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Research Output in Indian Journal of Experimental Biology : A ScientometricStudy.

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Abstract

The present study has analyzed the Research Output in Indian Journals of Experimental Biology :A Scintometric study.The authors were discussed Rank list of Authors: Author at first position, Relative growth rate and doubling time, Analysis of institutions wise distribution and department wise productivity.Thisstudy is a type of research method used in library and information science. The appropriate law used whenever necessary.

Introduction

The scientometric studies have shown that all the pieces of published information do not have equal importance. Present study focuses attention on the growth of literature, authorship pattern, journal coverage, institutions involved in active research etc. Citation studies are recognized as an indicator of influence of published work on the scientific community. This study attempts to analyse the performance of information literacy research output in terms of its content and coverage, growth rates, areas of research concentration, and author productivity, journals and articles and other means of assisting the peer review procedure. Performance of research institutions in promotion of information literacy research is also given due emphasis.

Scientometrics

Scientometrics is "the study of the measurement of scientific and technological progress" (Garfield, 1979). Its origin is in the quantitative study of science policy research, or the science of science, which focuses on a wide variety of quantitative measurements, or indicators, of science at large.

Objective of the study

- To identify the Rank list of Authors
- To access the Relative growth rate and doubling time
- To Analysis the Institutions wise distribution of publication
- To find out Department wise productivity of publication

Scope and Limitations

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

Scope of the present study is limited to Indian Journal of Experimental Biology. Further the study is limited to the data collected from the year 1999 to 2015 only.

Methodology

This research is based on the analysis of research papers published in Indian Journal of Experimental Biology, which is analysed by using various scientometric techniques.
The steps in methodology include:
a) Data collection;
b) Data analysis and Interpretation.

Data collection

Data has been collected from all issues of Indian Journal of Experimental Biology available in NICAIR Database. The data was collected on the parameters viz. authors, author affiliation, title of articles, Department, Institution, Keyterms, volume no, issue no, year of publication, editors of the journal, for the period from 1999- 2015.

Analysis

Table 1: Rank list of Authors: Author at first position

Rank	Authors	Affiliation	articles	first position	DF
1	Kumar, Anil	Pharmacology Division, University Institute of Phamaceutical Sciences, Punjab University, Chandigarh, India	25	14	0.56(10)
2	Tripathi, Yamini B	Department of Medicinal Chemistry, Indistute of Medical Sciences, BHU, Varanasi, India.	9	9	1.0 (1)
3	Chandra, Amar K	Endocrinology and Reproductive Physiology Laboratory, Dept. of Physiology, University College of Science and Technology, University of Calcutta, Kolkata, India	7	7	1.0(1)
3	Ramanathan, M	Neuropharmacology Laboratory, Department of Pharmacology, Institute of Medical Sciences, BHU, Varanasi, India	10	7	0.70(5)
3	Singh, B R	Dept. of Microbiology, College of Veterinary sciences, GB Pant University of Agriculture and Technology, Pantnagar, India.	10	7	0.70(5)
3	Kumar, Vikas	Pharmaceutics, Institute of Rechnology. Dept. of Pharmacology, Institute of Medical Sciences, BHU, Varanasi, India	11	7	0.64(7)
4	Singh, Surender	Delhi Institute of Pharmaceutical Sciences and Research, Formerly College of Pharmacy (University of Delhi), PushpVihar, New Delhi,	8	6	0.75(4)

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

		India			
4	**Gomes, Antony**	Laboratory of Toxinology and Experimental Pharmacodynamics Department of Physiology, University of Calcutta, Kolkata, India	24	6	0.57(9)
5	Koul, Ashwani	Department of Biophysics, Basic Medical Sciences, Panjab University, Chandigarh, India	6	5	0.83(2)
5	Narayanan, K	Project Directorate of Biological Control, Hebbal, Bangalore, India	6	5	0.83(2)
5	Shirwaikar, Annie	Department of Pharmacognosy, College of Pharm, Sciences: Department of Pharmacology, K.M.C, MAHE, Manipal, India	6	5	0.83(2)
5	Stevenson, A F G	Institute of Toxicology, University of Kiel, Brunswiker Str. Kiel, Germany	8	5	0.63(8)
5	Devi, P Uma	Dept. of Radiobiology, Kasturba Medical College, Manipal, India	9	5	0.56(10)
5	Gakhar, S K	Department of Biosciences, MaharshiDayanand University, Rohtak, India.	9	5	0.55(11)
6	Lahijani, Maryam Shams	Department of Biology, Faculty of Science, Shahid-Beheshti University, Tehran, Iran	4	4	1.0(1)
6	Mishra, Akansha	Divisions of Biochemistry: Medicinal and Process Chemistry CSIR-Central Drug Research Institute (CDRI), Lucknow, India	4	4	1.0(1)
6	Pandey, Rajesh	Department of Biotechnology & Microbiology, School of Life Science, Kannur University, Kannur, India	4	4	1.0(1)
6	Siddique, YasirHasan	Section of Genetics, Department of Zoology, Aligarh Muslim University, Aligarh, India	4	4	1.0(1)
6	Singh, Amarjeet	Dept. of Medical Research, Panacea Biotec Ltd., B-1 Ext./A-27,Mohan Co-op Industrial Estate, Mathura Road,New Delhi, India	4	4	1.0(1)
6	Sultana, Sarwat	Section of Chemoprevention and Nutrition Toxicology, Department of Medical Elementology and Toxicology, Faculty of Science, JamaHamdard (Hamdard University), New Delhi, India. India	4	4	1.0(1)
6	Tyagi, Manoj G	Department of Pharmacology, Christian Medical College, Vellore, India	4	4	1.0(1)
6	Barua, Chandana C	Department of Pharmacology & Toxicology, Public Health, Microbiology, College of Veterinary Science, AAU, Khanapara, Guwahati, India.	5	4	0.80 (3)
6	Dave, Bharti P	Dept. of Life Sciences, Bhavnagar University, Bhavnagar,India	5	4	0.80(3)

6	Pal, Sanjoy Kumar	Department of Gastroenterology, Sanjay Gandhi Post Graduate Institute of Medical Sciences, Raebareli Road, Lucknow.: Medical Genetics,Sanjay Gandhi Post Graduate Institute of Medical Sciences, Lucknow	5	4	0.80(3)
6	Patro, Nisha	Neuroscience Centre, School of Studies in Zoology, Jiwaji University, Gwalior 474 011, India	5	4	0.80(3)
6	Saha, S	Chittaranjan National Cancer Institute (CNCI), 37, S.P. Mukherjee Road, Kolkata, India	5	4	0.80(3)
6	Taneja, S K	Department of Zoology, Panjab University, Chandigarh, India.	5	4	0.80(3)
6	Dhingra, Dinesh	Department of Pharmaceutical Sciences, Guru Jambheshwar University of Science and Technology, Hisar, India	6	4	0.67(6)
6	Ray, SubrataBasu	Department of Anatomy, All India Institute of Medical Sciences, Ansari Nagar, New Delhi 110 029, India.	6	4	0.67(6)
6	Augusti, K T	Department of Medical Biochemistry, School of Medical Education (M.G. University) Gandhi Nagar, Kottayam, India.	8	4	0.50(12)
6	Kumar, Rajiv	Department of Biotechnology & Environmental Sciences, Thapar University, Patiala, India	8	4	0.50(12)
6	Kulkarni, Shrinivas K	Pharmacology Division, University Institute of pharmaceutical Sciences, Panjab University, Chandigar 160 014, India	26	4	0.15(13)

The table 1 also shows the authors on editorial board in bold letters. “Gomes, Antony” is chief editor of this journal. He has published 6 papers at first position. It was observed that from the year 1999 to 2015 of the total experts representing from editorial board of the journal.

Out of 2873 articles, 2079 (72.36%) of authors were been in only one time as first author position, followed by 233 (8.11 %) of authors were been in only two times as first authors, 54 (1.88 %) of authors were been in only three times as first authors, 17 (0.59 %) of authors were been in only four times as first authors, 8 (0.28 %) of authors were been in only five times as first authors, 1 (0.034 %) of author were been in only six times as first authors, 5 (0.17 %) of authors were been in seven times as first authors, 1 (0.034 %) of author were been in only nine times as first authors and 1 (0.034 %) of author were been in fourteen times as first authors respectively. It can be further noted from the table 1 that upto 6th rank, 19 authors are from editorial board member of this journal.

Table 2 Relative growth rate and doubling time

Year	Total	Cum.	$Log_e 1^p$	$Log_e 2^p$	Rt(P)	Dt (P)

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

	articles	articles				
1999	**257**	257	-	5.549	-	-
2000	234	491	5.549	5.455	0.094	7.372
2001	232	723	5.455	5.447	0.009	77.0
2002	221	944	5.447	5.398	0.049	14.143
2003	217	1161	5.398	5.380	0.018	36.47
2004	203	1364	5.380	5.313	0.067	10.5
2005	172	1536	5.313	5.147	0.166	4.174
2006	153	1689	5.147	5.030	0.117	5.923
2007	149	1838	5.030	5.004	0.026	25.26
2008	124	1962	5.004	4.820	0.184	3.786
2009	139	2101	4.820	4.934	0.114	6.078
2010	152	2253	4.934	5.024	0.089	7.786
2011	125	2378	5.024	4.828	0.196	3.553
2012	118	2496	4.828	4.771	0.058	11.94
2013	131	2627	4.771	4.875	0.105	6.6
2014	142	2769	4.875	4.956	0.081	8.662
2015	104	2873	4.956	4.644	0.311	2.228
Total	**2873**				**1.684 (0.09)**	**231.475 (13.6)**

It can be observed from table 2 predicts data of relative growth rate and doubling time for total research output. It is observed that its relative growth rates have contracted progressively from 0.094 at 1999 to 0.311 in the year of 2015. The whole study period sample mean relative growth rate is 0.09. Contrary to this, the Doubling Time for publication research output has decreased from 7.372 years at 1999 to 2.228 years at 2015. During the study period doubling time value is 13.6 years. More than fifty percent of articles were produced by only seven years, i.e. 1999 to 2005, remaining ten years were produced another fifty percent of articles.

Relative growth rate has shown wealthy trend, which means the rate of increase is low in terms of segment, and this has been highlighted by doubling time for publications, which is more than the relative growth rate. Hence the **first hypothesis** (The relative growth rate of total scientific publications shows a declining trend and the doubling time for publications reflects an increasing trend; There is extensive level of increase in the growth of research output, indicating the progressive of research performance) noted in chapter 3 has been substantiated.

Table: 3 Analysis of Institutions wise distribution

S. No	Institutions	No. of Recs.	Rank
1	Punjab University	128	1

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

2	Banaras Hindu University	87	2
3	Indian Veterinary Research Institute (IVRI)	69	3
4	University of Calcutta	68	4
5	University of Delhi	60	5
6	University Institute of Pharmaceutical Sciences	53	6
7	Jawaharlal Nehru University	52	7
8	Institute of Medical Sciences	48	8
9	Indian Agricultural Research Institute (IARI)	47	9
10	All India Institute of Medical Sciences (AIIMS)	39	10
11	Indian Institute of Technology Madras	36	11
12	University of Madras	35	12
13	Annamalai University	33	13
14	Jadavpur University	31	14
15	Kasturba Medical College & Centre for Basic Sciences	30	15
16	CCS Haryana Agricultural University	27	16
17	JiwajiUniversitty	27	16
18	Indian Institute of Chemical Biology	23	17
19	University College of Medical Sciences & Guru TegBahadur Hospital	23	17
20	Bharathidasan University	22	18
21	North-Eastern Hill University	22	18
22	Bhabha Atomic Research Center	21	19
23	Central Drug Research Institute	21	19
24	University of Kerala	21	19
25	University of Mysore	21	19
26	University of Pune	21	19
27	Centre for Advanced Studies	19	20
28	Madurai Kamaraj University (MKU)	19	20
29	University of Rajasthan	19	20
30	Osmania University	18	21
31	Maulana Azad Medical College	17	22
32	Post Graduate Institute of Medical Education and Research (PGIMER)	17	22
33	G.B Pant University of Agriculture and Technology	15	23
34	Institute of Nuclear Medicine and Allied Sciences	15	23
35	International Institute of Biophysics	15	23
36	National Dairy Research Institute	15	23
37	Aligarh Muslim University	14	24

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

38	Central Food Technological Research Institute	14	24
39	Laboratory of Toxinology& Experimental Pharmacodynamics	14	24
40	Tata Memorial Centre	14	24
41	University of Kalyani	14	24
42	Central Institute of Freshwater Aquaculture	13	25
43	National Chemical Laboratory (CSIR)	13	25
44	University College of Science & Technology	13	25
45	Amala Cancer Research Center	12	26
46	Chittaranjan National Cancer Institute	12	26
47	Hamdard University	12	26
48	Indian Institute of Science	12	26
49	Industrial Toxicology Research Centre	12	26
50	Jawaharlal Institute of Post graduate Medical Education and Research	12	26

The above table 3 indicates that the institution wise research productivity on IJEB during 1999 to 2015. Totally 1526 various institutions were brought out the research output the sample data.

The "Punjab University" has produced 128 publications with stood in first rank position. Next to that "Banaras Hindu University" has contributed 87 publications stood in second rank position; "Indian Veterinary Research Institute (IVRI)" has contributed 69 publications with stood in third rank position respectively.

Followed by the "University of Calcutta" has contributed 68 articles, "University of Delhi" has contributed 60 publications, "University Institute of Pharmaceutical Sciences" has contributed 53 publications and "Jawaharlal Nehru University" has contributed 52 publications. And remaining institutions were having below 400 articles. They do vary from one institution to another.

Out of 50 institutions, only five universities from Tamilnadu state to contributed articles in IJEB. Among those five the "Indian Institute of Technology, Madras" has contributed 36 articles, "University of Madras" has contributed 35 articles, "Annamalai University" has contributed 33 articles, "Bharathidasan University" has contributed 22 articles and "Madurai Kamaraj University" has contributed 19 articles in the IJEB respectively.

It could be concluded from the above discussion that the institution of "**Punjab University"** is active institution. The selected 50 institutions were not having equal productivity. **"Banaras Hindu University" is a major contributed in IJEB in Indian institutions" (Hypothesis no. 4) is not valid.**

Table:4 Department wise productivity

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

S.No	Subjects	No. of articles	Percentage
1	Zoology	304	10.58
2	Biochemistry	271	9.43
3	Pharmacology	269	9.36
4	Biotechnology	147	5.12
5	Microbiology	124	4.32
6	Botany	121	4.21
7	Physiology	119	4.14
8	Biology	79	2.75
9	Life Sciences	70	2.44
10	Biosciences	64	2.23
11	Pharmacy	47	1.64
12	Pharmaceutical Sciences	46	1.60
13	Chemistry	38	1.32
14	Animal Science	37	1.29
15	Genetics	35	1.22
16	Anatomy	32	1.11
17	Animal Biotechnology	30	1.04
18	Veterinary Microbiology	30	1.04
19	Pharmacognosy	28	0.97
20	Biophysics	27	0.94
21	Environmental Sciences	27	0.94
22	Pathology	27	0.94
23	Pharmaceutical Sciences and Technology	27	0.94
24	Biochemistry and Biotechnology	26	0.90
25	Pharmacology and Physiology	24	0.84
26	Pharmaceutics	23	0.80
27	Immunology	22	0.77
28	Medicinal Chemistry	20	0.70
29	Biochemistry & Molecular Biology	19	0.66
30	Plant Biotechnology	19	0.66
31	Entomology	17	0.59
32	Molecular Biology	16	0.56
33	Radiation Biology	16	0.56
34	Neurophysiology	15	0.52
35	Pharmaceutical Sciences and Drug Research	15	0.52
36	Pharmacology &Taxicology	15	0.52
37	Plant Physiology	15	0.52
38	Plant Science	15	0.52
39	Bacteriology Mycology	14	0.49
40	Molecular Biology & Genetic Engineering	14	0.49
41	Physics	14	0.49

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

42	Agricultural Microbiology	13	0.45
43	Biomedical Engineering	13	0.45
44	Cell Biology	12	0.42
45	Chemical Engineering and Technology	12	0.42
46	Science	12	0.42
47	Plant Pathology	11	0.38
48	Agricultural & Food Engineering	10	0.35
49	Biotechnology and Molecular Biology	10	0.35
50	Molecular Medicine	10	0.35

The above table 4 discussed the department of "Biology" department has contributed 79 articles; the department of "Life Sciences" department has contributed 70 articles; the department of "Biosciences" department has contributed 64 articles; the department of "Pharmacy" department has contributed 47 articles; the department of "Pharmaceutical Sciences" department has contributed 46 articles; the department of "Chemistry" department has contributed 38 articles; the department of "Animal Science" department has contributed 37 articles; the department of "Genetics" department has contributed 35 articles; the department of "Anatomy" department has contributed 32 articles; the department of "Animal Biotechnology" department has contributed 30 articles; and the department of "Veterinary Microbiology" department has contributed 30 articles respectively. Remaining departments were produced below 30 articles.

It could be found from this analysis, the departments of "Zoology"; "Biochemistry"; "Pharmacology"; "Biotechnology"; "Microbiology"; "Botany" and "Physiology" were contributing more numbers of articles in IJEB during 1999 to 2015.

Findings and Conclusion.

1. Out of 2873 articles, 2079 (72.36%) of authors were been in only one time as first author position.
2. It is observed that its relative growth rates have contracted progressively from 0.094 at 1999 to 0.311 in the year of 2015.
3. Punjab University has produced 128 publication with stood in first rank position.
4. Department of Zoology have published highest number of articles for the study period with 304 records.

Reference

1. Abdi, Idris, N., Alguliyev, R. M., and Aliguliyev, R. M., (2018) ,"Bibliometric Analysis of IP&M Journal (1980–2015)", *Journal of Scientometric Research*, vol. 7, no. 1, pp. 54-62, 2018.BibTex.
2. 8.Subhodip Bid. (2016) stated an Indian Institute of Technology, Kharagpur; A Scientometric study of Research Output. Scientific Society of Advanced Research and

ISSN: 2235-767X
Volume 07 Issue 05
May 2019

Social change SSARSC *International Journal of Library Information Network and Knowledg*e 1(1),1-15.

3. Elango B. &Rajendran P. (2017) Scientometric analysis of Tribology Research in African Countries, International Research: Journal of Library & Information Science, 7(1), 132-143.
4. Khiste G.P.(2017) Publication Productivity of "Consortia" by Scopus during 1989-2016, International Journal of Current Innovation Research, 3(1) 879-882.
5. Khiste G.P. &PaithankarR.R(2017) Mapping of the Literature on "Bibliometric" by using Science Direct during 2005-2016, New Man International Journal of Multidisciplinary Studies, 4(9),89-93.
6. Kumar, A. &Mohindra, R. (2015), Gibliometric analysis on knowledge management research. International Journal of Information dissemination and Technology, 54(2), 106-113.
7. Nove E. Variant Anna (2018) Library and Information (LIS) Research Topics in Indonesia from 2006 to 2017, Library Philosophy and Practice (e-journal) (http://dogota; cp,,pms.unl.edu/libphilprac/1773)