Role in Contribution to Open-Access Repository by the Northeast Universities in India: A Case Study of Shodhganga

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ABSTRACT

Every institution needs repositories for storing, organizing, and presenting digital content, as well as maintaining digital resources for long-term digital access. The authors discussed India's OpenDOAR status, a quality-assured listing of open-access repositories globally, with a particular emphasis on the Shodhganga repository. The focus of this paper is on universities in Northeast India that deposit Electronic Theses and Dissertations (ETDs) in the Shodhganga repository. This study depicts repositories in India since their inception. The Northeastern states are given special treatment by the Central Government and INFLIBNET in the form of Planners (Promotion of Library Automation and Networking in North Eastern Region). The study's main goals are to disclose the knowledge outcome as well as the knowledge gap that exists in this geographical location. The study helps determine the number of universities in Northeast India that follow the "University Grants Commission (UGC) Minimum Standards & Procedure for Award of M.Phil. / Ph.D. Degree, Regulation, 2009," which mandated that electronic version of Theses be uploaded to the Shodhganga repository for the benefit of scholars across the country.

Keywords: ETDs; OpenDOAR; Shodhganga; INFLIBNET; North East States; Theses

1. INTRODUCTION

As an untapped and unpublished source of knowledge, Theses and dissertations are well-known, crucial sources of information. The UGC and many higher education/research institutions in India have developed institutional repositories (IR) for academics' intellectual collections to avoid plagiarism and promote research ethics. Open DOAR is a quality-assured collection of open-access repositories from around the world. According to OpenDOAR, there are 5684 repositories worldwide, with 98 (1.88 %) repositories in India (as of 11th June 2021). Shodhganga is a repository for Theses and dissertations submitted at the national level by Indian universities. There were 308771 full-text Theses deposited in the Shodhganga as of June 11, 2021, with a significant number from Northeast Indian universities. Under the "UGC Minimum Standards & Procedure for Award of M.Phil. / Ph.D. Degree, Regulation, 2009," the UGC has mandated that universities upload Theses and dissertations online. As of June 2021, the country had 945 universities, of which 570 had signed MoU with INFLIBNET and 476 had submitted this to the Shodhganga repository. At this stage, the authors felt compelled to conduct this research to demonstrate how many universities in Northeast Indian states have their presence in the national repository, as well as how many of them comply with UGC Minimum Standards & Procedure for Award of M.Phil. / Ph.D. Degree, Regulation, 2009, which allows the electronic version of these to be accessed by scholars.

The study's objectives are to identify a) the status of open access repositories (DOAR) in India b) The status of the Shodhganga repository. c) The contribution of ETDs and the status of the universities in Northeast India. d) The state-wise contribution status of the ETDs in Northeast India. e) The year-wise contribution status of the ETDs in Northeast India f) The language-wise contribution status of the ETDs in Northeast India.

When it comes to the general development of India's Northeast (NE) area, the Indian government has been paying attention to it for the past two decades. With Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, and Tripura, the Northeast area is known as the "seven sisters." In 2001, Sikkim was added to the group thus made it a total of eight states.

The inclusion of 12 academic libraries for financial support under the INFLIBNET initiative has also resulted in changes in library automation and networking operations in Northeastern India. It paved the way for the growth of university libraries' information infrastructure, as well as the creation of databases for library automation and networking. In addition, other national universities such as IIT Guwahati, Sikkim Manipal Institute of Medical Science, Agricultural University Jorhat, and Central Agricultural University Imphal receive money from their respective parent bodies and funding organisations like as AICTE, ICMR, and ICAR.

The significance of the research was to determine how universities in Northeast India submitted ETDs to the Shodhganga National ETD database. Only 22 of Northeast India's 67 universities have deposited ETDs in Shodhganga, which are then counted for each University's rank and in addition, to examine the present status of the repository. The significance was not restricted to present statistical data with some narratives, the real significance was to aware the potential researchers about the development in the knowledge domain, existing status, anomalies if any, and more specifically to highlight the importance of submission of nascent organisational resources for better caring with responsible sharing.

2. LITERATURE REVIEW

Kalbande[2] presented the Indian scenario with 84 repositories in India and analysed the characteristics of the IR. Chakravarty[3] attempted to evaluate the performance of the online portal of India's National ETD repository, highlighting the status of the Open-Access ETD repositories along with discovering the tools used for the Indian ETD repositories. Dutt[4] tried to evoke the fundamentals of the ETD repository so that scholars can better grasp the concept. B.P. Singh[5] discussed the changing role of professional librarians concerning the management of ETDs in Indian universities. Jhamb & Samim[6] gave an introspect of the contribution to the Open-Access Repository "Shodhganga" made by India's central universities. Nanthini & Varghese[7] focused on the quantitative evaluation of contributing universities. Chingath[8] analysed the number of universities that adhere to the "UGC Minimum Standards & Procedure for the Award of an M.Phil. / PhD Degree, Regulation, 2009". Sandhya[9] pointed out that 355 Indian universities contributed 206909 full-text Theses to the digital repository. Ramesh[10] evaluated that many PhD Theses were submitted in library and Information Science from different universities in India. Das and Chauhan[11] intended to demonstrate that not all State Universities took part in the ETD project. Dhanavandan and Tamizhchelvan[12] and Sivasubramanian[13] assessed participation of Tamil Nadu universities that signed an MoU that applies for electronically submitted Theses. Biswas[14] traced the status of the submission of ETDs by the universities of West Bengal. Shanmugam[15] reviewed the ETDs deposited by The School of Legal Studies, Cochin University of Science & Technology, at Shodhganga. Manjunatha[16] presented the contribution of the Library & Information Science (LIS) departments of Karnataka State Universities regarding e-Theses databases and their submission to Shodhganga. R. K. Singh, Singh, and Singh[17] explored and discussed PhD thesis patterns for the past nine years at DLIS, AMU.

3. METHODOLOGY

The focus of this study is the Open-Access Repository (OAR) (Open-Access Repositories). As stated earlier, out of 5684 worldwide open repositories registered in OpenDOAR, a total of 98 repositories are in India. It is quite worth noting that not all the OAR in India is functional. As calculated physically through the OpenDOAR registry URL of these repositories 63(sixty-three) repositories are fully functional, 1(one) repository is having no collection (ETDs of The Tamil Nadu

Dr M.G.R. Medical University), and 1(one) repository asked for the installation of the chrome browser extension. 2(Two) repositories responded with "404 not found" and 1(one) repository responded, "400 bad Request". 1(one) repository (Indian Institute of Management Kozhikode Digital Library) resulted in "Page not Found" error, 3(three) URLs redirected to unwanted sites, 1(one) stated "site offline" and the remaining 25(twenty-five) repositories responded with "This site can't be reached" error.

Northeast universities include Arunachal Pradesh, Assam, Manipur, Meghalaya, Mizoram, Nagaland, Tripura, and Sikkim. In terms of education and social position, each of these states is culturally diverse.

Shodhganga (https://shodhganga.inflibnet.ac.in/) was used to gather the relevant data for the investigation. There are currently 476 universities contributing to Shodhganga across the country, and this study focused on those from Northeast India. To identify individual statistics, the number of university contributions was manually counted and tabulated. Wherever possible, statistical analysis has been used, and graphics have been integrated for enhanced data communication. For assessing the Indian repositories, the research was conducted using the Open DOAR website (https://v2.sherpa.ac.uk/opendoar/) and content obtained on June 11, 2020. According to the study's goals, the statistical software JASP was employed.

4. DATA ANALYSIS
4.1 Open-Access Repositories in India

Table 1 depicts the functional and non-functional OAR

Table 1. Status of open-access repositories in India (as registered in OpenDOAR)

Response	Count	
400 bad Request	1	
404 not found	2	
Operational	65	64.29
Page not Found	1	
Redirects	3	
Site offline	1	
This site can't be reached	25	
Total	98	
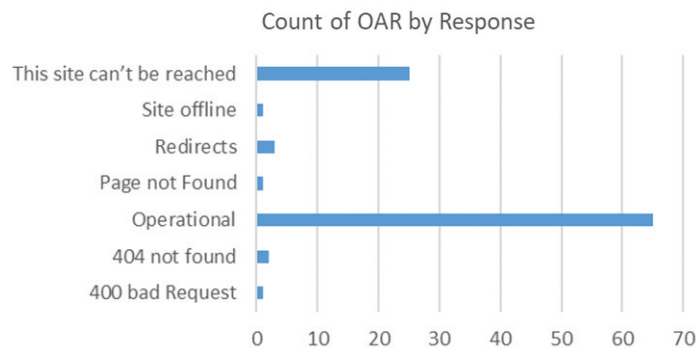
Figure 1. Functional OAR count.

Table 2. Status of universities in Northeast India

State	University	UT	DOE	DM	CST	IRU
Assam						
	Assam Don Bosco University	Private	2009	September, 2011	60	N
	Assam Down Town University	Private	2010	April, 2018	3	N
	Assam University	Central	1994	January, 2013	1436	N
	Bodoland University	State	2009	September, 2015	41	http://14.139.213.3:8080/jspui/
	Dibrugarh University	State	1965	June, 2015	407	N
	Gauhati University	State	1948	July, 2011	5695	N
	Krishna Kanta Handique State Open University	State	2007	December, 2011	12	http://dlkkhsou.inflibnet.ac.in/
	Tezpur University	Central	1994	August, 2013	614	agnee.tezu.ernet.in
	Assam Science and Technology University	State	2009	October, 2019	2	N
	Assam Agricultural University	State	1969	November, 2020	1	N
	National Law University and Judicial Academy	State	2009	May, 2019	2	N
Arunachal Pradesh						
	Rajiv Gandhi University	Central	1985	October, 2014	432	http://52.172.27.147:8080/jspui/
Manipur						
	Manipur University	Central	1980	March, 2011	1147	N
Meghalaya						
	Martin Luther Christian University	Private	2005	October, 2016	25	N
	North Eastern Hill University	Central	1973	March, 2011	2256	N
Mizoram						
	Mizoram University	Central	2000	October, 2013	440	http://mzuir.inflibnet.ac.in/
Nagaland						
	Nagaland University	Central	1994	August, 2015	205	http://www.nagalanduniv.ndl.iitkgp.ac.in/
	Institute of Chartered Financial Analysts of India (ICFAI) University	Private	2009	January, 2019	6	N
Sikkim						
	Sikkim Manipal University	Private	1995	September, 2019	47	N
	Sikkim University	Central	2007	March, 2012	52	http://dspace.cus.ac.in/jspui/
Tripura						
	Tripura University	Central	1987	January, 2013	202	https://www.tripurauniv.ac.in/Page/LBCRepositoryThesis
	ICFAI University, Tripura	Private	2004	November 2017	3	N

Abbreviation: UT-University Type, DOE-Date of Establishment, DM-Date of Signature of MoU, CTS-Contribution of Theses into Shodhganga, IRU-Institutional Repository URL

in India on June 11, 2021. One-third of the Open-Access Repositories are non-functional. Some of the specialised institutional repositories are not operative. The reason might be a temporary one as the Covid pandemic stalled most of the academic activities and repository management might get influenced by the same.

4.2 Universities in Northeast India's Contribution to ETDs

Table 2 displays the overall position of Institutional Repositories (IR) in Northeast universities in terms of signing MoUs and contributing electronic Theses to the Shodhganga

Table 3. State-wise status of ETD submission by Northeastern Universities

State	(TNTC) (%)	TNU	TNUSM	TNUCT
Assam	8273 (63.21)	24	12	11
Arunachal Pradesh	432 (3.30)	11	2	1
Manipur	1147 (8.76)	8	3	1
Meghalaya	2281 (17.43)	9	2	2
Mizoram	440 (3.36)	2	1	1
Nagaland	211 (1.61)	4	3	2
Sikkim	99 (0.76)	6	2	2
Tripura	205 (1.56)	3	2	2
Total	13088 (100)	67	27	22

Abbreviation: TNTC- Total number of Theses contribution, TNU - Total number of University, TNUSM –Total number of universities signing MoU, TNCT-Total number of universities contributing Theses

repository. Northeast India has 67 institutions, comprising 11 central universities, 34 private universities, 20 State Universities, and 2 deemed institutions spread over in eight states; Mizoram has the fewest universities, whereas Assam has the most. The Gauhati University in Assam has contributed maximum Theses (5695) and North Eastern Hill University in Meghalaya submitted the second most Theses (2256) in the Shodhganga.

4.3 ETD Status in Northeast India is State-Wise.

Table 3 shows that the Shodhganga repository received a total of 13088 Theses from Northeast universities, with Assam contributing the most (63.21 percent), followed by Meghalaya with 2281 (17.43 percent). The Shodhganga received a total of 4.24 percent of ETDs from the eight Northeastern states.

4.4 Year-wise Contribution of ETDs.

According to year-wise contributions of Theses from

Table 4. Year-wise contribution of ETDs by North East Universities

| University	2010-20	2000-09	1990-99	1980-89	1970-79	1960-69	Total
Tezpur University	482	112	6	0	0	0	600
Assam Agricultural University	1	0	0	0	0	0	1
Assam Don Bosco University	60	0	0	0	0	0	60
Assam Down Town University	3	0	0	0	0	0	3
Assam University	985	233	5	0	0	0	1223
Assam Science & Technology University, Kahilipara	2	0	0	0	0	0	2
Bodoland University	41	0	0	0	0	0	41
Dibrugarh University	407	0	0	0	0	0	407
Gauhati University	1281						1281
Krishna Kanta Handique state Open University	12	0	0	0	0	0	12
National Law University and Judicial Academy	2	0	0	0	0	0	2
Rajiv Gandhi University	293	113	6	0	0	0	412
Manipur University	277	397	214	68	0	1	957
Martin Luther Christian University	25	0	0	0	0	0	25
North Eastern Hill University	1045	392	306	270	1	2	2016
Mizoram University	416	24	0	0	0	0	440
Nagaland University	205	0	0	0	0	0	205
ICFAI University	6	0	0	0	0	0	6
Sikkim Manipal University	46	1	0	0	0	0	47
Sikkim University	52	0	0	0	0	0	52
ICFAI University, Tripura	3	0	0	0	0	0	3
Tripura University	202	0	0	0	0	0	202
	5846	1272	537	338	1	3	7997
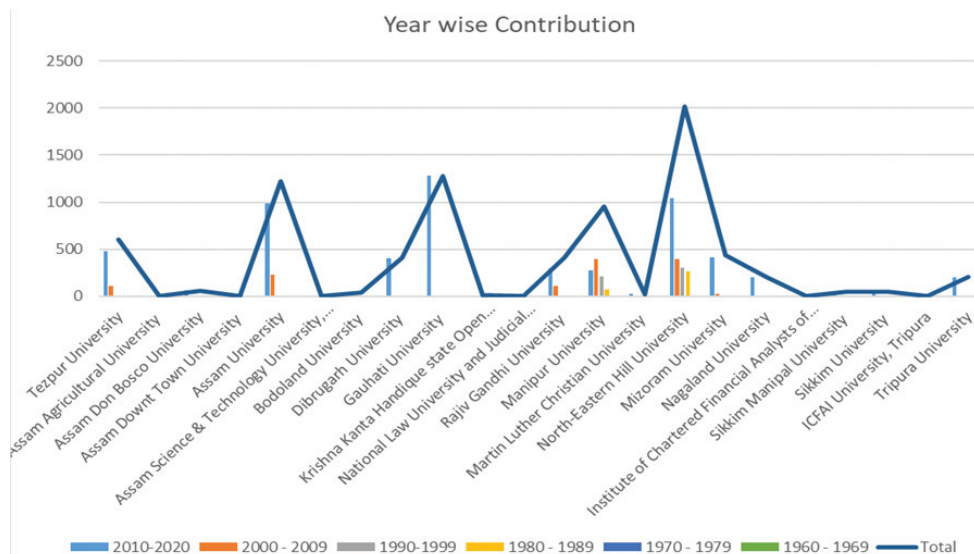
Figure 2. Year-wise distribution of contribution of ETDs by North East universities.

Table 5. Language-wise contribution of ETDs by North East universities

Universities	English	Assamese	Hindi	Bengali	Meitei	Others
Tezpur University	601		1	0	0	2
Assam Agricultural University	1		0	0	0	0
Assam Don Bosco University	58		0	0	0	2
Assam Down Town University	3		0	0	0	0
Assam University	1039		42	65	9	176
Assam Science & Technology University, Kahilipara	2		0	0	0	0
Bodoland University	38		0	0	0	3
Dibrugarh University	378		0	0	0	29
Gauhati University	5333	146	1	1	0	52
Krishna Kanta Handique state Open University	11		0	0	0	1
National Law University and Judicial Academy	2		0	0	0	0
Rajiv Gandhi University	394		24	0	0	12
Manipur University	1059		0	0	0	78
Martin Luther Christian University	25					
North Eastern Hill University	2157		1	0	0	37
Mizoram University	439		1	0	0	0
Nagaland University	204		0	0	0	1
ICFAI University	6		0	0	0	0
Sikkim Manipal University	47		0	0	0	0
Sikkim University	47		0	0	0	5
ICFAI University, Tripura	3		0	0	0	0
Tripura University	180		9	5	0	8

Northeastern universities, the data furnished on the Shodhganga website was unratified. The repository listed the total number of theses under the name of the universities that did not comply with the year-wise grouping of contributed data. Table 4 and Fig. 2 depicted existing data in the Shodhganga. It was seen that the year-wise information of some universities (mainly Gauhati University, Assam University, Northeast Hill University, etc.) had been quite different in Shodhganga.

4.5 Language-wise Contribution of ETDs

Table 5 and Fig. 3 shows, the language-wise contribution of ETDs in the Shodhganga but it can also be seen from few universities that accurate language-wise data is not displayed to the repository, which does not correspond to the overall quantity of ETDs contributions.

4.6 Statistical Data Relating the Support of ETDs Contributed into the Shodhganga by the Northeast states.

In Table 6 we preferred to make a comparative analysis of central tendency, dispersion, skewness, and Kurtosis of ETD submission by the Northeast universities. A low standard deviation means that most of the numbers are close to the average, while a high standard deviation means that the numbers are more scattered. Our study revealed that for ETD submission the submission count is greatly dispersed and thus corroborates the study. The skewness result 2.27 signified that the submission status is highly skewed as there was no symmetry in the submission of ETDs by the institutions of North East India. The Kurtosis result 6.13 signified that the distribution of ETD was Leptokurtic (>3 Positive) and Excess Kurtosis.

5. FINDINGS AND DISCUSSION

The study resulted in several significant findings. Firstly, despite signing a Memorandum
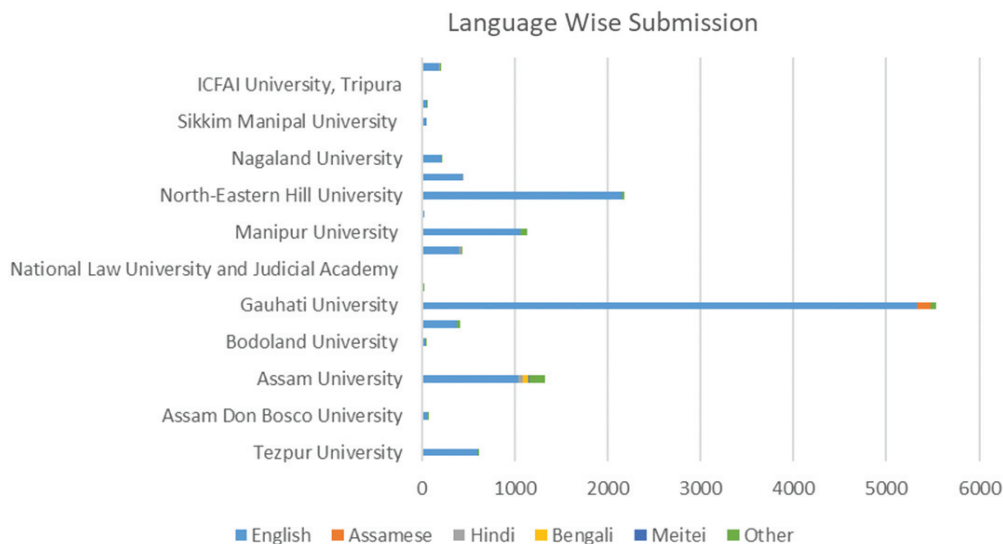
Figure 3. Language-wise submission of ETDS.

Table 6. Statistical analysis with the ETDs submitted data sets

x	(x-¯x) = (x-1636)	(x-¯x)2 = (x-1636)2	(x-¯x)3 = (x-1636)3	(x-¯x)4 = (x-1636)4
99	-1537	2362369	-3630961153	5580787292161
205	-1431	2047761	-2930345991	4193325113121
211	-1425	2030625	-2893640625	4123437890625
432	-1204	1449616	-1745337664	2101386547456
440	-1196	1430416	-1710777536	2046089933056
1147	-489	239121	-116930169	57178852641
2281	645	416025	268336125	173076800625
8273	6637	44049769	292358316853	1940382148953360
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13088	0	54025702	279598659840	1958657431383050

Standard deviation: 2778.12 Skewness =2.2759 Kurtosis =6.1353

of Understanding with INFLIBNET, the authors noticed that most universities did not begin ETDs submission to the national repository. The greatest and most consistent universities are submitting ETDs for storage in the repository. While a few private universities have signed memorandums of understanding and contributed Theses, deemed universities are not signing memorandums of understanding for the submission of ETDs. Lack of understanding of the importance of submitting electronic Theses and dissertation to the national repository undermined the very objective of the creation of a national ETD repository that helps curb down information duplication and development of filtered knowledge capital for social development. Furthermore, it was evident that all registered open-access repositories are not functional. It is of paramount importance that the non-functional repositories should dig out real operational reasons for not being active. According to OpenDOAR. By June 2021, India now has 98 repositories and between 2011 and 2015, India established a total of 39 repositories (41.50 percent).

The total collection of Shodhganga has the most ETDs in India, with 308771 ETDs as of June 11, 2021, which represents its importance in the academic domain. Even the institutions of Northeast submitted 13088 Theses the Shodhganga (4.24 percent). The state, Assam submitted the highest 78273 e-Theses that represented 63.21 percent of the total e-Theses of Northeast India.

The authors found some anomalies in data provided by the Shodhganga repository for the cases of Tezpur University, Gauhati University, and Assam University. Shodhganga portal declared that for Tezpur University total submission was 614, For Gauhati University total submission was 5695 and for Assam university, it was 1436. While crosschecking these data with the year-wise and language-wise categorisation provided in the same portal, the counts varied and thus created confusion. The authors took the year-wise and language values as the base which still gave irrelevant counts of the submission. Clearer and refined data are sought from the end of INFLIBNET.

6. CONCLUSION

The goal of this research is to find patterns in the growth of accessible repositories and their record collections in India. As a national Open-Access Repository, Shodhganga is critical for publicizing research results. It is critical to sign MoU with Shodhganga as soon as possible to help the Northeast universities with the country's quality research programme. The signature of MoU with Shodhganga to aid the Northeast universities in the country's quality research advancement is urgently needed. The entire contribution of Northeast universities in India to Shodhganga was determined to be insufficient, demanding strong guidance and further patronage to boost the submission of ETDs for the development of a mutually exclusive knowledge repository.

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