

An Analysis of The Research Output of India's North-Eastern Region Central Universities in OER With A Special Focus on Shodhganga Repository

Mukesh Saikia¹ and Sri Anuj Kumar Singh²

¹Librarian, Tezpur University, Assam

²Information Scientist, Tezpur University, Assam

Abstract

Purpose: In the past few years, technology plays a vital role in the digital era for content creation and its dissemination among readers. Today, Open Educational Resources (OERs) are easily available on the Internet and many educational organisations rely on them for their academic as well as research activities due to their easy licensing policy. Theses and dissertations are known for their rich and unique source of information that is published by educational institutions and organisations. One of the open educational resources that facilitate the digital repository of Indian Electronic Theses and Dissertations (ETDs) accessible online is the Shodhganga repository. The present study analyses the research output of North-Eastern's Central Universities in Shodhganga repository.

Methodology: The present study is based on quantitative research. Nine (09) Central Universities in North-Eastern India have been chosen for the study that comes under the purview of the Ministry of Education (previously MHRD), Government of India. Primary data is gathered through the Shodhganga repository until December 31, 2022.

Findings: The findings of the study show that NEHU has contributed 2,156 documents, which is the highest among all the Universities. AUS recorded the highest average growth rate of 97% during the year 2014. The majority of the documents contributed in Shodhganga are in the area of social science. English is the most preferable language for writing research theses and dissertations. 'Arts and Humanities', followed by 'Economics and Business', and 'Life Sciences', are the top three keywords used by the Universities while uploading documents in Shodhganga from various disciplines.

Originality: Analysis of research output can be very helpful to know the research productivity of higher education institutions. Shodhganga repository is an important tool for the academic community to preserve and disseminate their research output in the form of theses and dissertations. Very few studies are available pertaining to the research output of academic institutions in North-Eastern region. The present study has collected data from the Shodhganga repository. The findings of the study are useful in determining the growth of research output from Central Universities in North-Eastern Regions.

Keywords: INFLIBNET, North-Eastern Central Universities, Open Educational Resources (OER), Shodhganga

Corresponding Author: Dr. Mukesh Saikia: Email: mukesh@tezu.ernet.in and Sri Anuj Kumar Singh, Email: anuj Singh@tezu.ernet.in

1. Introduction

Education is the fundamental right of every individual for their economic and social development. It is a well-known fact that a nation cannot develop from the view of technological and scientific orientation beyond educational attainment (Itasanmi, 2020). In realisation of this, the Government of India (GoI) launched the National Repository of Open Educational Resources (NROER) in August 2013 as an initiative of the Department of School Educational and Literary, MHRD (presently Ministry of Education) in collaboration with the Central Institute of Educational Technology (CIET) and National Council of Educational Research and Training (NCERT). The basic idea of this initiative is to create a core group on NROER from each State/UTs with a number of trained resource persons to identify, curate, collate, and contribute educational resources to the repository thereby making the teaching-learning process more effective (MHRD, 2014). To resemble this and make easy access to educational materials for every individual, the GoI under its National Mission on Education through ICT (NME-ICT) being executed by the University Grant Commission (UGC) comes with many OER innovative projects such as e-PG Pathshala, Vidya-Mitra, Shodhganga and many more.

In the past few decades, the educational sector has seen tremendous growth both from print to digital learning resources as well as in teaching-learning methods. This technological advancement has reached into every nook and cranny of people's lives; anyone can access educational resources freely and openly which are available on the Internet. Almost every educational and research organisations are directly or indirectly connected to nurturing the knowledge society by creating and sharing open educational resources. This collaborative effort results in a transformation from a teaching to a student-centric approach with an emphasis on the needs and interests of the entire academic community (Midha & Kumar, 2022).

Today, open educational materials are considered to be the best way to easily get the available information, as one's can access it anywhere and anytime through the use of Information and Communication Technology (ICT) applications (Mushtaq et al., 2017). Many higher education institutions are now beginning promoting to use Open Educational Resources (OER) against traditional and expensive resource materials. Academic libraries are also a part of these OER initiatives and play a major role to collect, develop and share OERs materials among readers for the teaching-learning purpose (Reed & Jahre, 2019). This article tries to analyse the research output contributed by Central Universities of the North-Eastern Region of India at Shodhganga repositories over the past few years.

1.1. Open Educational Resources (OERs)

From the past two decades, Open Educational Resources have been an integral part of any education system where digitized educational materials are freely and legally available for sharing knowledge among the academic communities. OERs has their beginnings in the early 1970s when the very first online repository called "Project Gutenberg" comes into existence which is similar to OER forms that are maintained by volunteers including librarians (Roncevic, 2021).

The term Open Educational Resources (OER) was first initially coined at UNESCO's "Forum on the Impact of Open Course Ware for Higher Education in Developing Countries" in the year 2002. According to United Nations Educational, Scientific and Cultural Organization (UNESCO), OERs are defined as "technology-enabled, open provision of educational resources for consultation, use, and adaptation by a community of users for non-commercial purposes."

However, the open learning movement began in the year 1994 when Wayne Hodgins coined the term "learning object," and this term quickly entered the vernacular of educators and instructional designers. After that, David Wiley coined the term "open content," and while targeted at the educational community in 1998.

Open Educational Resources (OER) also refers to digital educational materials that are open-licensed and freely available that can be enhanced, modified and redistributed among the users to share knowledge and enable education. It comprises 5RS within the bounds of the Creative Common (CC) license that provides a legal way while using the contents.



Source: Nova Southeastern University (NSU)

Figure 1: 5RS of Open Educational Resources

Although, the most comprehensive definition of OER given by the William and Flora Hewlett Foundation is as follows: "OER is teaching, learning, and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources include full courses, course materials, modules, textbooks, streaming videos, tests, software, and any other tools, materials, or techniques used to support access to knowledge."

1.2. North-Eastern Region of India

The North-Eastern Region of India (NER) comprises eight states namely Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, and Tripura. In the late 20th Century, the territories of northeastern India were formed into different states, and at the time of Independence in 1947, there were only 03 states i.e., Assam, Manipur & Tripura. The northeastern state was formed based on ethnic and tribal identities having its own distinct culture, traditions, festivals, and art forms (Indian Culture, n.d.).

During the period of British colonial rule, the education system in the northeastern region relied heavily on traditional Indian education systems such as “Tols”, “Pathsala”, and “Moktab” etc. Although, the modern education system was implemented during the British time to cater to the basic needs and for operating administrative mechanisms. Despite being a lesser developed part of India, North-East India has seen tremendous growth in literacy rate (Das, 2018). According to the census 2011, except for Assam (73.18%) and Arunachal Pradesh (66.95%), all other North-East (NE) states have the literacy rates that exceed the national standard of 74.04%.

Table 1 shows the current status of several universities in northeastern India, which states that out of 81 universities, there are 26 State Universities, 11 Central Universities, 42 Private Universities and 02 Deemed to be Universities as of 31.03.2023.

Table 1: Number of Universities in North-Eastern India (NER)

North-Eastern State in India	Number of Universities (N=81)			
	State	Central	Private	Deemed
Arunachal Pradesh	01	01	08	01
Assam	18	02	06	01
Manipur	03	03	05	-
Meghalaya	-	01	09	-
Mizoram	-	01	01	-
Nagaland	-	01	04	-
Sikkim	02	01	08	-
Tripura	02	01	01	-
Total	26	11	42	02

Source: UGC

1.3. Shodhganga: A Reservoir of Indian Theses

Theses and dissertations are known for their rich and unique source of information that are published by educational institutions and organisations which might not be easily accessible publicly, especially at Indian universities. Due to this, it remains an under-utilized and unseen asset and sometimes leads to duplication and repetition of research output. In order to mitigate redundancy and enhance the accessibility of Indian theses and dissertations to the global academic community, “Shodhganga”, the digital repository of Indian Electronic Theses and Dissertation was developed by INFLIBET Centre, an Autonomous Inter-University Centre (IUC) of the UGC, New Delhi (Ministry of Education, Govt. of India). University Grants Commission issued the “Notification (Minimum Standards & Procedure for Award of M.Phil. / Ph.D. Degree, Regulation, 2009)” on June 1st, 2009, which makes it mandatory for the researchers in Indian universities to submit the electronic version of their theses and dissertations into Shodhganga.

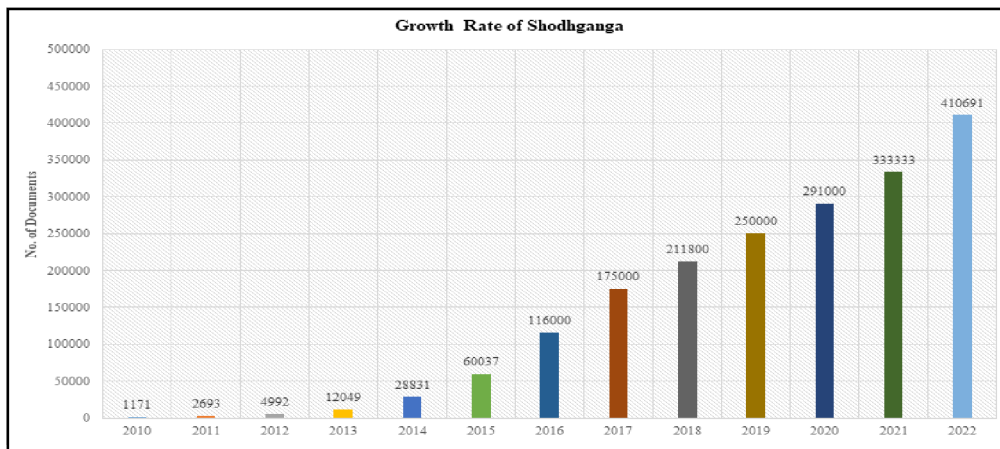
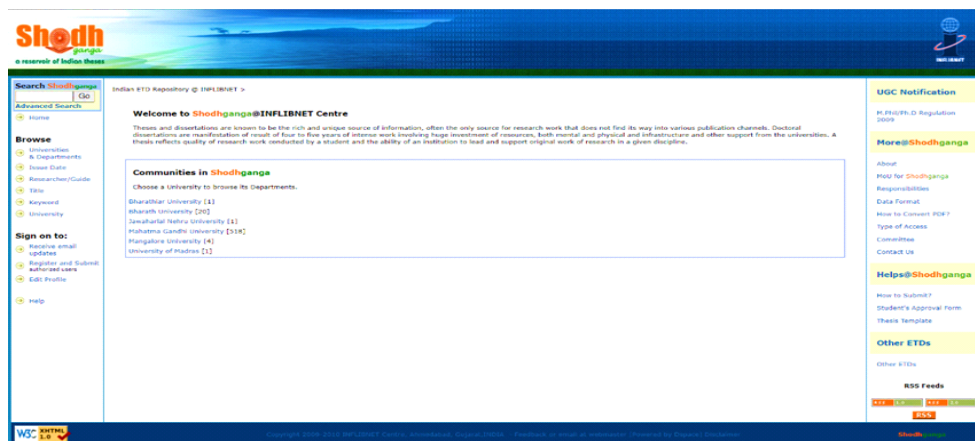


Figure 2: Homepage of Shodhganga Repository in Early Development Stage

Since 2009, Shodhganga has seen a tremendous growth rate in research output (see Figure 3) and many educational institutions and organisations had signed an MoU to deposit their theses and dissertations and make them publicly available, which also overcomes the boundaries faced by the institutions for managing their research output online. To celebrate the success of Shodhganga, on 9th April 2021, INFLIBNET Centre organised the launching of 3,00,000th theses to Shodhganga uploaded by Prof. Rajnish Jain, the Hon'ble Secretary of UGC. Presently, Shodhganga has crossed 4,50,000 full-text theses contributed by 713 institutions/ universities in India.



Source: Shodhganga

Figure 3: Growth Rate of Shodhganga from 2010 to 2022

2. Literature Review

The sector of education can benefit greatly from open educational resources (OERs). It opens up a lot of potential for online learning by providing users with access to numerous educational resources from across

the world. Fostering openness and flexibility in educational resources, removing obstacles to knowledge access, and providing high-quality educational materials, have enabled educators to become more innovative in their pedagogical approaches. Academic libraries serve a vital role in the scholarly communication system by supporting the teaching, learning, and research activities of their parent institutions. Therefore, academic libraries have a crucial role in promoting the use and benefits of OER among faculties, students, and research scholars for their teaching, learning, and research activities.

Cheung et al. (2023) in their study examined how university students assessed the value of open educational resources (OER) in connection to the shift to online learning during the COVID-19 epidemic. The study involved the selection of two distinct groups of students, one studying in a face-to-face instruction and the other in a distance learning mode. They participated in a survey that was carried out in 2019 prior to the pandemic and in 2021 during the epidemic. The study found that both groups of the students found OER most useful during the pandemic. Face-to-face students perceived OER to be more advantageous for test and exam preparation, whereas distance learners perceived OER to be more beneficial for supplementing course materials. Both the groups were concerned about the OER's limits, particularly in terms of correctness and comprehensiveness. The findings emphasise the need of recognising the two categories of students' unique requirements and providing suitable OER resources for each.

In the field of graphic arts, Christoforidou and Georgiadou (2021) looked into the knowledge and use of OER by educators and students in higher education. The study found that although educators were aware of OER and had already shared their work as such, the awareness is low, particularly among undergraduate students. This is due to students' lack of awareness about open educational resources and how to use them for learning. The primary obstacle identified in the adoption of Open Educational Resources (OER) by students in the field of Graphic Arts discipline is the absence of a dedicated platform that caters only to OER.

Vyas (2017) from Swami Ramanand Teerth Marathwada University analyse the Shodhganga repository by using Bibliometrics Techniques. Here, he took the data of the Shodhganga repository up to 10th March 2014. A total number of 108 theses by 28 universities has been taken for the data analysis by using different bibliometric techniques. Here in this study researchers visualize the Year-wise distribution, Subject field distribution, Guide, Language distribution, etc. The growth of the thesis increasing continuously.

Panda (2016) explored the status of Shodhganga and the study found that 66% of the universities in Tamil Nadu had signed MoUs with Shodhganga and ranked top position on the state lists, followed by Maharashtra (56.09%) and Uttar Pradesh (45.4%). The number of theses increased steadily from 2010 to 2014, according to the yearly trend analysis, and in 2015, it has increased more than in previous years. The majority of deposited theses were in the field of Management, followed by Education and Economics. However, when it comes to broad subjects, it was found that the maximum number of theses were submitted in Natural Science.

Ramesh (2013) examined how Indian universities contributed to Ph.D. theses in library and information science, with a focus on Shodhganga. According to the study, universities from states like Arunachal Pradesh, Chandigarh, Nagaland, and Sikkim made Zero contributions to Shodhganga. Very few universities had signed MoU with Shodhganga. Among the states, Kerala was the highest contributor to university

theses. Maharashtra contributed the maximum number of Library and Information Science theses. As a result, it has the maximum number of universities with LIS departments that still need to contribute.

Toumi (2013) conducted research on the fast spread of open education resources (OER) among learners. The author aimed to provide a conceptual framework for examining the potential revolution of OER within a larger social, economic, and historical context by categorising OER into four distinct categories. Further, the study also examines the potential impact of the widespread implementation of Open Educational Resources (OER) on the transformation of learning and education within the context of a knowledge-based society. The research also highlights the emerging knowledge society, which will have new educational requirements and learning methodologies where OER will likely play as a central element in this transformative process.

3. Objectives of the Study

The followings are the main objectives of the study:

- ❖ To ascertain the total number of documents deposited in Shodhganga
- ❖ To ascertain the year-wise average growth rate of documents in Shodhganga.
- ❖ To determine discipline-wise contribution in Shodhganga.
- ❖ To measure the institutional performance research contributions i.e., Annual Growth Rate (AGR), Relative Growth Rate (RGR), and Doubling time (Dt).
- ❖ To determine language-wise contribution in Shodhganga.
- ❖ To determine the top 50 keywords distribution among documents.
- ❖ To detect distinct records of documents uploaded in Shodhganga.

4. Methodology

The study has covered nine (09) Central Universities in North-Eastern regions of India that come under the purview of the Ministry of Education (previously MHRD), Government of India which are Assam University (AUS), Manipur University (MU), Mizoram University (MZU), Nagaland University (NU), North Eastern Hill University (NEHU), Rajiv Gandhi University (RGU), Sikkim University (CUS), Tezpur University (TEZU), and Tripura University (TU). Data from the Shodhganga repository was gathered till December 31, 2022. (<http://shodhganga.inflibnet.ac.in/>).

5. Data Analysis and Result Discussion

5.1. North-Eastern Central Universities Profiles at Shodhganga Repository

The data shows the profiles of nine (09) central universities signed Memorandum of Understanding (MoU) for Shodhganga repository with INFLIBNET Centre, Gandhinagar, and a total number of 8,663 documents have been deposited by all the 09 central universities in the repository as on 31.12.2022, however only 8,088

contributed documents are distinctive i.e., 575 documents are non-unique and has been uploaded multiple times in the repository. NEHU has contributed the highest number of unique documents (2,156) in Shodhganga, followed by AUS (1,892) and MU (1,345) respectively (see Table 2).

Table 2: Profile of NER Central Universities at Shodhganga Portal

Sl. No.	Abbr.	MoU Signed On	Handle URI	No. of Documents Contributed	Unique No. of Documents
1	AUS	31st January 2013	10603/12989	1,949	1,892
2	MU	17th March 2011	10603/3007	1,373	1,345
3	MZU	17th October 2013	10603/1198	656	546
4	NU	11th August 2015	10603/9310	365	365
5	NEHU	26th November 2010	10603/5270	2,434	2,156
6	RGU	19th September 2014	10603/7764	520	514
7	CUS	1st March 2012	10603/191975	155	155
8	TEZU	1st August 2013	10603/8988	823	732
9	TU	21st January 2013	10603/6594	388	383
Grand Total				8,663	8,088

5.2. Year-Wise Average Growth Rate

Figure 4 shows the year-wise average growth rate pattern towards the contribution of Central Universities from the years 2010 to 2022. From Table-3, it is found that AUS contributed 97% of average documents in 2014, which is the highest among all the universities whereas NEHU contributed 95.80% in 2015, NU contributed 94.44% in 2013, and RGU 94.44% in 2017 respectively.

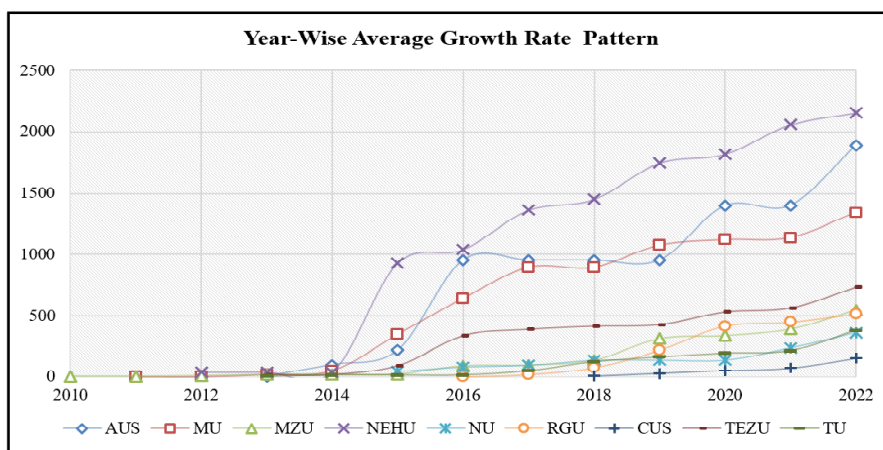


Figure 4: Year-Wise Average Growth Rate Pattern

In addition to that, it is also noticeable that AUS has not uploaded any documents for three consecutive years i.e., 2017, 2018 & 2019, followed by NU in 2012 & 2018, and NEHU in 2014 respectively.

Table 3: Year-Wise Average Growth Rate of Submitted Documents

Abbr.	Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
AUS	N				3	100	220	953	953	953	953	1401	1403	1892
	GR					97.00	54.55	76.92	0.00	0.00	0.00	31.98	0.14	25.85
MU	N		1	1	18	49	350	642	895	895	1077	1121	1138	1345
	GR			0.00	94.44	63.27	86.00	45.48	28.27	0.00	16.90	3.93	1.49	15.39
MZU	N	5	5	9	20	20	20	90	95	137	313	337	391	546
	GR		0.00	44.44	55.00	0.00	0.00	77.78	5.26	30.66	56.23	7.12	13.81	28.39
NEHU	N			37	39	39	929	1041	1364	1453	1749	1821	2059	2156
	GR				5.13	0.00	95.80	10.76	23.68	6.13	16.92	3.95	11.56	4.50
NU	N						44	82	97	140	141	141	240	365
	GR							46.34	15.46	30.71	0.71	0.00	41.25	34.25
RGU	N							1	18	74	221	417	449	514
	GR								94.44	75.68	66.52	47.00	7.13	12.65
CUS	N									8	29	52	71	155
	GR										72	44	27	54
TEZU	N				16	16	90	338	390	416	429	531	564	732
	GR					0.00	82.22	73.37	13.33	6.25	3.03	19.21	5.85	22.95
TU	N				6	16	16	16	49	126	166	197	217	383
	GR					62.50	0.00	0.00	67.35	61.11	24.10	15.74	9.22	43.34

Formula to calculate growth rate (G) = $\frac{V_{current} - V_{previous}}{V_{previous}} \times 100$

N=No. of Documents, GR = Growth Rate (%)

5.3. Discipline-Wise Contributed Documents

The majority of the documents were submitted in Social Science (4,989), followed by Basic Science (2,296) and Applied Science (803) as shown in Figure 5.

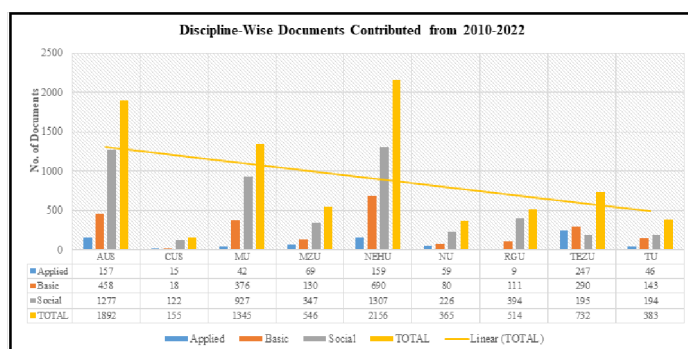


Figure 5: Discipline-Wise Documents Contributed from 2010-2022

ENRICHING ETDs AND THEIR REACH

In the field of Social Science, the highest number of documents contributed by NEHU (1,307), followed by AUS (1,277) and MU (927). In the field of Basic Science, NEHU contributed the highest number of documents (690), followed by AUS (458) and RGU (376). In the field of Applied Science, TEZU contributed the highest number of documents (247), followed by NEHU (159) and AUS (157) respectively (see Table 4).

Table-4: Discipline-Wise Contributed Documents

Abbr.	Y	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	GT
	D														
AUS	A					4	9	33				45		66	157
	B				2	23	33	188				92		120	458
	S				1	70	78	512				311	2	303	1277
	T				3	97	120	733				448	2	489	1892
CUS	A										3	3	2	7	15
	B										1	4	2	11	18
	S									8	17	16	15	66	122
	T									8	21	23	19	84	155
MU	A					1	3		11		10	2	3	12	42
	B				13	8	51	1	174		55	13	6	55	376
	S		1		4	22	247	291	68		117	29	8	140	927
	T		1		17	31	301	292	253		182	44	17	207	1345
MZU	A	1		1	1			7	2	6	22	3	6	20	69
	B			1	5			15	2	10	44	5	12	36	130
	S	4		2	5			48	1	26	110	16	36	99	347
	T	5		4	11			70	5	42	176	24	54	155	546
NEHU	A			1			25	3	21	9	29	12	40	19	159
	B			20			336	92	54	17	69	18	67	17	690
	S			16	2		529	17	248	63	198	42	131	61	1307
	T			37	2		890	112	323	89	296	72	238	97	2156
NU	A												40	19	59
	B						13	11	1	7			13	35	80
	S						31	27	14	36	1		46	71	226
	T						44	38	15	43	1		99	125	365
RGU	A									3		2	2	2	9
	B								5	9	36	38	7	16	111
	S							1	12	44	111	156	23	47	394
	T							1	17	56	147	196	32	65	514
TEZU	A				4		23	75	16	6	3	40	9	71	247
	B				8		35	114	12	9	7	41	12	52	290
	S				4		16	59	24	11	3	21	12	45	195
	T				16		74	248	52	26	13	102	33	168	732
TU	A				1				1	6	2	4	4	28	46
	B				3	9			17	35	14	18	3	44	143
	S				2	1			15	36	24	9	13	94	194
	T				6	10			33	77	40	31	20	166	383
GT		5	1	41	55	138	1429	1494	698	341	876	940	514	1556	8088

Y=Year, D=Discipline, A=Applied Science, B=Basic Science, S=Social Science, T=Total, GT=Grand Total

5.4. Annual Growth Rate (AGR), Relative Growth Rate (RGR) and Doubling Time (Dt) of Research Contributions

Table 5 illustrates two metrics used to evaluate the pace of growth in research contributions across the 09 (nine) Central Universities in the North-eastern area throughout the time span of 2010 to 2022 i.e., Annual Growth Rate (AGR) and Relative Growth Rate (RGR) that are frequently employed in academic research and analysis. These metrics serve as quantitative measures to assess the rate at which a certain variable or entity is growing over a specified time-period.

The AGR was calculated using the prescribed formula $AGR = \frac{\text{end value} - \text{first value}}{\text{first value}} \times 100$ and found that highest growth rate was recorded in the year 2012 (97.56%) and 2015 (90.34%) respectively. For calculating the mean relative growth rate (RGR) during the specific period of the interval using the formula $RGR = \frac{\ln(w1) - \ln(w2)}{T2 - T1}$ and found a lowest point -0.70 in 2011 and highest 1.61 in 2012, whereas the maximum doubling time of 35.87 was found in the year 2016. Also, it has been observed that in 2022 there were the highest numbers of document contributions (1556) among the universities.

Table 5: Year-Wise AGR, RGR and Dt Research Contributions

Year	TC	AGR	CT	CP	Log	RGR	Dt
2010	5		5	0.06	0.70		
2011	1	-400.00	6	0.07	0.00	-0.70	-0.99
2012	41	97.56	47	0.58	1.61	1.61	0.43
2013	55	25.45	102	1.26	1.74	0.13	5.43
2014	138	60.14	240	2.97	2.14	0.40	1.73
2015	1429	90.34	1669	20.64	3.16	1.02	0.68
2016	1494	4.35	3163	39.11	3.17	0.02	35.87
2017	698	-114.04	3861	47.74	2.84	-0.33	-2.10
2018	341	-104.69	4202	51.95	2.53	-0.31	-2.23
2019	876	61.07	5078	62.78	2.94	0.41	1.69
2020	940	6.81	6018	74.41	2.97	0.03	22.63
2021	514	-82.88	6532	80.76	2.71	-0.26	-2.64
2022	1556	66.97	8088	100.00	3.19	0.48	1.44

The following given formulas are used to calculate AGR, RGR and Dt

$$AGR = \frac{\text{End Value} - \text{First Value}}{\text{First Value}} \times 100$$

$$\text{Relative Growth Rate (RGR)} = \frac{\ln(w2) - \ln(w1)}{T2 - T1}$$

R = Mean relative growth rate over the specific period of interval

W1 = log w1 (Natural log of the initial number of publications/pages)

W2 = log w2 (Natural log of the initial number of publications/pages)

T2-T1 = Unit difference between the initial time and final time

$$\text{Doubling time (Dt)} = 0.693/R$$

TC=Total contribution, AGR=Annual growth rate, CT=Cumulative Total, CP=Cumulative Percentage, RGR=Relative growth rate, DT=Doubling times

5.5 Language-Wise Distribution of Documents

As shown in Table 6, Out of total 8,088 numbers of documents, 7,442 documents are uploaded in English, followed by Bengali (159) and Hindi (129) respectively. The data also shows that 287 documents' language code is defined as Others, and 32 documents of MU (01), MZU (08), NU (01), NEHU (11), and CUS (11) languages are not defined.

Table 6: Language-Wise Distribution of Documents

Sl. No.	Abbr.	ASM	BEN	ENG	HIN	MNI	MEI	NEP	OTH	SAN	URD	ND	T
1	AUS	01	118	1,507	62	01	09		185	08	01		1,892
2	MU			138				16				01	155
3	MZU		27	1,229	11		01		69			08	1,345
4	NU			543	02							01	546
5	NEHU			2,122	02				21			11	2,156
6	RGU			362					03				365
7	CUS			469	34							11	514
8	TEZU			724	06				02				732
9	TU		14	348	12				07	02			383
	GT	01	159	7,442	129	01	10	16	287	10	01	32	8,088

ASM=Assamese, BEN=Bengali, ENG=English, HIN=Hindi, MNI=Manipuri, MEI=Meitei, NEP=Nepali, SAN=Sanskrit, URD=Urdu (ISO 639-2 Language Code), OTH=Others, ND=Not Defined, T=Total, GT=Grand Total

It is clearly visible that, in around every 1,000 documents, 93 are uploaded in English language followed by 20 documents in Bengali, 16 documents in Hindi and 05 documents in other regional languages. Furthermore, it can also be seen that 40 documents in every 1000 doesn't have any specific language in which AUS has uploaded 185, followed by MZU (69), NEHU (21), TU (07), RGU (03) and TEZU (02) respectively (see Figure 6).

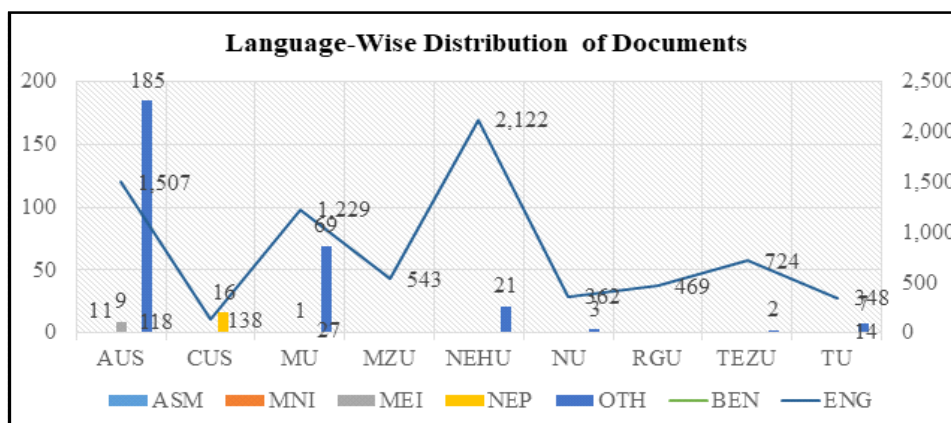


Figure 6: Language-Wise Distribution of Documents

5.5. Keyword Distribution among Documents

Table 8 shows the top 30 keywords that have been used several times while uploading documents in Shodhganga from various disciplines.

Table 8: Keyword Distribution among Documents

Keyword	AUS	CUS	MU	MZU	NEHU	NU	RGU	TEZU	TU
Arts and Humanities	√	√	√	√	√	√	√	√	√
Arts and Recreation			√					√	√
Assam	√				√		√	√	
Biology and Biochemistry	√						√	√	
Chemistry	√		√	√		√		√	√
Computer Science	√			√				√	√
Development			√		√			√	
Ecology and Environment	√			√				√	
Economics	√	√	√	√		√	√		√
Economics and Business	√	√	√	√		√	√	√	√
Education and Educational Research		√	√	√		√	√		√
Engineering and Technology	√			√				√	√
Environmental Sciences	√			√				√	
Geography		√					√		√
History and Geography	√	√	√	√		√	√		√
Language	√	√	√	√				√	
Language and Linguistics	√	√		√				√	
Life Sciences	√	√	√	√	√	√	√	√	√
Linguistics	√	√	√						
Literary Reviews	√	√							√
Literature	√	√				√	√		√
Management	√	√	√				√		
Mathematics			√	√			√	√	√
Physical Sciences	√	√	√	√	√	√	√	√	√
Physics	√	√		√				√	√
Plant and Animal Science	√	√	√	√		√	√		√
Plant Sciences			√	√		√			√
Political Science	√	√		√			√		√
Social Sciences	–	–	–	–	–	–	–	–	–
Sociology		–				–		–	

The top 05 popular keywords used by the 09 Central Universities are ‘Arts and Humanities’, followed by ‘Economics and Business’, ‘Life Sciences’, ‘Physical Sciences’, and ‘Social Sciences’ (see Figure-7).

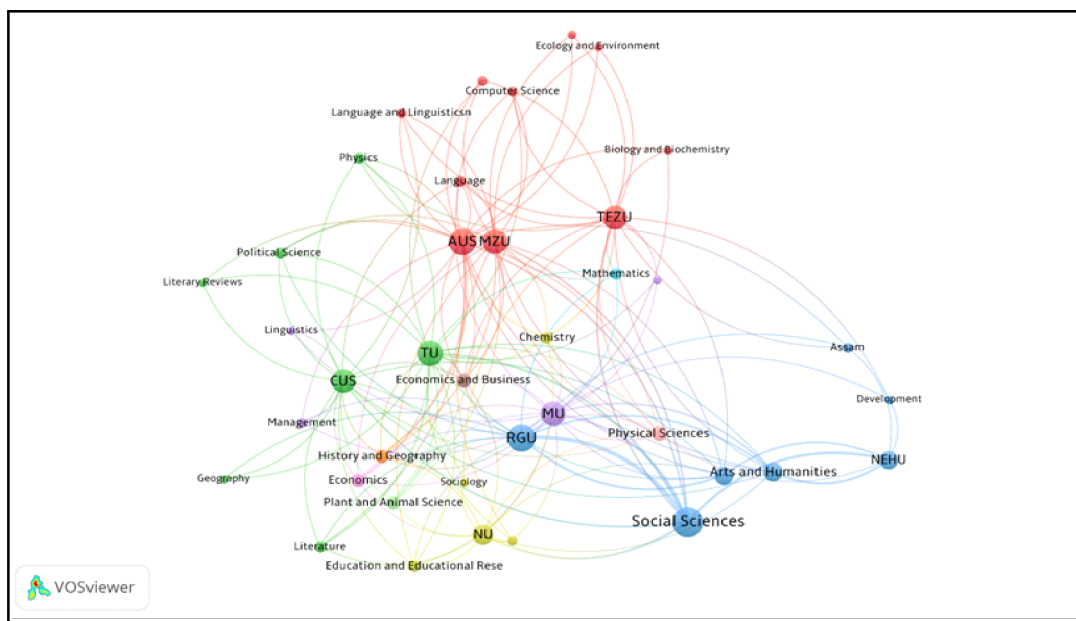


Figure 7: Density of Popular Keywords used by North-Eastern Central Universities

6. Key Findings

- ❖ All the 09 (nine) Central Universities in NE-Region had signed a Memorandum of Understanding (MoU) for Shodhganga repository with INFLIBNET Centre, Gandhinagar.
- ❖ Out of 8,663 uploaded documents deposited by all the 09 Central Universities in Shodhganga as of 31.12.2022, only 8,088 documents are distinctive.
- ❖ NEHU has contributed 2,156 documents, which is the highest among all the Universities.
- ❖ AUS recorded the highest average growth rate of 97% in 2014. It is also to be noted that AUS has not contributed any documents to the Shodhganga repository for three consecutive years, i.e., 2017, 2018 & 2019.
- ❖ Most of the documents are submitted in the field of social sciences. NEHU made the highest contribution in both Social Science and Basic Science, whereas TEZU made the highest contribution in Applied Science.
- ❖ The findings also suggest that most documents uploaded in Shodhganga are in English. In addition, just one (01) document has been uploaded in Assamese, Manipuri, and Urdu, whereas 319 documents are categorized as Others in which 32 documents didn't have any specific language.

- ❖ 'Arts and Humanities', 'Economics and Business', and 'Life Sciences' are the top three (03) keywords preferred when uploading the documents in the Shodhganga portal.

7. Conclusion

India's North-Eastern Region (NER) is characterized by its rich cultural and ethnolinguistic diversity, unique traditions, and ecology. Scholarly research uploaded in Shodhganga can play an important role in the wider dissemination of research activities carried out in academic institutes like Central Universities of the regions. The analysis of research output by North-Eastern Central Universities contributed to the Shodhganga repository brings out three major concerns. Firstly, there are irregularities in the contribution of theses by the Universities during the selected period. Secondly, compared to Hindi and English, the contribution of these in regional languages is incredibly low. Thirdly, around 6.637% of the total contributed documents are duplicate entries, suggesting a proper examination to prevent uploading of similar items. The INFLIBNET Centre, Gandhinagar should urge their member institutes to use library resources effectively to develop and preserve research activities. Universities should also support research activities in regional languages given the current state of regional language research output. Along with that, Universities should take effective measures for timely uploading of research theses in Shodhganga, which is an effective way to highlight and promote their publications among the academic community.

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