



2. Impact of Research Output of All Central Universities in North East, India During 2016-2020: A Bibliometrics Study

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ABSTRACT

Purpose: *The aim of this study is to trace out the research output of Central Universities of North-East, India from 2016-2020 as reflected in the SCOPUS database.*

Methodology: *The present study is based on SCOPUS database core collection in terms of total publications in the last five years (2016-2020) in Central Universities. The study identified the research analysis (like Citation analysis, Publication quality and H-index) of all Universities in N.E. India.*

Finding: *In this study retrieved 7,981 documents consisting of research journal articles, review paper, and conference proceedings. The consistent growth of SCOPUS database has been observed at Tezpur University, Assam has the maximum publication during 2016-20. The study reflects that quality publication measurement between all related Universities.*

Originality: *This study is the original work of authors.*

KEYWORDS

Bibliometrics, Scopus, Publication analysis, Citation, h-index, Central University, North East India.

1. Introduction:

Before the independence of India, University education was poor in the North East state of India, there was no single university in this region. But after 1947, to rapidly change the scenario and support of the Government of India with the different states of North East have established many recognised universities under the different state acts or central universities act. Many universities have been working on research and innovation fields thus North East Region Universities also selected for this study and so there is a need to analyse their research outputs. University Grant Commission (UGC) plays a vital role on research publication, as the UGC norm every M.Phil. students should submit minimum 1 publication or every Ph.D scholar should be minimum 2 publication. Rapidly increasing the research output in every University, it is difficult to differentiate between quality and non quality research output. There are evaluating the research output through different Information sources. We select the data from SCOPUS because which is popular citation database in all over the world. In the Northeast region there are 10 central Universities. But we consider only 9 Central universities because these all central universities have many disciplinary subject areas. These universities are: Assam university, Assam, Tezpur University, Assam, Rajiv Gandhi University Arunachal Pradesh, Manipur University Manipur, North Eastern Hill University Meghalaya, Mizoram University Mizoram, Nagaland University Nagaland, Sikkim University Sikkim, Tripura University Tripura.

1.1 What is SCOPUS?

Scopus is Elsevier's abstract and citation database of research literature and quality web sources in the areas of health, life, physical and social sciences, launched in the Netherlands 2004. It is covering more than 36,000+ titles from approximately 11,678 publishers and of which 34,346 are peer-reviewed journals. It quickly finds relevant and authoritative research, identifies experts and provides access to reliable data, metrics and statistical analytical tools.

1.2 About Bibliometrics:

The term 'Bibliometrics' was given by Alan Pritchard in 1969 in his famous paper. (Pritchard,1969). Bibliometrics are the statistical analyses of research articles, books, conference proceedings and other publications. These analyses are used for author, researcher or institutional research output and their impact.

2 Objectives:

The main objectives of this study are to evaluate the research output of the Central Universities of North-East region of India during 2016-2020 using SCOPUS and to fulfil the following research objectives:

- To show year wise research publications of different Universities.
- To find the research publication of different Universities.
- To determine the cited rate of different Universities.
- To find the impact of research output of all Universities.
- To show the h-index of different Universities.

3 Scopes and Limitation:

The study area is limited to the Central Universities of North-East region (India), who offer many disciplinarians subject areas. The main limitation of this study is research output of all central universities in the North-East region between 2016 to 2020.

4. Review of Literature:

Several studies in recent times tried to perform publication analysis of research performance of N.E. region. Birender Pal and Merina Ahmed (2014) conducted a bibliometric analysis on the topic of Measuring the Publication Productivity of N.E- Indian Universities using SCOPUS. In this study, investigating the different types of published material (like articles, conference papers, review, erratum, etc.) and growth of publication by the Universities of N.E- India. It also examined the annual Growth Rate (AGR) and Average Annual Growth Rate (AAGR). Ramani Ranjan Sahu and Lambodara Parabhoi (2020) examined the LIS research trends during 2014-2018 in India. It covers yearly growth citation and contributions, author productivities and newly emerging areas of research in LIS fields. Suresh K. Chauhan and Preeti Mahajan (2017) using a bibliometrics study on research output of Library and Information Science in India. It covers 934 articles during 1951- 2010 using the Science Citation Index (SCI) database. Manoj Kumar Verma and Krishna Brahma (2017) examined a webometric analysis on websites of Central Universities in N-E India.

It covers Webpages, Websites, Web Impact Factor (WIF) of different N-E Indian Universities. It also examined the Domain & Page Authority, External or Internal Equity-Passing links. Avijit Mahala and Rajesh Singh (2021) conducted a sciento metric study on the topic of Research output of Indian Universities in sciences (2015-2019) by retrieving the data from Web of Science (WOS). In this study, they studies to examine the pattern of growth of the research and to identify the collaborating countries of these universities during this period. Lambodara Parabhoi, Hrituparna Bhattacharjee and Swarnika Dey (2019) using a bibliometrics analysis of LIS faculties of North-East and East region of India.

In this study, it covers 32 LIS faculties and authors contributed 967 papers from 1980-2017 using Google Scholar. Swapan Kumar Patra and Prakash Chand (2006) wrote a bibliometric study on Library and Information science Research in India. This study is based on the data abstracted in Library and Information Science Abstract (LISA). To understand Indian LIS research output's strength and weakness and a comparative study with respect to other Asian Countries. AK Singh and Kumar Gaurav (2017) conducted a comparative bibliometric study on research contribution and Collaboration pattern of Assam University and Tezpur University. It covers comparison in terms of productivity qualitatively and qualitatively and national ranking by National Assessment & Accreditation Council (NAAC) and National Institute of Ranking Framework (NIRF).

5. Methodology:

For this the central universities list available in the UGC website was consulted. SCOPUS database was used for retrieving the publication and citation data for the research articles published from the Central Universities of N-E India. An institutional affiliation address search was made in SCOPUS by typing each Universities name in the search box, after the search the affiliation ID comes with University name. The time duration for the study was from 2016 to 2020. In the feature of SCOPUS, we can retrieve the data in three ways: (i) by documents, (ii) by authors, and (iii) by affiliations search. In this study we search the data by affiliation search and go to a particular university and to set the time period to 2016, 2017, 2018, 2019, and 2020. We got the result. e.g.: - AF-ID ("Tezpur University" 60007709) AND (LIMIT-TO (PUBYEAR, 2020) ORLIMIT-TO (PUBYEAR ,2019) OR LIMIT-TO (PUBYEAR ,2018) ORLIMIT-TO (PUBYEAR ,2017)ORLIMIT-TO (PUBYEAR ,2016))

6. Data analysis:

In this study, from 2016 to 2020, over the period of the last five years, these nine Central Universities produced 7,981 research publications that have been cited 45,427 times. Following tables represent the quantitative performance of all central universities of the North-East region, through different metrics.

6.1 Year wise Publication analysis of all Universities:

Table 1 or Figure 1 given below shows the increase and research output of these nine universities in terms of the number of research articles published in different journals or other sources of publication from 2016- 2020. It can be seen that the increase in the number of the research articles varies to a great extent amongst these 9 universities. While the maximum number of research publications are written in Tezpur University, Assam (2175 Documents) followed by North-Eastern Hill university, Meghalaya (1481 Documents). The lowest number of publications are registered in Nagaland University, Nagaland (183 documents).

Name Of University	2016	2017	2018	2019	2020	Total Publication (2016-2020)	Contribution of NE Region
Assam University	242	242	267	291	327	1369	17.15%
Tezpur University	424	464	440	440	407	2175	27.25%
Rajiv Gandhi University	43	58	64	65	90	320	4.01%

Name Of University	2016	2017	2018	2019	2020	Total Publication (2016-2020)	Contribution of NE Region
Manipur University	65	83	63	74	91	376	4.71%
Northeastern Hill University	256	257	331	318	319	1481	18.56%
Mizoram University	143	134	158	177	311	923	11.56%
Nagaland University	32	44	29	37	41	183	2.29%
Sikkim University	55	62	78	100	128	423	5.31%
Tripura University	112	135	161	144	179	731	9.16%

Table 1.: Source from Scopus Database Searched & Extracted on 15th May 2021

As shown in the figure 2, total Publication of these nine universities is the maximum to minimum percentage in terms of research publication (in descending order); Tezpur University has 27.25% followed by North Eastern Hill University with 18.56%, Assam University has 17.15%, Mizoram University 11.56%, Tripura University has 9.16%, Sikkim University has 5.31%, Manipur University has 4.71%, Rajiv Gandhi University has 4.01% and the last minimum percentage has 2.29% of Nagaland University

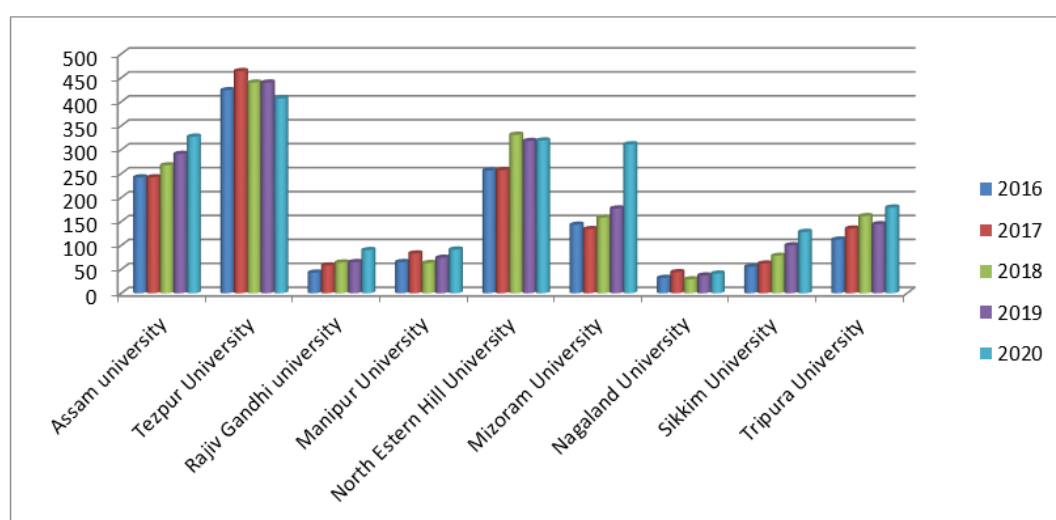


Fig.1: Year Wise Publication of Different Universities

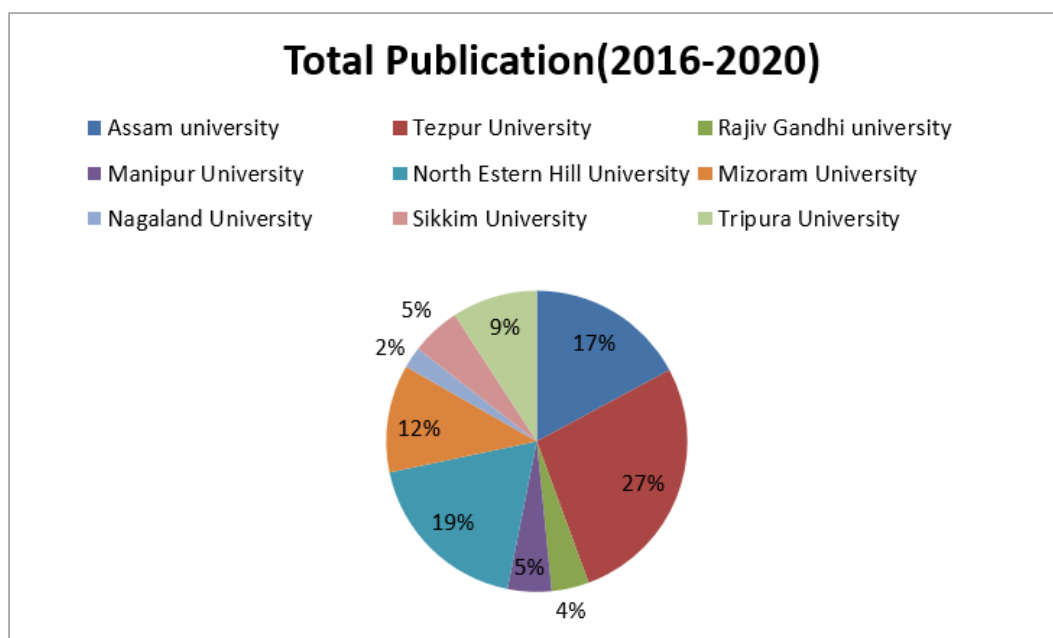


Fig.2: Percentage Contribution in research Output

6.2 Impact of research Output:

The impact of research output can be major in terms of citation received by these universities and their H-index. Total number of 7981 research outputs produced by nine universities received 45,427 citations, as depicted in Table 2.

Name Of University	Publication	Citations	Total No. of Pub. Having at least 1 Citation	Real Average Citations	Cited Rate	Percentage of Publications not Cited
Assam University	1369	7287	913	7.98	66.69%	33.31%
Tezpur University	2175	15977	1697	9.41	78.02%	21.98%
Rajiv Gandhi University	320	1091	204	5.35	63.75%	36.25%
Manipur University	420	1436	271	5.30	64.52%	35.48%
North-Eastern Hill University	1482	6697	1043	6.42	70.38%	29.62%
Mizoram University	923	4691	592	7.92	64.14%	35.86%

Name Of University	Publication	Citations	Total No. of Pub. Having at least 1 Citation	Real Average Citations	Cited Rate	Percentage of Publications not Cited
Nagaland University	185	612	103	5.94	55.68%	44.32%
Sikkim university	424	3501	279	12.55	65.80%	34.20%
Tripura University	731	4135	500	8.27	68.40%	31.60%

Table 2: Universities wise impact of research outputs

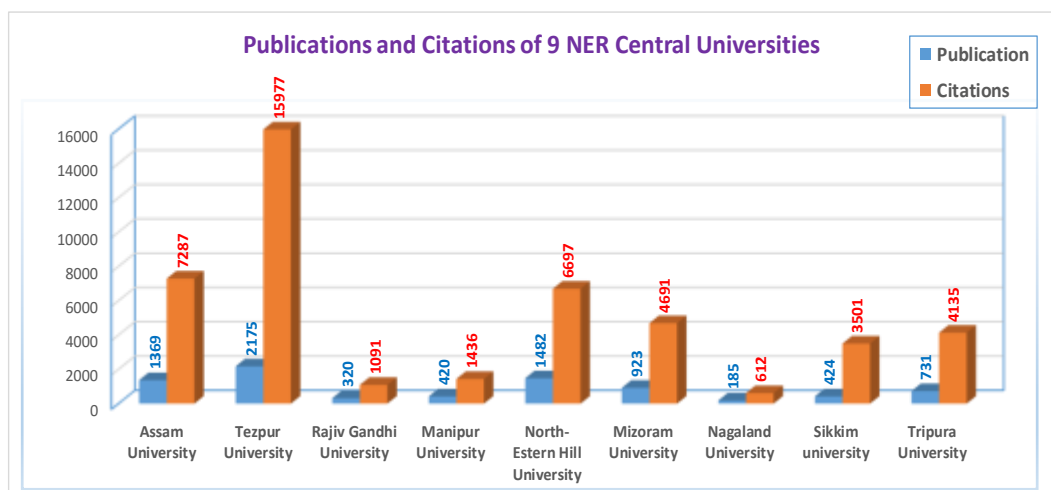


Fig. 3: Publications and Citations of the 9 NER Central Universities

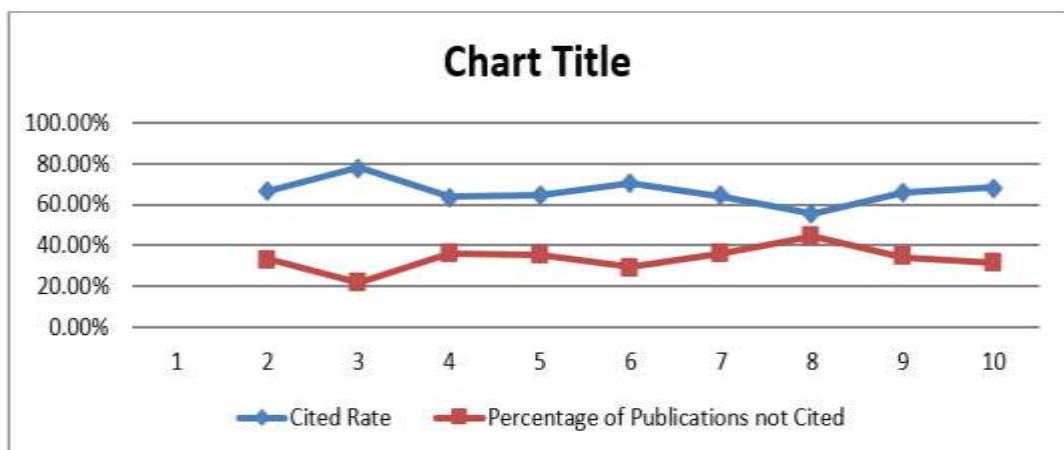


Fig.4: Citation Impact of 09 NER Central Universities

Real Average Citation: this metrics is used to find quality of research outputs across different universities or geographical regions in a time period.

Total citation for a time period in a particular University

Real Average Citation = -----

No. Of Publication which have at least 1 citation

Cited Rate: it is percentage of publication which have at least 1 citation during the time period considered.

Number of papers which have at least 1 citation

Cited Rate = ----- * 100

Number of paper which are published

Percentage of Publication not Cited: this metrics is used for to find the percentage of publication which is not cited during the time period considered.

(Total number of papers published – Number of papers which have at least 1 citations)

PPC = ----- * 100

Total number of papers published

On average, every article has been cited 5.69 times. The cited rate varies from the maximum of 78.02% in Tezpur University followed by 70.38% in North Eastern Hill University to the minimum of 55.68% in Nagaland University.

A percentage of publication not cited varies from the maximum of 44.32% in Nagaland University followed by 36.25% in Rajiv Gandhi University to minimum of 21.98% in Tezpur University.

6.3. University ranking according to H-index

H-index also called hirsch index or hirsch number. It is based on author metrics. If any author has ‘A’ papers there have been minimum cited ‘A’ times each then they have ‘A’ h-index. For example, if any author has 44 h-index it means 44 papers in the given set were cited at least 44 times each. These metric attempts to reflect both institutional productivity and impact.

In Table 3, we arrange the table according to highest to lowest h-index. On the top in this list is Tezpur University with 41 h-index and followed by Assam University with 32 times. And the bottom in this list is Nagaland University with 13 times.

Name of University	H-index
Tezpur University	41
Assam University	32
North-Eastern Hill University	29
Mizoram University	28
Tripura University	26
Sikkim University	24
Manipur University	16
Rajiv Gandhi University	15
Nagaland University	13

Table 3: Universities list in terms of H-index

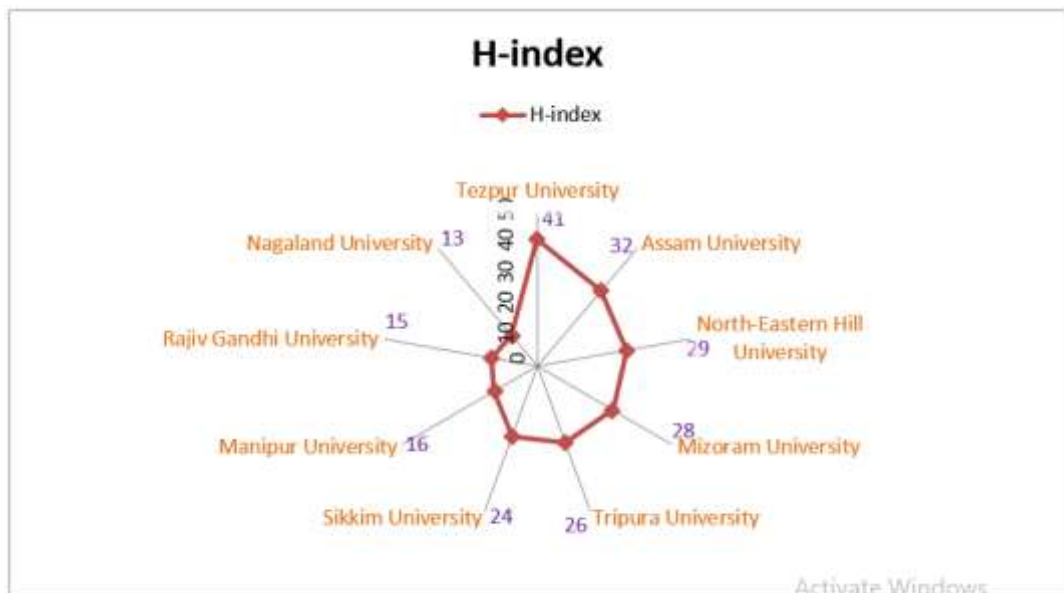


Fig.5: H-index Ranking

Conclusion:

This study gives a basic idea and information about the research output of all nine central universities of North-East India. This Study aimed to show the year wise research productivity and their impact in terms of citation during 2016-2020. This study showed a general growth of research output between 2016-2020. It is observed from this study that through the research output of all nine universities has been grown 1372 in 2016 to 1793 in

2020. There were a total of 7981 number of documents have been cited 45,427 times. The majority of the contribution published by Tezpur University (2175 Documents) with 78.02% cited rate and highest h-index with 41.

References:

1. PRITCHARD, A. Statistical bibliography, "an interim bibliography. North-Western Polytechnic, School of Librarianship". May 1969, 60p. (SABS-5; PB 184 244).
2. Pal, Birender and Ahmed, Merina, "Measuring the Publication Productivity of N.E-Indian Universities Using Scopus: A Bibliometric Analysis", PLANNER 2014 Dibrugarh, Assam, 213p. (ISBN 9789381232040).
3. Sahu, RamaniRanjan and Parabhoi, Lambodara, "Bibliometric Study of Library and Information Science Journal Articles during 2014 2018", December 2020, DESIDOC Journal of Library & Information Technology 40(06):390-395, DOI: 10.14429/djlit.40.06.15631.
4. Chauhan, Suresh K. and Mahajan, Preeti, "Measuring Quality and Quantity of Indian Library and Information Science Research Output", SRELS Journal of Information Management, Vol 54(3), June 2017, p. 125-129, DOI: 10.17821/srels/2017/v54i3/79954.
5. Verma, Manoj Kumar and Brahma, Krishna, "Websites of Central Universities in North East India: A Webometric Analysis", May 2017, DESIDOC Journal of Library & Information Technology 37(3):186-191, DOI: 10.14429/djlit.37.3.10906.
6. Mahala, A. and Singh, R. (2021), "Research output of Indian universities in sciences (2015–2019): a scientometric analysis", Library Hi Tech, Vol. ahead-of-print No. ahead-of-print. <https://doi.org/10.1108/LHT-09-2020-0224>.
7. Parabhoi, Lambodara, Bhattacharjee, Hrituparna and Dey, Swarnika, "Library and Information Science Research in East and North-East India", July 2019 Lambert Academic Publishing ISBN: 9786139446643.
8. Patra, Swapan Kumar and Chand, Prakash, "Library and information science research in India: A bibliometric study", January 2006, Annals of Library and Information Studies 53:219-223
9. Sharma, A. K. and Gaurav, Kumar; "Research contribution and Collaboration Pattern of Assam University and Tezpur University: A Comparative Bibliometric Study", September 2017, IASLIC Bulletin, vol 62 no.3, 149p.
10. Arora, Jagdish and Trivedi, Kruti; "Assessing and Evaluating Research Performance of an institution using Bibliometrics Indicators". INFLIBNET Newsletter, 2012, 19(2&3), PP.22-30.
11. ELSEVIER, Available at <https://www.scopus.com/search/form.uri?display=basic#basic> (Accessed on 15/05/2021).