

# *Shodhganga: an Institutional Repository for e-Theses in India*

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## **ABSTRACT**

*Academic libraries plays pivotal role in fulfilling the information needs of the academic and research community by acquiring various sources such as books, journals, magazines, theses and dissertations etc. Print resources have certain limitations such as access by single user, access within the stipulated time in the four walls of library, damage due to frequent handling of documents; theft, fire etc. have forced the libraries to undergo changes in this digital environment. Theses and dissertations are considered as important sources for the teaching and research community should be made available to the users at their convenient time for development of new ideas. Many of the academic and research institutions in India have started digitizing their printed materials for wider access to the user community. Information Library Network (INFLIBNET), a centre of UGC has established a project called Shodhganga – an Institutional Repository to access theses through open access mode, which are submitted by the Indian universities, have made a good attempt to meet the information needs of the user community. This paper discusses about the Shodhganga – institutional repository, need and importance, impact of e-Theses initiative, INFLIBNET centre, universities and students role in development and contribution to the project, and issues and strategies to be adopted for further development.*

**Keywords:** e-theses and dissertations, open access initiative, institutional repository, Shodhganga, INFLIBNET Centre, Indian Universities

## **INTRODUCTION**

Academic libraries are treated as treasure of knowledge plays significant role on teaching, learning and research activities. University libraries have wealth of knowledge in various dimensions such as books, journals, magazines, reports, standards, rare books, theses and dissertations, have certain limitations such as access by single user, access within four walls of library, chances for theft, damage due to frequent handling, short life span and so on (Beena, 2015). Among the resources mentioned above, theses/dissertations are considered as important source particularly for research work. Access to theses/dissertations in university libraries varies according to the policies of the libraries. In some places, theses are not allowed to take photocopies, which hinders the usage level of theses by the researchers.

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Digitization of theses makes available of the resources outside the world, apart from preserving for longer period by having the resources in multiple locations. Realizing the importance of digitization, in India, many of the organizations have started digitizing their rare materials such as rare books, reports, theses. Many of the institutes with National Importance such as Indian Institute of Science (IISc), Bangalore, Indian Institute of Technologies (IITs), and Universities have started digitalizing theses and dissertations for wider access. Information Library Network (INFLIBNET), a centre of University Grants Commission (UGC) has implemented a Shodhganga – e-Theses institutional repository, where all the higher education institutions e-Theses are uploaded will be available to the users have made significant role in their academic and research activities. This paper discusses about shodhganga – IR, its role and its impact on academic and research activities.

### **Higher Education India**

Indian Higher Education is the third largest in the globe, next to United States of America and China, witnessed quantitative expansion after independence needs more reforms in the rules and regulations to maintain the quality (**Sethi, 2015**). It plays major role in bringing out the research in the form of theses and dissertations. Thousands of theses are awarded every year, which are very important source for the young researchers to understand their research, acquire new knowledge and proceed with right direction on research (**Vijayakumar, Murthy, & Khan 2004**).

Recent years witnessed healthy growth in number as well as enrollment. Today, there are around 768 Universities (Central, State, Deemed to be Universities and Private Universities) and 37,000 Colleges. The situation of Gross Enrollment Ratio is 20.0%, which is much less than average of 27.0% and less than the GER of USA and United Kingdom. India is also lacking in producing good number of quality research output. There are many reasons for lack of quality of research are affiliating system, interference with autonomy, differences in funding policy, no incentives for good performers, shortage of quality faculty members, political and communal interference, traditional examination system and so on are the evils, which have put hindrance in developing the higher education (**Rama Devi Pani, 2015**). According to (**Sreenivasan, 2012**), frequent changes in the curriculum and research is very important, and the results of any research should be useful and should bring out changes in the society.

### **Need and importance of e-Theses initiative**

In India, access to theses and dissertations are limited and differs from university to university. **Thomas and Sarah (2013)** stated that many of the precious documents have been lost due to many reasons such as theft, fire, flood, damage and so on, which are sometimes not replaced due to non-availability in the market. Preservation is the only solution, which provides space to keep the documents in central server and also allows the users to access simultaneously from any part of the world.

### ***Shodhganga: An Institutional Repository***

By realizing the limitations, Government of India and other agencies such as Indian Council for Social Science Research (ICSSR), Council of Scientific and Industrial Research (ICSR), Indian Council of Agricultural Research (ICAR), INDEST Consortium, which has many institutes with national importance such as Indian Institute of Technologies, Indian Institute of Science, Indian Institute of Managements, Indian Institute of Information Technologies, National Institute of Technologies and so on have taken steps to frame guidelines to digitize theses and availability of the same through open access mode. Some of the core member institutes have started Open Access Initiatives for ETD repositories and some of the IITs and IISc have started digitizing their back volumes of theses. Vidyanidhi, a major project, signed Memorandum of Understanding (MOU) with National Social Science Documentation Centre (NASSDOC) of Indian Council of Social Science Research (ICSSR), New Delhi, have digitized more than 2000 theses and made it available through CD-ROM format (**Anil Hirwade, 2011**).

Among the institutions and centres digitizing theses, Shodhganga is a major project has started digitizing the theses submitted in Indian universities from the day one. In India, the users both faculty members and research scholars are effectively utilizing theses for many reasons such as formulating research problem, literature review, and how the previous study has been carried out so that they can proceed further without much problem. Printed copies of theses serve little to the researchers and simultaneous access, access at any time are the problems in printed theses. These limitations have been overcome by the e-Theses must be reached to all the users so that the major purpose of the digitization can be achieved. In this circumstances, this study will be more useful to the user community and the universities which are contributing less or not contributing can take steps to develop e-Theses and strategies can be taken for the problems faced while digitizing.

### **OBJECTIVES OF THE STUDY**

Following are the major objectives identified for the above study

- To highlight the INFLIBNET, academic and research institutions and research scholars role in e-Theses initiative
- To find out major Indian and Tamil Nadu universities contribution to e-Theses development
- To find out the problems identified while development of e-Theses
- To provide some measures to overcome the barriers

### **METHODOLOGY OF THE STUDY**

Though, there are many institutes in India have started digitizing the theses., INFLIBNET Centre an autonomous Inter-University Centre of UGC plays major role in modernizing the university libraries through state-of-the art network technologies have initiated many projects such as UGC-INFONET Consortia, N-LIST, Union database of books, journals, theses, SOUL (Software for University Libraries) for automating libraries, Soghganga and so on. Shodhganga is an Institutional Repository for electronic Theses available for research

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scholars. There are 83396 full text theses, 2222 synopsis contributed by 246 universities in which, 268 universities have signed MOU with INFLIBNET Centre as on 16.05.2016.

### **LIMITATIONS OF THE STUDY**

- Since most of the universities are uploading theses and many of the universities are joining with Shodhganga project to upload the theses, the data taken for this study is limited to the time specified.
- INFLIBNET Centre with the help of UGC is providing financial assistance to the universities to convert the printed theses into electronic theses. But, financial assistance is given to limited institutions in phased manner, may hinders the other institutions in conversion of printed theses into e-Theses.
- There are cases that theses in one subject are placed in other subject and same university appears in different places.

### **Shodhganga – Institutional Repository for e-Theses and Dissertations**

Recent years witnessed massive open access initiatives all over the world, which gained popularity among the academic and research community. Open access movement allows the users to view the content, modify, download, preserve and re-distribute among the users (**Sengupta, 2012**).

Theses and Dissertations are the rich and unique sources for research scholars' plays key role in research activities in higher academic institutions, which is available with the universities are unpublished materials. Theses materials are normally underutilized and unidentified, which is the reason for duplication of research, wastage of money and precious time of the researchers. In this digital environment, the only solution to make it aware of the theses and dissertations are digitization of printed theses and dissertations. Digitization of theses and dissertations and making available of the same through a server which is located in central place not only makes easy to access the resources, but also helps to ensure the standards and quality of the research work. In this context, the INFLIBNET, Ahmedabad had come up with a project called Shodhganga, a platform for depositing the research work and making available of Indian Ph.D theses in electronic form to the research community through open access mode.

Shodhganga is the name coined for maintaining electronic Theses and Dissertations through centrally-maintained web server for the purpose of budding research scholars to access the research work carried out by the researchers. The word 'Shodh' originated from Sanskrit means research and discovery and "Ganga" means holiest, largest rivers of all in Indian subcontinent.

Shodhganga at INFLIBNET is developed using DSpace an open access software for developing Institutional Repository for all types of materials such as text, audio, video and data sets. Shodhganga has the capability of capturing, indexing, storing, preserving and retrieving the theses in open access mode. DSpace supports "Open Archives Initiative's

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Protocol for Metadata Harvesting” (OAI-PMH) and uses Dublin Core Metadata Schema. INFLIBNET Centre also promotes the member Universities to set up their Institutional Repository for ETDs using OAI-PMH compliant software. It is also possible for the Universities, which has networks, sufficient infrastructure facilities to maintain their own ETD repository for depositing the research students’ theses in e-version and also the member universities can use the Shodhganga for maintaining their back files of theses. INFLIBNET Centre, which maintains Shodhganga also deploys a central server to harvest metadata from ETD repositories distributed in universities with aim to provide uniform access to theses through its harvesting server (**INFLIBNET Centre, n.d.**)

INFLIBNET Centre, Universities and students are the major players involved with the digitization process are listed below.

#### **Role of INFLIBNET Centre**

Among the three stakeholders mentioned above, INFLIBNET plays key role in digitization process that

- Recommends financial assistance to the universities to digitize the theses
- Provides methods to submit the theses through online, offline, or research centre or researcher to register through web-based interface before submitting the theses
- Assists in configuring and purchasing of systems for IR
- Ensures the authenticity of the theses with consultation with the university coordinators
- Provides anti-plagiarism software to detect the plagiarism portion of the theses.

#### **Role of Universities**

Following are the universities role in digitization process

- Modifying the regulations of Ph. D theses by adding a clause for submitting e-Version of theses, abiding copyright rules and IPR for detecting plagiarism and making available of the resources through open access mode.
- Providing computer, network and manpower facility to the scholars to submit the theses
- Making available of back files of theses with metadata with the funds released by UGC and by own funds if necessary
- Submitting the theses in the PDF format, with different fields such as title page, declaration, contents, tables etc. and facilities to convert the theses submitted in other formats.
- Maintain policies and regulations for submission of theses
- Creating awareness to the students and faculty members about the Shodhganga

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## **Students Responsibilities**

INFLIBNET recommends the students to submit theses using standard software for composing theses with all elements such as declaration, certificate, table, abbreviation and so on and standard reference manual for citation, reference and bibliography. Before submitting the theses, the user has to create a user name and password, and the file should be in PDF format with proper keywords or descriptors. After submitting the theses, authentication certificate should be received from the coordinator of the university.

## **Shodhganga – Institutional Repository**

Shodhganga is an Institutional Repository for electronic Theses have 83396 full text theses, 2222 synopsis contributed by 246 universities in which, 268 universities have signed MOU with INFLIBNET Centre as on 16.05.2016.

The screenshot shows the Shodhganga website in a browser window. The browser's address bar displays 'shodhganga.inflibnet.ac.in'. The website header features the 'Shodhganga' logo with the tagline 'a reservoir of Indian theses' and the INFLIBNET logo. A navigation menu includes 'HOME', 'ABOUT US', 'SEARCH & BROWSE', 'UGC NOTIFICATION', 'GUIDE & TUTORIALS', 'DOWNLOAD', 'USER REGISTRATION', and 'LOGIN'. A central banner highlights an award: 'Shodhganga Received the eINDIA JURY CHOICE Award for Best ICT Enabled Higher Education Institute of the Year 2015'. Below the banner is a search bar with the text 'Search Thesis into Shodhganga' and options for 'Advance Search', 'Subject Search', and 'Google Search'. A dropdown menu is open over the search bar, listing 'M.Phil/Ph.D Regulation 2009', 'UGC Guidelines for Shodhganga', and 'Shodhganga Questionnaire for Fund'. The footer contains 'About Shodhganga', 'Latest Updates', 'Videos', and 'Photos'. A small notification at the bottom right states '» 268 Universities Signed MoU'. The Windows taskbar at the bottom shows the time as 11:23 AM.

Source: <http://www.inflibnet.ac.in>

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Table 1: Out of 246 Universities, universities contributed more than 500 theses

S.N.	Name of the University	No. of Theses	%	S.N.	Name of the University	No. of Theses	%
1	Aligar Muslim University	6058	7.3	21.	North-Eastern Hill University	1096	1.3
2	Jawaharlal Nehru University	4457	5.3	22	Kuvembu University	1096	1.3
3	Punjab University	4298	5.2	23	Periyar University	1024	1.2
4	Anna University	3919	4.7	24	Bangalore University	1002	1.2
5	Maharaja Sayajirao University of Baroda	3433	4.1	25	Maharaja Krishnakumarsinhji Bhavnagar University	968	1.2
6	Sri Krishnadevaya University	3209	3.8	26	Sri Jagdishprasad Jhabarmal Tibarewala University	912	1.1
7	Gauhati University	3046	3.7	27	Maharshi Dayanand University	842	1.0
8	Gujarat University	3027	3.6	28	University of Calicut	830	1.0
9	Mahatma Gandhi University	2182	2.6	29	Bharathiyar University	799	1.0
10	Manonmanian Sundaranar University	2105	2.5	30	Savitribai Phule Pune University	784	0.9
11	Sardar Patel University	1853	2.2	31	Pondicherry University	773	0.9
12	CUSAT	1853	2.2	32	Sourashtra University	683	0.8
13	Pt. Ravishankar Shukla University	1787	2.1	33	University of Hyderabad	658	0.8
14	Bundelkhand University	1693	2.0	34	Bharathidasan University	630	0.8
15	Chaudhary Charan Singh University	1683	2.0	35	University of Kashmir	576	0.7
16	The University of Burdwan	1661	2.0	36	Sant Gadge Baba Amravati University	554	0.7
17	Dr. Harisingh Gour Vishwavidhyalay	1646	2.0	37	Acharya Nagarjuna University	541	0.6
18	Dr. Babasaheb Ambedkar Marathwada University	1577	1.9	38.	Punjabi University	560	0.7
19	Sri Venkateshwara University	1354	1.6	39	University of Delhi	508	0.6
20	University of Mysore	1153	1.4				
	39 Universities contribution	66,830	80.1				
	Remaining 207 Universities contribution	16,566	19.9				
	Total	83,396	100.0				

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From the above table, it is known that among the top 39 universities, which have contributed more than 500 theses, it is found that out of 246 total universities, 39 have contributed 66,830 (80.1%) of theses, which is more than three-fourth of the theses and rest of 207 universities have contributed only 16,566 (19.9%). Among 39 universities, the top universities contribution were: Aligar Muslim University 6058 (7.3%), Jawaharlal Nehru University 4457 (5.5%), Punjab University 4298 (5.2), Anna University 3919 (4.7%), Maharaja Sayajirao University of Baroda 3433 (4.1%), Sri Krishnadevaya University 3209 (3.8%), Guahati University 3046 (3.7%) and Gujarat University 3027 (3.6%) and rest of the universities have contributed less than 3000 theses and University of Kashmir, Sant Gadge Baba Amravati University, Acharya Nagarjuna University, Punjabi University and University of Delhi were the universities contributed between 501 to 599 theses range. It is also noted that some of the universities have contributed very less number of theses like less than 5 and some have gone for MOU and not contributed so far.

From the Table 2, there are 36 universities have contributed theses to Shodhganga. Out of 246 universities, 36 universities from Tamil Nadu have contributed 11,490 (13.8%) theses, which is reasonable since India has 28 states and 7 union territories. Some of the universities, which have contributed less than 10 theses, were Saveetha University, V.O. Chidambaram College of Education, Madurai Kamaraj University, Tamil University, Noorul Islam Centre for Higher Education, Periyar Maniammai University

From the Table 3, it is found that Anna University, Chennai is in 4<sup>th</sup> position with 3919 (4.7%) theses followed by Manomaniam Sundaranar University with 2105 (2.5), Periyar University with 1024 (1.2), Bharathiar University with 799 (1.0%) and Bharathidasabn University with 630 (0.8%) secured 10<sup>th</sup>, 23<sup>rd</sup>, 29<sup>th</sup>, and 34<sup>th</sup> position. These five universities have contributed 8477, which is 9.7% of the total theses.

## **DISCUSSION**

India is a country with 28 states and 7 union territories have many State, Central, Deemed and Private Universities. By realizing the importance of digitization, many of the higher academic institutions have started digitizing their research work. Though many agencies have started digitization of theses and dissertations, INFLIBNET Centre plays major role in digitizing all the theses submitted to Indian Universities. Submission of theses to Shodhganga is gradually increasing with more and more number of universities are contributing their collection. INFLIBNET Centre has meticulously planned and brought out the project has done wonderful job to the academic and research community. At the same time, some of the issues, which also should be considered and solution should be taken to strengthen the service. In this context, some of the issues are brought out and necessary solutions also to be provided to make the service effective.

Table 2: Contribution of Universities in Tamil Nadu

<b>S.N.</b>	<b>University</b>	<b>No.s</b>
1	Kalasalingam University	46
2	Periyar University	1024
3.	PRIST University	11
4	Saveetha University	5
5.	Tamil Nadu Physical Education & Sports University	26
6.	V.O. Chidambaram College of Education	2
7.	Alagappa University	336
8.	Annamalai University	315
9.	Bharathiar University	799
10.	B.S. Abdur Rahman University	25
11.	Dr. M.G.R. Educational & Research Institute	46
12	Karunya University	113
13.	Madurai Kamaraj University	1
14	SASTRA University	94
15.	SRM University	327
16.	Tamil University	5
17.	The Gandhigram Rural Institute	185
18.	Amrita Vishwa Vidhyapeetham	94
19	Anna University	3917
20.	Avinasilngam Deemed University for Women	195
21.	Bharathidasan University	630
22.	Hindustan University	26
23	Kalasalingam University	4
24.	ManonmaniamSundaranar University	2107
25.	Mother Terasa Women’s University	224
26.	Noorul Islam Centre for Higher Education	10
27.	Periyar Maniammai University	10
28.	Sri Chandrasekharendra Saraswathi Viswa Mahavidyalaya	93
29.	Sri Ramachandra University	133
30.	St. Peter’s University	52
31.	Tamil Nadu Dr. Ambedkar Law University	16
32.	The Tamil Nadu Dr. Ambedkar Law University	12
33.	University of Madras	441
34.	Vels University	62
35.	Vel Tech Dr. R R & Dr. S R Technical University	11
36.	VIT University	93
	<b>Total</b>	<b>11,490</b>
	<b>%</b>	<b>13.8</b>

Table 3: Tamil Nadu Universities contributed more than 500 theses

S.N.	Universities	Nos.	%	Position
1.	Anna University	3919	4.7	4
2.	Manonmaniam Sundranar University	2105	2.5	10
3.	Periyar University	1024	1.2	23
4.	Bharathiar University	799	1.0	29
5.	Bharathidasan University	630	0.8	34
	<b>Total</b>	<b>8477</b>	<b>10.2</b>	

### ISSUES AND STRATEGIES

- Among 246 universities, top 39 universities have contributed 66,830 (80.1%) theses, which are more than three-fourth of the theses and rests of 207 universities have contributed only 16,566 (19.9%). Among 39 universities, top universities are: Aligar Muslim University 6058 (7.3%), Jawaharlal Nehru University 4457 (5.5%), Punjab University 4298 (5.2), Anna University 3919 (4.7%), Maharaja Sayajirao University of Baroda 3433 (4.1%), Sri Krishnadevaya University 3209 (3.8%), Guahati University 3046 (3.7%) and Gujarat University 3027 (3.6%) and rest of the universities have contributed less than 3000 theses and University of Kashmir, Sant Gadge Baba Amravati University, Acharya Nagarjuna University, Punjabi University and University of Delhi were the universities contributed between 501 to 599 theses range. Among 207 universities, which have contributed less than 500 theses, most of the universities have contributed very less number of theses. INFLIBNET centre should take necessary steps to speed up the digitization process with the universities contributed less theses.
- It is found from the results that Tamil Nadu have contributed 11,490 (13.8%), and only 5 universities in Tamil Nadu have contributed 8477 (9.7%), which seems more when comparing with other states. It is better to have a discussion with the education ministry and experts to maximize the digitization process in other states also.
- More awareness to the research scholars, faculty members and library professionals should be created in order to utilize the services effectively and efficiently by asking the universities to conduct more awareness programme on e-Theses, otherwise huge money spent for such project will be meaningless.
- Training to the library professionals should be provided periodically either in the INFLIBNET Centre or on site training at the universities.
- There are chances for placing the theses under different department headings. Care must be taken to ensure the title of theses placed in the correct location.
- Policies for applying Optical Character Recognized (OCR), particularly for Indian language theses submitted in universities
- UGC has requested the universities to submit the theses by checking the plagiarism level. Many of the users are not aware of using the plagiarism software and

particularly, the language research scholars are facing difficulties. Hence, there should be proper guidelines for plagiarism checking and action to be taken if the detected plagiarism portion of theses are more.

- Integrity of the digital content, which means digital content should not be modified at any time.
- Technological obsolescence should be clearly discussed and the digital content should be made available to the end-users at any time (**Ghani, 2012**)

## CONCLUSION

The present digital environment has forced most of the institutions to go for digitization of their printed resources. Among many of the sources, theses play major role in meeting the information of the academic and research community. Submission of soft copy of thesis has made easy to upload the same in to the Institutional Repository, whereas the existing printed theses needs much effort, money, staff and infrastructure for developing open access repository. For making any system effective, awareness about the resources will be the only solution, which is being provided by the INFLIBNET centre to the universities contributed theses. The centre is providing the awareness service in the respective university and at their place to create awareness about the e-Theses, which is being well received by the students and faculty members. Awareness programme on Shodhganga and plagiarism software Urkund is being conducted at Alagappa University, Karaikudi, Tamil Nadu was well received and increased the awareness level among the academic and research community, which increased the access level. If such programmes are organized periodically in all the universities will help the user community to utilize the resources effectively.

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