

Mapping Research Contributions of Assam University: A Scientometric Study

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Abstract

Metrics studies have an important role in understanding the growth of a discipline and assist in designing national policies for implementation and improving. This study is a scientometric study examining the research contribution of Assam University (A.U), Central University in Assam. In this study period, i.e. from 2000 to 2015 the numbers of bibliographic records found were 714. The average output of the organization was 45 publications per year; the peak was 143 items in 2014 and the minimum was 2 items in the year 2000. In the study period, a total of 3172 citations were found for the 714 records.

Keywords: Bibliometrics, Scientometrics, Collaboration Pattern, Citation Analysis, Web of Science (WoS).

1. Introduction

Assam University is a teaching-cum-affiliating public university devoting itself in the pertaining of education and research. It was established in the year 1994 with the affiliation of UGC. The university is situated at Silchar, Assam, India. It is having a great role in scientific research.

Metrics studies have an important role in understanding the growth of a discipline and assist in designing national policies for implementation and improving. Scientometrics is the science of measuring and analysing science research is often done using bibliometrics which is a measurement of the impact of (scientific) publications. Modern scientometric is mostly based on the work of Derek J. de Solla Price and Eugene Garfield. In this study, an attempt has been made to analyse the research output of Assam University towards the field of science using different metrics.

2. Literature Review

A number of quantitative studies based on bibliometrics and scientometrics were consulted to know research productivity of individuals, organization, countries etc. To access development of science these studies are very helpful along with to resource management of libraries.

Dutta and Nikam (2013) examines solar cell research in India as revealed by the publications indexed in Web of Science (WoS) for a period of 20 years from 1991 to 2010 in the paper Solar cell research in India: A scientometric profile. This paper helps to get the idea of application of different metrics.

Gupta (2012) in his paper Scientometric Analysis of Pakistan's S & T research output examined the research output of Pakistan for the period 2001-10 on several parameters.

Thirumagal, Devi and Sethukumari (2012) examined authorship pattern and global research productivity of heart disease which helped to gather knowledge of authorship pattern.



Narongrit et al (2011) studied the research output of ASEAN countries and universities in the field of energy and fuel which can be consulted mainly to get the information about getting research output.

Parvathamma and Gobbur (2008) studied on N.T.M Aminabhavi which reveals that most of his publications were towards foreign journals.

Barooh and Sharma (1999) in their paper bibliometric study of doctoral dissertations in organic chemistry submitted by S & T Workers of RRL, Jorhat to evaluate the utility factor of the library discussed about the research contributions of S&T workers in the field of organic chemistry and total of 4253 citations were found for the dissertations.

Apart from the above mentioned documents, more documents were consulted which has been mentioned in the bibliography.

3. Objectives of the Study

The following are the main objectives of this study:

- ❖ Examining the research output of Assam University.
- ❖ Year wise distribution of authorship pattern.
- ❖ To calculate authors productivity.
- ❖ To study degree of relationship between main and co-author.
- ❖ To calculate institutional collaboration pattern.
- ❖ Citation pattern analysis.

4. Methodology

WoS has been used to collect and download the publication data. All the bibliographic records are retrieved from WoS. Search expression used for the purpose is "Adress=(Assam Univ) AND Year Published=(2000-2015)".

WoS retrieved total records of 714 publications data and were downloaded and exported to MS-Excel Worksheet. Quantitative analysis using Bibliometrics and Scientometrics indicators, methods and techniques are used here.

5. Analysis

Following tables represent the quantitative performance of A.U through different metrics.

5.1. Year Wise Distribution of Publications

Assam University is showing a rising publication trend for the distribution of 714 items but with the exception in 2003, and 2005 (Table-1). The rise in the other years might be due to some scholarly events like seminar, workshop, conference, lecture etc. 45 publications per year is the average output of the organization; the peak is 143 items in 2014 and the minimum is 2 items in the year 2002.

Table 1: Chronological Distribution of Publications

Year	Contribution	Cumulative No.	% Share	Cumulative %
2000	2	2	0.28	0.28
2001	3	5	0.42	0.7
2002	7	12	0.98	1.68
2003	6	18	0.84	2.52
2004	7	25	0.98	3.5
2005	5	30	0.70	4.2
2006	9	39	1.26	5.46
2007	15	54	2.10	7.56
2008	23	77	3.22	10.78
2009	35	112	4.90	15.68
2010	57	169	7.98	23.66
2011	76	245	10.64	34.3
2012	88	333	12.32	46.62
2013	107	440	14.99	61.61
2014	143	583	20.03	81.64
2015	131	714	18.35	100

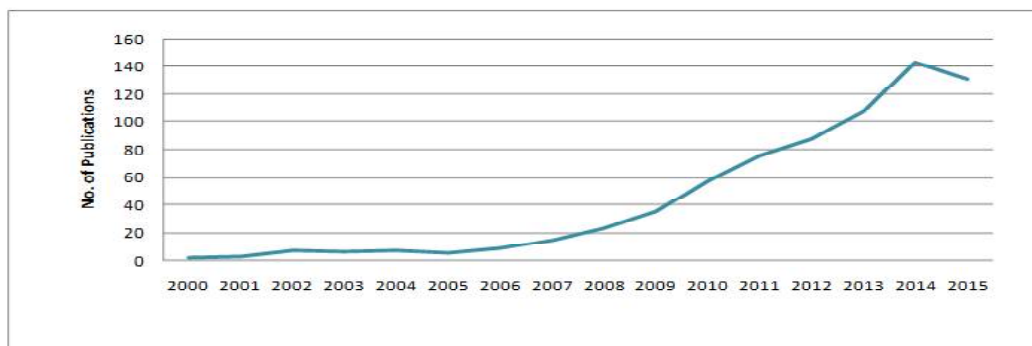


Figure 1: Chronological Distribution of Publications

5.2. Distribution by Document Types

While arranging the documents according to their types, it is seen that in this count, journal articles account for 90% share, followed by review (3%), letter (3%) and the remaining 4 % had appeared in many other publication types viz. proceeding paper, editorial materials, meeting abstract, book review etc. (Table-2)

Table-2: Distribution of Publications in Different Forms

TYPE	NUMBER	%
Journal Articles	645	90.34
Review	21	2.94
Letter	20	2.80
Proceeding Paper	13	1.82
Editorial Materials	6	0.84
Meeting Abstract	5	0.89
Book Review	2	0.28
Correction	2	0.28
Total	714	100.00

5.3. Authorship Collaboration Pattern

A very high collaborative manner is seen for the publications of this university. Single authorship accounted for 3%, while multi authorship accounted for 97 %. In particular, two- authored papers accounted for 21%, 3-5 authored papers accounted for 58% and six and more than six authored papers 18%.

Table-3: Distribution of Authorship among Publications

Year	Solo (1Au.)	Double (2 Au.)	Multi (3-5 Au.)	Mega (>6 Au.)	Total	%Total	D.C
2000	0	0	1	1	2	0.28	1
2001	0	1	2	0	3	0.42	1
2002	0	2	5	0	7	0.98	1
2003	0	2	3	1	6	0.84	1
2004	0	1	6	0	7	0.98	1
2005	0	2	2	1	5	0.70	1
2006	1	2	5	1	9	1.26	0.87
2007	3	5	7	0	15	2.10	0.8
2008	3	2	17	1	23	3.22	0.86
2009	0	10	24	1	35	4.90	1
2010	3	9	34	11	57	7.98	0.94
2011	1	15	50	10	76	10.64	0.98
2012	3	23	49	13	88	12.32	0.96
2013	1	21	59	26	107	14.99	0.99
2014	1	29	80	33	143	20.03	0.99
2015	5	26	69	31	131	18.35	0.96
Total	21	150	413	130	714	100	0.96(Average)
% of Total	2.94	21.01	57.84	18.21			

D.C.= Degree of Collaboration

Degree of Collaboration (D.C) is the measurement of ratio of collaborative publications and total number of publications. It is measured as 0.96 as average.

$$D.C = N_m / (N_m + N_s) = 683 / (683 + 21) = 0.96$$

Where, N_m refers to multi-authored (two or more) contributions while, N_s refers to number of single authored papers.

5.4. Institutional Collaboration in Research

A.U is found in collaboration with 119 institutions. The top 22 institutions accounted for about 49% share (Table-4). Karimganj College is found as the leading collaborative institute with a contribution of 7%. The other major institutes from India are Mizoram University (4%), NE Hill University (4%), Banaras Hindu University (3%), Indian Institute of Technology (3%), Jamia Millia Islamia University (3%), Gauhati University (2%) etc.

Table 4: Leading Collaborating Institutes of A. U

Sl. No	Other Collaborating Organization	Freq	% Share	Cum %
1	Karimganj College	24	7.14	7.14
2	Mizoram University	14	4.17	11.31
3	NE Hill University	14	4.17	15.48
4	Banaras Hindu University	11	3.27	18.75
5	Indian Institute of Technology	10	2.98	21.73
6	Jamia Millia Islamia University	10	2.98	24.71
7	Gauhati University	8	2.38	27.09
8	Slovak Univ of Agriculture	7	2.08	29.17
9	Jadavpur University	7	2.08	31.25
10	N Eastern Reg Institute of Science & Technology	6	1.79	33.04
11	Kalyani University	6	1.79	34.83
12	Guru Charan College	6	1.79	36.62
13	NERIST	6	1.79	38.41
14	Kobe University	5	1.49	39.9
15	Govt Kolasib College	4	1.19	41.39
16	Guru Charan College	4	1.19	42.58
17	Rajiv Gandhi University	4	1.19	43.77
18	Indian Institute of Astrophysics	4	1.19	44.96
19	IUCAA	4	1.19	46.15
20	University of Colorado	4	1.19	47.34
21	Delhi university	3	0.89	48.23
22	University of North Bengal	3	0.89	49.12

5.5. Preferred Journals for Research Communications

Total of 357 journal titles are found for the research output of A.U. Among these, top 10 titles accounted 43% share.

Table-5: Core Journal Titles for Research Communication

Name of the journal	Number	Frequency	Cum %
Current science	23	6.67	6.67
Liquid crystals	22	6.38	13.05
Indian journal of traditional knowledge	21	6.09	19.14
Journal of pure and applied microbiology	18	5.22	24.36
Plos one	14	4.06	28.42
Journal of environmental biology	13	3.77	32.19
Indian journal of physics	11	3.19	35.38
RSC advances	9	2.61	37.99
Journal of environmental science and health part a-toxic/ hazardous substances & environmental engineering	9	2.61	40.6
Monthly notices of the royal astronomical society	8	2.32	42.92

5.6. Citation Impact of Publication

During the study period, i.e. from 2000 – 2015 the publications of A.U received a total of 3172 citations. The average citation per item is 4.44. The number of highest citation received in 2011 is 559 citations with 76 publications.

Table-6: Citations of Publications

Year	Publication	Total Citations	Cumulative Citations	% of total Citations
2000	2	11	11	0.35
2001	3	6	17	0.19
2002	7	144	161	4.54
2003	6	58	219	1.83
2004	7	47	266	1.48
2005	5	74	340	2.33
2006	9	111	451	3.50
2007	15	137	588	4.32
2008	23	297	885	9.36

Year	Publication	Total Citations	Cumulative Citations	% of total Citations
2009	35	273	1158	8.61
2010	57	466	1624	14.69
2011	76	559	2183	17.62
2012	88	384	2567	12.11
2013	107	343	2910	10.81
2014	143	212	3122	6.68
2015	131	50	3172	1.58
TOTAL	714	3172		100

6. Conclusion

As the study tried to cover research papers from 2000 to 2015 for a period of 16 years, 714 contributions of A.U. are found in WoS. Since the time of establishment, A.U. is contributing with increasing trend towards International science. The study also confirms that scholarly publications constitute the best available basis to assess research performance. A.U. shows a good scenario of impressive progress in the fields of research.

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