Highly Cited Papers from Annamalai University, Annamalainagar

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Abstract

This article presents the highly cited papers from Annamalai University using different bibliometric approach both quantitative and qualitative methods. Bibliographic data for the study has been collected from Web of Science online database. A search was conducted with the phrase 'Annamalai University' in the address field and restricted to i10 papers only. Researcher have published 6224 publications with 66473 Global Citations Scores (H-Index: 78), which were published between 1989-2017 and average citations of 10.68. Then filter to highly cited publications i.e. with the minimum of 10 citations (mean i10 index papers) were selected and 1962 publications which were used for further data analysis. Moreover it has identified Institutional and Countries wise collaboration of the research. 40 papers are received more than 100 citations

Keywords

Institutional repository; Digital library; Project management methodology; Knowledge management; Library; Open access

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INTRODUCTION

patterns of publications and citations, H-index, Impact Factor, Highly cited Papers, Highly cited references, dominant subject domain, most productive and cited authors, source etc., Biblographic data retrieved from database that number of citations from other document that they received. Bibliometrics can help assess the academic impact of research, as well as help identify leading organizational entities and units within the research community. From a practical point of view, it is a helpful technique because it allows us to quantify evidence on research performance in a clear and comparable way, with some caveats (described in the next section). In summary, bibliometrics can be an 'objective' source of evidence for informing prospective R&D decision making, particularly when used in conjunction with other evaluation methods

OBJECTIVES OF THE STUDY

Broadly, the study has carried out the bibliometric analysis consisted of the following objectives:

- To find the highly cited papers, which has received the minimum of 10 citations (i10-Index papers)
- To find the cited document by the authors.
- To identify the year wise distribution of highly cited papers.
- To identify the dominant subject domain and citations impact.
- To identify the Institutional and country wise research collaboration.
- To identity the most preferred source titles.
- To identify the most productive authors and their citations, H-Index, Average Citations per article etc.,

METHODOLOGY

Bibliographic data for the study has been collected from Web of Science online datbase. A search was conducted with the phrase 'Annamalai University' in the address field and restricted to i10 papers only. Database has indexed 6224 publications with 66473 Global Citations Scores (H-Index: 78), which were published between 1989-2017 and average citations of 10.68.Then filter to highly cited publications i.e. with the minimum of 10 citations (mean i10 index papers) were selected and 1962 publications which were used for further data analysis. Authors were identified by name, department and subject domain.

Moreover it has identified Institutional and Countries wise collaboration of the research. 40 papers have received more than 100 citations and the highest number of citation by K. Kathiresan (Title: Biology of mangroves and mangrove ecosystems, *Advances in Marine Biology*) with 410 and the paper has collaboration with Bingham from USA followed by M. Srinivasan from Department of Biochemistry and Biotechnology with 293 Citations.

DATA ANALYSIS AND INTERPRETATIONS

Year wise distribution of Highly cited papers

A total of 1,962 Publications were identified as highly cited among the 6216 Publications. Table 1 shows that the highly cited papers from Annamalai University were published during 1989-2017. Most of the highly cited articles (83.8%) were published from 2003-2014. The highest number of highly cited papers was published in the 2011 with 196. In general, peak of citations was found in the 2007 with 6563 followed in the year of 2008 with 5718 citations.

Table 1: Year wise distribution of Highly cited papers

Year	Records	%	TGCS	Year	Records	%	TGCS
2011	196	10.0	4725	1999	35	1.8	971
2008	192	9.8	5718	2000	30	1.5	924
2007	189	9.6	6563	1997	28	1.4	649
2010	177	9.0	5000	2001	27	1.4	1204
2009	170	8.7	4847	1998	22	1.1	507
2012	149	7.6	3074	1992	14	0.7	404
2006	125	6.4	4979	1993	14	0.7	341
2013	116	5.9	2209	1996	12	0.6	230
2004	97	4.9	3310	2016	12	0.6	207
2005	88	4.5	2843	1991	11	0.6	360
2014	86	4.4	1344	1994	9	0.5	131
2003	58	3.0	1792	1995	9	0.5	193
2002	47	2.4	1498	1990	7	0.4	204
2015	36	1.8	519	1989	6	0.3	138
Total	**1962**	**100.00**	**54884**	**Total**	**1962**	**100.00**	**54884**

Research Collaboration

Table 2 depicts the extent of International collaboration research of Annamalai University. It is clearly observed from the table that U.S.A has the maximum number of contribution with 75 publications and received 2926 citations followed by Japan with 54 with 2633, Italy with 41, South Korea with 28 and People R China with 23.

Table 2: Research collaboration of highly cited papers

Country	Records	TGCS	Country	Records	TGCS
USA	75	2926	New Zealand	3	74
Japan	54	2633	Russia	3	309
Italy	41	736	Saudi Arabia	3	64
South Korea	28	879	Switzerland	3	83
Peoples R China	23	1619	Cambodia	2	130
Turkey	23	597	Germany	2	44
Malaysia	21	824	Hong Kong	2	75
Canada	16	337	Iran	2	27
France	14	576	Israel	2	104
Philippines	14	1039	Mexico	2	30
UK	14	818	Pakistan	2	175

Singapore	10	330	Tunisia	2	174
Oman	9	162	Austria	1	196
Vietnam	8	741	CISKEI	1	49
Taiwan	7	194	Denmark	1	196
U Arab Emirates	7	433	Egypt	1	10
Argentina	5	115	Ethiopia	1	50
Australia	5	301	Ireland	1	17
Indonesia	5	619	JAMAICA	1	49
Brazil	4	309	Kuwait	1	13
Czech Republic	4	51	Netherlands	1	14
Finland	4	78	Slovakia	1	10
Poland	4	483	South Africa	1	39
Portugal	4	76	Tanzania	1	11
Bahrain	3	48	Thailand	1	104
Belgium	3	232	ZIMBABWE	1	49
Hungary	3	53			

Table 3: Institution wise distribution of Collaborated papers

S.No.	Institution	Records	TLCS	TGCS
1	Anna University	33	53	1034
2	Ehime University	24	75	1598
3	Jawaharlal Nehru University	23	39	556
4	Indian Inst Technology	19	28	621
5	Bharathiar University	18	12	411
6	University Kerala	18	38	619
7	Sathyabama University	17	20	564
8	CNR	16	27	310
9	Pukyong Natl University	16	26	401
10	Ahi Evran University	15	5	395
11	Natl Phys Lab	12	48	462
12	University Madras	12	19	263
13	Govt Arts Coll	11	26	195
14	Sri Aravindar Arts & Sci Coll	11	30	396
15	AVC Coll	10	7	245
16	Indira Gandhi	10	4	276
	Ctr Atom Res			
17	University Pisa	10	11	185
18	Bharathidasan University	9	8	171
19	CSIR	9	4	261
20	De La Salle University	9	6	410

Institution wise distribution of Collaborated papers

Table 3 presents contributions of top 50 institutes based on publications with Citations. In this category first positions is occupied by Anna University with 33 publication and received 1034 Global citations Scores followed by Ehime University with 24 (1598 Citations), JNU with 23 publications (556 Citations) Indian Institute of Technology with 19 Publication and received 621 Citations. The remaining Institutions are listed in the below table with Publications and Citations.

Department wise distribution of Publications

Table 4 presents data of Schools/Department contribution based on number of Publications with Global Citations Scores. The first position is occupied by Department of Chemistry with 437 Publications and received 11534 Citations followed by Dept Biochemistry & Biotechnology with 185 Publications (5020 Citations), Department of Physics with 158 Publications (3111 Citations) and remaining departments and schools are ranked in the below table.

Table 4: Institution with Subdivision of Highly Cited papers

S.No	Institution with Subdivision	Records	%	TLCS	TGCS
1	Department of Chemistry	437	26.0	1235	11534
2	Dept Biochemistry & Biotechnology	185	9.4	203	5020
3	Department of Physics	158	8.0	204	3111
4	Centre Adv Study Marine Biology	154	7.8	272	5280
5	Dept Biochemistry	120	7.0	277	4291
6	Dept Manufacturing Engineering	118	6.0	117	3387
7	Department of Zoology	76	3.9	239	2012
8	Dept Botany	74	4.0	413	3228
9	Dept Phys Engineering	35	1.8	40	1146
10	Dept Earth Science	34	1.7	40	622

Source title wise distribution of publications

Table 5 listed with top 20 source title with Impact Factor. Spectrochimica Acta Part A-Molecular and Biomolecular Spectroscopy has the highest number of publications with 158 (4090 citations) followed by Materials & Design with 40 publication (1282 citations). Journal of Hazardous Materials has the highest number of impact factor is 4.83 and indexed 16 paper with 645 citations.

Table 5: Source title wise distribution of publications

S.No	Journal	Impact Factor	Records	TGCS	TLCR
1	SPECTROCHIMICA ACTA PART A-MOLECULAR AND BIOMOLECULAR SPECTROSCOPY	2.10	158	4090	443
2	MATERIALS & DESIGN	3.50	40	1282	55
3	EUROPEAN JOURNAL OF PHARMACOLOGY	2.73	36	955	77
4	PARASITOLOGY RESEARCH	2.35	31	942	174
5	JOURNAL OF ENVIRONMENTAL BIOLOGY	0.64	27	466	51
6	COLLOIDS AND SURFACES B-BIOINTERFACES	4.15	26	1217	135
7	JOURNAL OF ETHNOPHARMACOLOGY	3.0	22	1009	30
8	JOURNAL OF MEDICINAL FOOD	1.84	22	432	51
9	CHEMICO-BIOLOGICAL INTERACTIONS	2.58	21	584	49
10	PHYTOTHERAPY RESEARCH	2.66	21	745	29
11	FOOD AND CHEMICAL TOXICOLOGY	3.58	18	395	34
12	INDIAN JOURNAL OF PURE & APPLIED PHYSICS	0.74	18	367	13
13	JOURNAL OF MOLECULAR STRUCTURE	1.60	18	357	47
14	CLINICA CHIMICA ACTA	2.53	16	677	8
15	INDIAN JOURNAL OF CHEMISTRY SECTION A-INORGANIC BIO-INORGANIC PHYSICAL THEORETICAL & ANALYTICAL CHEMISTRY	0.73	16	263	51
16	JOURNAL OF HAZARDOUS MATERIALS	4.83	16	645	23
17	EUROPEAN JOURNAL OF MEDICINAL CHEMISTRY	3.45	15	459	51
18	INDIAN JOURNAL OF MARINE SCIENCES	0.32	15	250	5
19	INTERNATIONAL JOURNAL OF ADVANCED MANUFACTURING TECHNOLOGY	1.78	15	442	9
20	JOURNAL OF FLUORESCENCE	2.61	15	287	71

Ranking of Authors based on Publications

Table 6 present the rankings for authors based on Publications. 457 authors have published ten and above publications out of 7234 authors. The highest number of publications published by S. Balasubramanian with 232 Publications and received 3252 Citations (H-index 28) followed by Jayabarathi with 206 Publications and received 1422 Citations (H-index 18). Menon ranked first in order based on H-index with 36 for 159 Publications.

Table 6: Ranking of authors based on Publications

S.No	Author	Publications	H Index	I10 Index	Citation	ACPA
1	Menon VP	159	36	109	4133	25.99
2	Swaminathan M	168	34	101	4331	25.78
3	Balasubramanian V	232	28	96	3252	14.02
4	Nagini S	151	30	96	2630	17.42
5	Pari L	108	31	81	2540	23.52
6	Sundaraganesan N	127	30	76	2759	21.72
7	Karunakaran C	179	24	69	2015	11.26
8	Prince PSM	84	25	61	2027	24.13
9	Anuradha CV	96	25	59	1754	18.27
10	Jayabharathi J	206	18	51	1422	6.90
11	Jaleel CA	69	29	50	2479	35.93
12	Nalini N	101	22	48	1798	17.80
13	Panneerselvam R	64	28	47	2257	35.27
14	Kathiresan K	108	20	43	2124	19.67
15	Pugalendi KV	82	20	43	1246	15.20
16	Govindarajan M	100	21	42	1280	12.80
17	Manoharan S	73	17	41	1155	15.82
18	Rajendiran N	88	21	41	1122	12.25
19	Krishnakumar B	58	22	38	1280	22.07
20	Thanikachalam V	160	16	37	1033	6.46

Ranking of Authors based on Citations

Table 7 shows the ranking of the authors by the total number of citations received. N. Swaminathan is ranked number one with 4105 citations for 101 Publications, followed by Menon with 3952 Citations for 109 Publications, V. Balasubramanian with 2755 Citations for 96 Papers. The remaining authors of the citations are listed in the below table. 23 Authors are received 1000 and above citations.

Highly cited papers

Highly Cited paper is identified through papers are arranged in descending order according to Citations. This method has been used to identify Highly Cited authors. Prof. Kathiresan from Department of Marine Science has received the highest number of citations with 406 and it published in Advances in Marine Biology (Chidambram area is popular for Mangroves) followed by Prof. Srinivasan from department of Chemistry with 291 citations. The rest of the papers with citations are listed in the below table

Table 7: Ranking of authors based on Citations

S.No	Author	Records	%	TGCS	TLCR
1	Swaminathan M	101	5.1	4105	404
2	Menon VP	109	5.6	3952	204
3	Balasubramanian V	96	4.9	2755	116
4	Sundaraganesan N	76	3.9	2537	117
5	Nagini S	96	4.9	2428	307
6	Pari L	81	4.1	2402	158
7	Jaleel CA	50	2.5	2383	410
8	Panneerselvam R	47	2.4	2167	386
9	Kathiresan K	43	2.2	1919	82
10	Prince PSM	61	3.1	1909	84
11	Tanabe S	27	1.4	1753	78
12	Karunakaran C	69	3.5	1653	131
13	Nalini N	48	2.4	1616	74
14	Anuradha CV	59	3.0	1581	86
15	Manivannan P	27	1.4	1549	229
16	Muruganandham M	17	0.9	1282	45
17	Subramanian A	17	0.9	1223	49

18	Krishnakumar B	38	1.9	1199	198
19	Govindarajan M	42	2.1	1130	255
20	Pugalendi KV	43	2.2	1119	32

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Table 8: Highly cited papers from Annamalai University

S.No	Date / Author / Journal	GCS	CR
1	198 Kathiresan K, Bingham BL, Biology of mangroves and mangrove ecosystems, Advances in Marine Biology, VOL 40. 2001; 40: 81-251	406	1025
2	652 Srinivasan M, Sudheer AR, Menon VP Ferulic acid: Therapeutic potential through its antioxidant property, JOURNAL OF CLINICAL BIOCHEMISTRY AND NUTRITION. 2007; 40 (2): 92-100	291	77
3	613 Sobana N, Muruganadham M, Swaminathan M, Nano-Ag particles doped TiO2 for efficient photodegradation of Direct azo dyes JOURNAL OF MOLECULAR CATALYSIS A-CHEMICAL. 2006 OCT 2; 258 (1-2): 124-132	273	59
4	288 Monirith I, Ueno D, Takahashi S, Nakata H, Sudaryanto A, et al. , Asia-Pacific mussel watch: monitoring contamination of persistent organochlorine compounds in coastal waters of Asian countries, MARINE POLLUTION BULLETIN. 2003 MAR; 46 (3): 281-300	261	59
5	657 Menon VP, Sudheer AR , Antioxidant and anti-inflammatory properties of curcumin MOLECULAR TARGETS AND THERAPEUTIC USES OF CURCUMIN IN HEALTH AND DISEASE. 2007; 595: 105-125	259	109
6	493 Sundaraganesan N, Ilakiamani S, Saleem H, Wojciechowski PM, Michalska D FT Raman and FT IR spectra, vibrational assignments and density functional studies of 5-bromo-2-nitropyridine, SPECTROCHIMICA ACTA PART A-MOLECULAR AND BIOMOLECULAR SPECTROSCOPY. 2005 OCT; 61 (13-14): 2995-3001	247	24
7	566 Sazawal S, Hiremath G, Dhingra U, Malik P, Deb S, et al. , Efficacy of probiotics in prevention of acute diarrhoea: a meta-analysis of masked, randomised, placebo-controlled trials, LANCET INFECTIOUS DISEASES. 2006 JUN; 6 (6): 374-382	237	58
8	497 Kathiresan K, Rajendran N , Coastal mangrove forests mitigated tsunami, ESTUARINE COASTAL AND SHELF SCIENCE. 2005 NOV; 65 (3): 601-606	214	15
9	401 Muruganandham M, Swaminathan M Photochemical oxidation of reactive azo dye with UV-H2O2 process, DYES AND PIGMENTS. 2004 SEP; 62 (3): 269-275	203	17
10	517 Muruganandham M, Swaminathan M Photocatalytic decolourisation and degradation of Reactive Orange 4 by TiO2-UV process DYES AND PIGMENTS. 2006; 68 (2-3): 133-142	197	32

Highly Collaborated Authors

Table 9 indicates number of authors contributed for single paper. A total of 7134 authors are contributed 1962 Publications and received 54884 Citations and papers are ranked based on number of authors. Singh R, Singh Y, Xalaxo S, Verulkar S, Yadav N, et al. ranked first (From QTL to variety-harnessing the benefits of QTLs for drought, flood and salt tolerance in mega rice varieties of India through a multi-institutional network PLANT SCIENCE. 2016) with 52 authors followed by Polidoro BA, Carpenter KE, Collins L, Duke NC, Ellison AM, et al. The Loss of Species: Mangrove Extinction Risk and Geographic

Areas of Global Concern PLOS ONE. 2010 with 21 authors and remaining highly collaborated authors papers are listed in the below table.

Table 9: Highly collaborated Authors

S.No	Date / Author / Journal	GCS	NA
1	1953 Singh R, Singh Y, Xalaxo S, Verulkar S, Yadav N, et al. From QTL to variety-harnessing the benefits of QTLs for drought, flood and salt tolerance in mega rice varieties of India through a multi-institutional network, PLANT SCIENCE. 2016 JAN; 242: 278-287	10	52
2	1244 Polidoro BA, Carpenter KE, Collins L, Duke NC, Ellison AM, et al., The Loss of Species: Mangrove Extinction Risk and Geographic Areas of Global Concern, PLOS ONE. 2010 APR 8; 5 (4): Art. No. e10095	188	21
3	1477 Vang O, Ahmad N, Baile CA, Baur JA, Brown K, et al. , What Is New for an Old Molecule? Systematic Review and Recommendations on the Use of Resveratrol, PLOS ONE. 2011 JUN 16; 6 (6): Art. No. e19881	196	21
4	1849 Joshanloo M, Lepshokova ZK, Panyusheva T, Natalia A, Poon WC, et al. , Cross-Cultural Validation of Fear of Happiness Scale Across 14 National Groups, JOURNAL OF CROSS-CULTURAL PSYCHOLOGY. 2014 FEB; 45 (2): 246-264	13	19
5	288 Monirith I, Ueno D, Takahashi S, Nakata H, Sudaryanto A, et al. , Asia-Pacific mussel watch: monitoring contamination of persistent organochlorine compounds in coastal waters of Asian countries, MARINE POLLUTION BULLETIN. 2003 MAR; 46 (3): 281-300	261	16
6	120 Sakagami H, Kashimata M, Toguchi M, Satoh K, Odanaka Y, et al. , Radical modulation activity of lignins from a mangrove plant, Ceriops decandra (Griff.) Ding Hou, IN VIVO. 1998 MAY-JUN; 12 (3): 327-332	19	13
7	293 Minh NH, Minh TB, Watanabe M, Kunisue T, Monirith I, et al. , Open dumping site in Asian developing countries: A potential source of polychlorinated dibenzo-p-dioxins and polychlorinated dibenzofurans, ENVIRONMENTAL SCIENCE & TECHNOLOGY. 2003 APR 15; 37 (8): 1493-1502	73	13
8	334 Ueno D, Inoue S, Takahashi S, Ikeda K, Tanaka H, et al. , Global pollution monitoring of butyltin compounds using skipjack tuna as a bioindicator, ENVIRONMENTAL POLLUTION. 2004; 127 (1): 1-12	42	13
9	535 Sepede G, De Berardis D, Gambi F, Campanella D, La Rovere R, et al. , Olanzapine augmentation in treatment-resistant panic disorder - A 12-week, fixed-dose, open-label trial JOURNAL OF CLINICAL SYCHOPHARMACOLOGY. 2006 FEB; 26 (1): 45-49	28	13
10	1729 Suresh R, Kamalakkannan D, Ranganathan K, Arulkumaran R, Sundararajan R, et al. , Solvent-free synthesis, spectral correlations and antimicrobial activities of some aryl imines SPECTROCHIMICA ACTA PART A-MOLECULAR AND BIOMOLECULAR SPECTROSCOPY. 2013 JAN 15; 101: 239-248	11	13

FINDINGS AND CONCLUSION

Based on the analysis undertaken the present study, the following findings are drawn

- The study found that 15 authors published range of papers from 100-232 and 32 authors have published 50-99 papers.
- The study found that 23 authors received more than 1000 citations and the range of Citations is 10-4105. Swaminathan from Department of Chemistry ranked first with 4105 Citations.
- The study found that 1319 papers does n't has citations.
- The study found that 4905 papers received citations and range of citations is 1-406.
- The study found that Spectrochimica Acta Part A-Molecular and Biomolecular Spectroscopy has the highest number of publications with 158

(4090 citations)the range of impact factor 1-4.83.

- The study found that 505 papers published in open access journals.
- The study found that Chemistry is the dominant subject domain with 1490 publications and received 13464 citation (h-index 43) followed by Physics subject domain.

It is concluded that it is important to identify the highly-cited of Annamalai University and also to characterize the overall citation landscape. We hope that this paper will encourage further study about other universities towards analysis and formal characterization of the highly-cited papers.

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