publications, most prolific author in terms of productivity count and most prolific department. Subramanyam's formula is used to calculate Degree of Collaboration (DC). **Dhanavandan, S & Tamizhchelvan, M. (2014)[6]** discussed the published research articles and its citation among Universities in South Tamil Nadu. During 2009 to 2013, there were 377 articles published from the analysis, highest publications in the year 2009,Â 81 (21.49%) articles were published by three universities. **Jeyshankar, R., Babu, B. Ramesh., Rajendran, P. (2011)[7]** analyzed bibliographical details of 1282 research articles published by the scientists of CECRI during the period 2000-2009. It is found that 2009 was the most productive year with 194 articles (15.13%) published in the year. Collaborative research was dominant with the highest degree of collaboration being 0.98, in the year 2005. Further, the study investigated authorship pattern, co-authorship pattern, highly prolific authors and highly preferred journals by the scientists of CECRI. **Shetty, PK and Hiremath, MB and Murugan, M and Sreeja, KG. (2010)[8]** presented results of the analysis of higher education and research scenario in ten state universities of India during 2000 to 2006. Calcutta University ranked first in terms of published research articles, on an average 664 articles in a year in peer reviewed national and international

journals. Similarly Madras, Panjab, Rajasthan, Mysore, Gauhati, Pune, Mumbai, Patna and Sikkim Manipal Universities published 600, 582, 538, 328.33, 221, 184.33, 112.5, 47 and 5 articles respectively. The ratio of number of faculty to research publication varied from 1:0.05 to 1:1.9 in the selected universities. University of Madras, University of Panjab, University of Rajasthan and University of Calcutta have ratio more than 1:1. University of Madras received the maximum research funds of 41.46 crore rupees and ranked first among the selected ten universities. Considering the overall performance of universities in our analysis, Calcutta University and Madras University captured the first two places respectively.

3. Research Methodology

This study investigates of Bharathidasan University faculty members publications that have been indexed in Dimensions database. The keyword "Bharathidasan University" has been used to retrieve records. A total of 10,167 records have been retrieved from Dimensions database (https://app.dimensions.ai/)[9]. The study has considered top ten researchers, highly cited papers, altmetric articles, various types of documents and source wise documents. Microsoft Excel has been used for data analysis.

4. Objectives of the Study

The following are the major objectives of the study.

1. To analyze year wise distributions of the publications
2. To find out the various types and source of documents
3. To analyze the top ten researchers of Bhararthidasan University
4. To find out the highly cited papers of Bharathidasan University
5. To investigate the highly Altmetric attention score of articles.

5. Data Analysis and Interpretation

5.1 **Year wise publications**

Table.1

Year wise publications

S.No	Year	No. of Publications	% of 10167	Rank
1	2019	519	5.10	9
2	2018	1,086	10.68	1
3	2017	975	9.59	2
4	2016	881	8.67	3
5	2015	878	8.64	4
6	2014	845	8.31	5
7	2013	673	6.62	6
8	2012	597	5.87	7
9	2011	571	5.62	8
10	2010	418	4.11	10
11	2009	419	4.12	11
12	2008	270	2.66	12
13	2007	260	2.56	13
14	2006	228	2.24	14
15	2005	183	1.80	15
16	2004	147	1.45	17
17	2003	153	1.50	16
18	2002	123	1.21	18
19	2001	89	0.88	19
20	2000	70	0.69	23
21	1999	70	0.69	23
22	1998	79	0.78	20
23	1997	79	0.78	20
24	1996	71	0.70	22
25	1995	60	0.59	25
26	1994	59	0.58	26
27	1993	52	0.51	27
28	1992	52	0.51	27

29	1991	28	0.28	32
30	1990	42	0.41	29
31	1989	33	0.32	30
32	1988	28	0.28	32
33	1987	30	0.30	31
34	1986	20	0.20	34
35	1985	16	0.16	36
36	1984	11	0.11	37
37	1983	20	0.20	34
38	1982	10	0.10	38
39	1981	3	0.03	40
40	1979	3	0.03	40
41	1978	2	0.02	42
42	1974	2	0.02	42
43	1973	1	0.01	46
44	1972	2	0.02	42
45	1971	2	0.02	42
46	1970	4	0.04	39
47	1966	1	0.01	46
48	1965	1	0.01	46
49	1943	1	0.01	46
Total		**10167**	**100**	

Table 1 shows that year wise publications. In 2018, 1,086 (10.68%) publications have been published. It is followed by 975 (9.59%), 881 (8.67%), 878 (8.64%), 845 (8.31%) and 673 (6.62%). Fewer than 100 publications were found during the years of 1943-2001.

5.2 Various types of Documents

Table.2

Various types of Documents

S. No	Type of Documents	No. of documents	% of 10167	Rank
1	Article	8,897	87.51	1
2	Chapter	568	5.59	2
3	Proceeding	472	4.64	3
4	Book	200	1.97	4
5	Monograph	24	0.24	5
6	Preprint	6	0.06	6
Total		**10167**	**100**	

Table 2 indicates the various types of documents indexed in Dimensions database. The majority of the documents are found to be research articles 8,897 (87.51%) placed in first rank, followed by chapter 568 (5.59%) placed in second rank. It is further found that preprint 6 (0.06%) is the least and ranks last.

5.3 Source wise documents

Table.3

Source wise Documents

S. No	Name of the Journal	No. of Articles	%	Rank
1	Acta Crystallographica Section E: Crystallographic Communications	376	3.70	1
2	Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy	192	1.89	2
3	Journal of Materials Science: Materials in Electronics	165	1.62	3
4	Acta Crystallographica Section C: Structural Chemistry	124	1.22	4
5	ChemInform	123	1.21	5
6	RSC Advances	111	1.09	6
7	Sensors and Actuators B Chemical	89	0.88	7
8	Wireless Personal Communications	80	0.79	8
9	Journal of Molecular Structure	76	0.75	9
10	Physical Review E	75	0.74	10

Table 3 shows source wise publications. It is found that “Acta Crystallographica Section E: Crystallographic Communications” journal published more number of 376 (3.70%) publications is placed first “Spectrochimica Acta Part A Molecular and Biomolecular Spectroscopy” published 192 (1.89%) articles placed second. It is further found that “Physical Review E” published less number of publications is placed last.

5.4 Top five Researchers at Bharathidasan University

Table.4

Top five Researchers at Bharathidasan University

S. No	Name of the Faculty	No. of Publications	%	No. of Citations	Rank
1	Muthusamy Lakshmanan	321	3.16	6,850	1
2	Packianathan Thomas Muthiah	178	1.75	1,571	2
3	Mallayan Palaniandavar	144	1.42	5,560	3
4	Govindaraju Archunan	125	1.23	939	4
5	Ponnambalam Venuvanalingam	129	1.27	1,440	5

Table 4 indicates the top five researchers at Bharathidasan University. It is found that "Muthusamy Lakshmanan" contributed 321 (3.16%) publications and received 6,850 citations from dimensions database ranks first. "Packianathan Thomas Muthiah" has contributed 178 (1.75%) publications and received 1,571 citations and placed second. It is further found that "Ponnambalam Venuvanalingam" contributed 129 (1.27%) publications and 1,440 citations is placed fifth.

5.5 **Highly Cited Papers of Bharathidasan University**

Table.5

Highly Cited Papers of Bharathidasan University

S. No	Name of the Article and Publisher	Citations	Rank
1	Stimuli responsive polymers for biomedical applications (Chemical Society Reviews)	1,152	1
2	Current Research in Photosynthesis (Proceedings of the VIIIth International Conference on Photosynthesis Stockholm)	489	2
3	A review on g-C3N4-based photocatalysts (Applied Surface Science)	435	3
4	Personalized Oncology Through Integrative High-Throughput Sequencing: A Pilot Study (Science Translational Medicine)	422	4
5	Nanostructured electrode materials for electrochemical energy storage and conversion (Energy & Environmental Science)	362	5
6	DNA binding and cleavage properties of certain tetrammine ruthenium(II) complexes of modified 1,10-phenanthrolines – effect of hydrogen-bonding on DNA-binding affinity (Journal of Inorganic Biochemistry)	359	6
7	Plant extract mediated synthesis of silver and gold nanoparticles and its antibacterial activity against clinically isolated pathogens (Colloids and Surfaces B Biointerfaces)	356	7
8	Mixed-ligand copper(II)-phenolate complexes: effect of coligand on enhanced DNA and protein binding, DNA cleavage, and anticancer activity. (Inorganic Chemistry)	348	8
9	Identification of recurrent NAB2-STAT6 gene fusions in solitary fibrous tumor by integrative sequencing (Nature Genetics)	310	9
10	Current Perspectives on Ophthalmic Mycoses (Clinical Microbiology Reviews)	300	10

Table 5 shows the Highly Cited Papers of Bharathidasan University. It is found that "Stimuli responsive polymers for biomedical applications (Chemical Society Reviews)" article received highest 1,152 citations from dimensions database stands first and it is followed by "Current Research in Photosynthesis (Proceedings of the VIIIth International Conference on Photosynthesis Stockholm)" has received 489 citations. It is further found that "Current Perspectives on Ophthalmic Mycoses (Clinical Microbiology Reviews)" has received less number of citations so placed last.

5.6 Altmetric analysis of Articles

Table.6

Altmetric analysis of Articles

S. No	Name of the Article	Altmetric Score	Rank
1	Breaking barriers and creating inclusiveness: Lessons of organizational transformation to advance women faculty in academic science and engineering	85	1
2	Personalized Oncology Through Integrative High-Throughput Sequencing: A Pilot Study	77	2
3	2D QSAR and Virtual Screening based on Pyridopyrimidine Analogs of Epidermal Growth Factor Receptor Tyrosine Kinase.	75	3
4	Socio-economic and demographic determinants affecting participation in the Swedish cervical screening program: A population-based case-control study	71	4
5	RAF1 mutations in childhood-onset dilated cardiomyopathy	48	5
6	Antioxidant, Antihyperglycemic, and Antihyperlipidemic Effects of Coriandrum sativum Leaf and Stem in	40	6

	Alloxan-Induced Diabetic Rats		
7	Encyclopedia of Complexity and Systems Science	36	7
8	Renal cell tumors with clear cell histology and intact VHL and chromosome 3p: a histological review of tumors from the Cancer Genome Atlas database	35	8
9	Identification of recurrent NAB2-STAT6 gene fusions in solitary fibrous tumor by integrative sequencing	32	9
10	Antioxidant properties of phlorotannins from brown seaweed Cystoseira trinodis (Forsskål) C. Agardh	32	10

Table 6 indicates the Altmetric analysis of Articles. The “Breaking barriers and creating inclusiveness: Lessons of organizational transformation to advance women faculty in academic science and engineering” article has received score 85 and placed first. Followed by “Personalized Oncology through Integrative High-Throughput Sequencing: A Pilot Study” has received score 77 and placed second. Altmetric score with 48 “RAF1 mutations in childhood-onset dilated cardiomyopathy” placed fifth. It is further found that “Antioxidant properties of phlorotannins from brown seaweed Cystoseira trinodis (Forsskål) C. Agardh” has received less number of (32) scores and placed tenth.

6. Conclusion

Dimensions is recently launched by Digital Science and is integrated with the research tools and technologies of social media. This tool will be useful for the research scholars and institutions to look their research publications in a single place and also to get the citations for the publications which is shared and viewed by the social media tools. The study recommends every institution to subscribe Dimensions database as it helps to get institution publications reports easily. In addition researchers & faculty members can access large number of research papers worldwide. It is recommended that Dimension database can add new features like h-index, self citations, etc. Hence Library Science Professionals should be aware of these databases and create more awareness to faculty members and research scholars in their institutions.

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