

Assessment of the Impact of INFLIBNET's Initiative on Libraries with Special Reference to Central Universities of North India

*Rajesh Kumar Pandey
Dr. J.N. Gautam*

ABSTRACT-

Rajesh Kumar Pandey
Research Scholar
School of Studies in Library and
Information Science
Jiwaji University, Gwalior
rajeshpandey@slbsrsv.ac.in

Dr. J.N. Gautam
Professor & Head
School of Studies in Library and
Information Science
Jiwaji University, Gwalior (MP)
jngautam1@yahoo.com

The purpose of the research study is to assess the impact of INFLIBNET's initiatives on the libraries of the central universities in North India. The study has been designed to get the perspectives of the University Librarian/Librarian in charge of the central universities in North India. Given the delimitation of the Geological Survey of India and the scope of the study, thirteen central universities of North India have been incorporated into the study. The survey method of research has been adopted for this study. To gather the primary data, a structured questionnaire incorporating all the legitimate questions concerning INFLIBNET has been designed and distributed amongst the university librarians. The data collected has been organised and analysed, and many tests have been performed using MS Excel and SPSS. Analysis and interpretation of data reveal that although INFLIBNET has played a significant role in transforming university libraries, there has been scope for improvement on many fronts. The study suggests specific measures to be taken to ensure optimum utilisation of university library resources and affirm the mission and vision of INFLIBNET.

Keywords: INFLIBNET; E- ShodhSindhu; Shodhganga; Shodhchakra; Shodhshuddhi; Professional Capacity Building

INTRODUCTION

Equitable access to scholarly resources was a perennial issue in Indian universities and a significant impediment to quality education and research. Financial limitations before higher education stakeholders led to adopting the age-old tested concept of resource-sharing to ensure access to quality resources and avoid duplicity in acquiring scholarly resources for universities. (Viswanathan et al., 1991)

The idea of resource sharing amongst the university libraries of India through networking of libraries capitalising on emerging information and communication technologies led to the genesis of the Information and Library Network (INFLIBNET) in 1988. The pressing need for quality education and research in universities post the announcement of the National

Education Policy 1986 and the demands for implementation of information and communication technologies in the libraries after the report of National Policy on Library and Information System (1986) played a catalytic role for the Planning Commission (now NITI Aayog) to set up a Working Group on the modernisation of Library and Information Services during 7th FYP (1985-1990). It culminated in conceptualising an ambitious project to network university libraries by the University Grants Commission to benefit the faculty and students. ("Networking of University Libraries," 1989). INFLIBNET became functional in 1991 as a project under the IUCAA and became an independent IUC of UGC in 1996, with its headquarters at Gandhinagar.

Since its inception, the INFLIBNET Centre has been instrumental in transforming the university library system. Manifold projects, programmes, and activities that support ICT infrastructure development, automation and networking for resource sharing, and access to quality e-contents through the e-journal consortium have supported university libraries nationwide. Conducting short and long-term training programmes and organising conventions have been the ways to promote capacity building and skill development amongst LIS professionals working in the university libraries. (Chauhan & Murthy, 2006; INFLIBNET, 2004; *INFLIBNET Centre Gandhinagar*, n.d.; Waghmode, 2014)

OBJECTIVE

INFLIBNET was entrusted with transforming the university library systems in India, enabling libraries to be future-ready organisations by utilising the latest technologies. During its three-decade journey towards assisting the universities and libraries in pursuing knowledge, research, and scholarships, billions of taxpayer money have been incurred. Assessing the impact of INFLIBNET's initiatives on the libraries is imperative.

This paper aims to comprehend and assess the impact of various initiatives of INFLIBNET meant to transform university libraries, especially the libraries of the central universities in North India. Per the paper's objective, librarians' perspectives on INFLIBNET's initiatives have been collected, assessed, and analysed to understand if the mission

and vision of INFLIBNET towards the transformation of university libraries are accomplished!

REVIEW OF LITERATURE

Post the establishment of INFLIBNET and based on its various initiatives, many studies have been carried out concerning almost all the projects, namely automation and networking of university libraries, IndCat, e-consortium, Shodhganga, human resource development, etc. Studies concerning INFLIBNET's initiatives illustrated in this paper have been reviewed and are presented below.

In their paper, (Kumar & Arora, 1996) elaborated on the objectives, programmes, and services of INFLIBNET. It elaborated on how the INFLIBNET, since its inception in April 1991 by the UGC, has been assisting universities and colleges in getting access to scholarly content, modernisation and automation of its libraries, and pooling-sharing-optimisation of library resources, human resource development, and so on. (Subba Rao, 2001) highlights the challenges before the libraries that are essentially required to address the networking issues of libraries and information centres. The paper lists some of the essential library and information networks and elaborates on the mandatory requirements for the networking of libraries. The role of information technology (IT) in transforming traditional libraries into digital libraries, various policies of the government of India, and the issues concerned have been the focal areas of the paper. Their studies (Salgar & Murthy, 2003) discussed in detail the objective behind establishing INFLIBNET as an IUC of the University Grants Commission and elaborated on how INFLIBNET has been assisting university libraries across the country to be transformed into modern libraries and resource-rich centres. The paper highlights that 142 university libraries were given necessary assistance, and around 600 librarians were provided training during the first decade of its establishment. Their paper (Vijaykumar & Vijaykumar, 2003) has shown the role and effects of information and communication technologies in developing Indian university libraries. They discussed and described the part of

Table 1: Central Universities in North India

Sr.No.	Name of the Central Universities	States/Union Territories
1.	Central University of Kashmir	Jammu & Kashmir
2	Central University of Jammu	Jammu & Kashmir
3	Central University of Himachal Pradesh	Himachal Pradesh
4	Central University of Punjab	Punjab
5	Central University of Haryana	Haryana
6	University of Delhi	Delhi
7	Jawaharlal Nehru University	Delhi
8.	Jamia Millia Islamia	Delhi
9.	H.N.B.Garhwal University	Uttarakhand
10.	Aligarh Muslim University	Uttar Pradesh
11.	Banaras Hindu University	Uttar Pradesh
12.	University of Allahabad	Uttar Pradesh
13.	Babasaheb Bhimrao Ambedkar University	Uttar Pradesh

INFLIBNET in developing university libraries and detailed how future programmes will meet the requirements of ICT applications in university libraries. In their paper, (Karn & Das 2009) described INFLIBNET as a boon for higher education and discussed the development of union databases (India) and software (SOUL). Around 483 training programmes, workshops, etc., have been organised at different levels to serve library professionals (26927) across the country as a part of human resource development. (Waghmode, 2014) has highlighted many initiatives of INFLIBNET which include database management (IndCat), networking and quality control, software research and development (SOUL), human resource development (training programmes, CALIBER, PLANNER), UGC-Infonet Digital Library Consortium, etc. (Chand & Arora, 2008) Have shown the significant impact of e-journal consortium programme of INFLIBNET through which scholarly e-contents have been provided to the universities. Their studies confirmed a qualitative increase in the usage of resources. (Arora & Trivedi, 2010) Have elaborated in detail on the UGC-Infonet Digital Library consortium's activities, services, subject-wise coverage, scope, membership, usage pattern, etc. and have identified this initiative as very significant for academic institutions. In a critical study, (Arora et al., 2013) have shown the research output of some member universities and have proved that their research

output has tremendously increased after having access to the UGC-Infonet digital library consortium. In their study concerning the assessment of the availability of e-journals under the e-ShodhSindhu consortium to the Sanskrit university libraries, it has been concluded that more e-resources need to be part of such an ambitious consortium for the benefit of the academic and research community of such language universities. (Pandey et al., 2017). Respondents in this study have echoed the same.

(Pandey, 2018) , in his study, surveyed fifteen university libraries in Uttar Pradesh to assess the impact of programmes and activities of INFLIBNET on the automation of libraries, human resource development of library personnel and use of resources of e-Shodhsindhu (eSS) and has concluded that most university libraries have been utilising the services of INFLIBNET.

(Kumar & Arora, 2015) and (Panda, 2016) Have elaborated on the Shodhganga project and its substantive role in making available scholarly contents of theses in open access for broader visibility and other implications. (Dutt, 2017) has provided a detailed account of Shodhganga. The paper has recognised the inevitable role of Shodhganga as an ETD repository at the national level.(Jhamb & Samim, 2017) Their study has overviewed the status of contributions made by the central universities of India in the Shodhganga. In contrast, the study (Nanthini & Varghese, 2018) has

Table 2: Did your library receive grants/funds towards computerising library activities from INFLIBNET?

Nature of Response	Number of Response	Percent %
Yes	2	15.4
No	11	84.6
Can't say	0	0.0
Total (All Respondents)	13	100.0

Table 3: Has your library ever used the SOUL LMS?

Response	Respondent (N)	Percent (%)
Yes	4	30.8
No	9	69.2
Can't say	0	0.0
Total	13	100.0
All Respondent		

Table 4: Reasons for not using the SOUL LMS in the libraries

	N	%
0	7	53.8
Library uses KOHA	3	23.1
The library uses Virtua & KOHA	1	7.7
Library using e-Granthalaya of NIC	1	7.7
Library using SLIM	1	7.7
Total	13	100.0
All Respondent		

Table 5: Has an information scientist ever been appointed in your library?

Response	Respondent (N)	Percent (%)
Yes	9	69.2
No	4	30.8
Can't say	0	0.0
Total	13	100.0
All Respondent		

analysed the contributions of the top ten universities. (Devi & Singh, 2006) have elaborated on the role of INFLIBNET in academic institutions' human resources development in the Library and Information Science field. The paper shows the various measures INFLIBNET took in developing and training library professionals. Its convention and other programmes have provided a suitable platform for exchanging knowledge and ideas and thereby help enhance professional knowledge, skills

and competence. This paper has assessed this account, and the findings conclude the affirmative role of INFLIBNET.

Studies (Upadhyay, 2005) and (Pandey, 2018) on the UP State universities, (Ramesh & Yuvaraj, 2013) on three universities of Tamil Nadu, and (Pal, 2017) on the universities of the North-Eastern region of India pertain to assess the impact of INFLIBNET's initiatives and their outcomes are almost in conformity with the findings of this study

Table 6: Do you consider it a suitable tool for resource-sharing?

Response	Respondent (N)	Per Cent (%)
Yes	12	92.3
No	0	0.0
Can't say	1	7.7
Total	13	100.0
All Respondent		

Table 7: Are the bibliographic records of the holdings of your library part of the IndCat?

Response	Respondent (N)	Percent (%)
Yes	9	69.2
No	2	15.4
Can't say	2	15.4
Total	13	100.0
All Respondent		

Table 8: Do you think it is helpful in copy cataloguing?

Response	Respondent (N)	Percent (%)
Yes	11	84.6
No	0	0.0
Can't say	2	15.4
Total	13	100.0
All Respondent		

Table 9: Do you consider it helpful in collection development?

Response	Respondent (N)	Percent (%)
Yes	11	84.6
No	0	0.0
Can't say	2	15.4
Total	13	100.0
All Respondent		

Table 10: Is it one of the best union catalogues built for the university library by INFLIBNET?

Response	Respondent (N)	Percent (%)
Yes	11	84.6
No	1	7.7
Can't say	1	7.7
Total	13	100.0
All Respondent		

Table 11: It helps check duplicate acquisition of resources.

Response	Respondent (N)	Percent (%)
Yes	8	61.5
No	0	0.0
Can't say	5	38.5
Total	13	100.0
All Respondent		

Table 12: Did your library/university sign an MoU with INFLIBNET for Shodhganga?

Nature of Response	Number of Response	%
Yes	12	92.3
No	0	0.0
Can't say	1	7.7
Total (All Respondents)	13	100.0

Table 13: Did your library receive any grants/funds towards digitising theses and setting up an ETD lab under the Shodhganga project from INFLIBNET/UGC?

Nature of Response	Number of Response	%
Yes	2	15.4
No	10	76.9
Can't say	1	7.7
Total (All Respondents)	13	100.0

Table 14: Has your library a backlog of theses to be uploaded/contributed on the Shodhganga portal?

Nature of Response	Number of Response	%
Yes	4	30.8
No	7	53.8
Can't say	2	15.4
Total (All Respondents)	13	100.0

Table 15: Does your library contribute to the Shodhgangotri project?

Nature of Response	Number of Response	%
Yes	4	30.8
No	9	69.2
Can't say	0	0.0
Total (All Respondents)	13	100.0

that showed the significant impact of INFLIBNET on the university libraries about its resources and services.

SCOPE AND LIMITATIONS OF THE STUDY

The study comprised thirteen central universities of five states and two union territories in North India per the geographical delimitation parameters of GSI (*Geological Survey of India - Home*, n.d.), illustrated in Table 1.

Further, such central universities established on or before 2010 and covered within the purview of INFLIBNET have been selected for the study for multiple reasons. Therefore, the following central universities were excluded.

- SLBS National Sanskrit University, New Delhi

- Central Sanskrit University, New Delhi
- Rajiv Gandhi National Aviation University, Bareilly
- Rani Lakshmi Bai Central Agricultural University, Jhansi
- Indira Gandhi National Open University, New Delhi

This paper is confined to deliberating one dimension of a broader research study and reflects librarians' perspectives concerning assessing the impact of INFLIBNET's initiatives on libraries. Further, analysis and outcomes concerning some of the prominent projects of INFLIBNET have been presented. However, perspectives have been collected on almost all the programmes, services, and activities formulated, especially for the university libraries.

Table 16: Descriptive Statistics based on Likert Scale data concerning perspectives on Shodhganga

	N	Minimum	Maximum	Mean	Std. Deviation
An important open access initiative of INFLIBNET.	13	4	5	4.77	.439
Largest ETD repository project in India.	13	4	5	4.46	.519
Has effectively checked the duplicity of university research work.	13	4	5	4.62	.506
Has supported researchers and faculty members in their research work.	13	4	5	4.46	.519
Has been successful in making the research visible.	13	4	5	4.38	.506
Has transformed the functioning of the university library concerning management and visibility of theses.	13	4	5	4.31	.480
Researchers and faculty members are fully aware and satisfied with such an open ETD repository.	13	3	5	4.15	.801
There has not been a visible difference concerning the management of theses in the library post-implementation of the Shodhganga project.	13	1	5	3.46	1.391
Shodhganga has not succeeded in fulfilling its purpose.	13	1	5	4.08	1.038
Valid N (listwise)	13				

RESEARCH METHODOLOGY

A survey research method has been adopted as it was amply fit for conducting such research design to get the assessment outcome (Fowler, 2013; Tenopir et al., 2010). A structured questionnaire consisting of all the variables measuring the impact

of INFLIBNET was included. Annual Reports, Newsletters, brochures, and websites of INFLIBNET and UGC were consulted to get the relevant secondary data. All these and the scrutiny of previously published literature enabled the selection and refinement of the relevant questions to be incorporated into the research tool to get

Table 17: Descriptive Statistics based on Likert Scale data concerning perspectives on the e-ShodhSindhu consortium

Statement	N	Minimum	Maximum	Mean	Std. Deviation
With the introduction of e-consortia, the availability of scholarly international e-journals and bibliographic databases to universities and libraries has become possible.	13	4	5	4.54	.519
E-Consorita has resulted in a manifold increase in the availability of e-resources to your library users.	13	4	5	4.38	.506
It has been a significant step for INFLIBNET towards ensuring access to quality e-content in the university library.	13	4	5	4.54	.519
Has a quality impact on the research work/academic work of your university.	13	4	5	4.46	.519
Accessibility of international e-journals and other e-resources was limited to your library before the e-Shodhsindhu (UGC-Imfornet consortium was introduced.	13	1	5	3.69	1.032
E-ShodhSindhu has enhanced the e-collection of your library.	13	4	5	4.46	.519
The research output of the university has enhanced both qualitatively and quantitatively the introduction of e-consortia to the university library by the INFLIBNET	13	3	5	4.15	.689

Library users, especially faculty members and research scholars, have been satisfied using e-ShodhSindhu.	13	3	5	4.15	.689
There is a lack of coverage, especially for Arts and Humanities and Social Sciences.	13	2	5	3.38	.961
Most e-resources must be available under e-ShodhSindhu.	13	4	5	4.31	.480
It would have been difficult to fulfil the demands of the researchers and faculty members without the e-ShodhSindhu consortium.	13	4	5	4.23	.439
Downloading of research papers has been enhanced.	13	3	5	4.08	.760
Valid N (listwise)	13				

optimum and rational perspectives. To assess the impact objectively, questions with the following modalities were incorporated:

- Questions with three choices to opt for Yes/No/Can't Say
- A five-point Likert Scale against several statements/variables related to specific projects of INFLIBNET as well as INFLIBNET as a whole
- Questions marking the preferred choice on a Preferred Scale of 1 to 5. Here, 1 illustrates the minimum score, which stands for 0-20%, and 5 illustrates the maximum and holds for 80-100%.
- A few questions with open space to invite the deliberations of the respondents, if any.

The designed questionnaire, appended as an annexure, was submitted to two LIS experts to verify the reliability, validity, and consistency. All suggestions provided by the experts were accommodated accordingly. Consistent pursuance

of respondents resulted in getting all thirteen questionnaires duly filled. MS Excel (version 2019) and SPSS (version 22) have been used to organise data and apply relevant statistical tests.

ANALYSIS AND INTERPRETATION OF DATA

As referred to earlier, one of the significant objectives of the present research study is to get the perspectives of the librarians of the selected Central Universities of North India (Table 1). Librarian's views were collected on the following aspects-

- i. Automation/Computerization of library activities
- ii. IndCat
- iii. Shodhganga & Shodhgangotri
- iv. e-ShodhSindhu Consortium
- v. Shodhshuddhi
- vi. Shodhchakra
- vii. INFED
- viii. VIDWAN & IRINS
- ix. Human resource development/Professional development

Table 18: Are you aware of the Shodh-Chakra project of INFLIBNET?

Nature of Response	Number of Response	%
Yes	10	76.9
No	3	23.1
Can't say	0	0.0
Total (All Respondents)	13	100.0

Table 19: Has your library/university previously provided any such integrated portal facility?

Nature of Response	Number of Response	%
Yes	1	7.7
No	7	53.8
Can't say	5	38.5
Total (All Respondents)	13	100.0

x. Overall impact of INFLIBNET

An analysis of some prominent aspects concerning most of the above programmes has been presented below.

i. Automation/ Computerisation of Library Activities

Respondents were asked if INFLIBNET has given their libraries grants/funds towards automation and networking. Only 15.4% (N=2) affirmed receipt of the grants. In contrast, 84.6% (N=11) responded negatively, as illustrated in Table 2.

Regarding awareness and use of 'SOUL' (Software for University Libraries) LMS, all the respondents confirmed their awareness of SOUL; however, only 30.8% (N=4) have been using such, and 69.2% (N=9) responded negatively (Table 3). Further, on the rationale for not using INFLIBNET's SOUL LMS, 53.8% (N=7) preferred neutrality, while 46.2% (N=6) respondents cited preferences for other LMS, primarily KOHA (Table 4).

To ensure the smooth implementation of technologies in university libraries, INFLIBNET considers it appropriate and essential to get an information scientist appointed in libraries. On the issue of the appointment of an Information Scientist, 69.2 % (N=9) of respondents replied affirmatively. In contrast, 30.8 % (N=4) of respondents responded negatively, as illustrated below (Table 5).

ii. IndCat

IndCat, a union catalogue for Indian universities, has been a significant project of INFLIBNET that hosts the bibliographic records of the holdings of the universities. Concerning participation and contribution of bibliographic records to IndCat, 69.2% (N=9) responded positively. In contrast, 15.4% (N=2) responded negatively, and another 15.4% preferred to remain neutral.

Most librarians (92.3%; N=12) considered IndCat a suitable tool for resource sharing (Table 7), copy cataloguing (84.6%; N=11) (Table 8), collection development (84.6%; N=11) (Table 9), and the best union catalogue for the universities (84.6%; N=11) (Table 10). Further, 61.5% of respondents considered it helpful in checking duplicate acquisition of resources (61.6%; N=11), while 38.5% preferred nothing to say (Table 11).

iii. Shodhganga & Shodhgangotri

Most universities (92.3%; N=12) affirmed signing an MoU with INFLIBNET (Table 12). Only 15.4% (N=2) affirmed receipt of grants for digitising theses and setting up ETD lab, and 76.9% responded negatively (Table 13). 30.8% (N=4) confirmed backfiles of theses to be digitised and uploaded (Table 14)

Regarding contribution to Shodhgangotri projects, only 30.8% (N=4) of respondents confirmed their participation, while 69.2% (N=9) responded negatively (Table 15).

Table 20: Descriptive Statistics based on Likert Scale data concerning perspectives on HRD/PD

	N	Minimum	Maximum	Mean	Std. Deviation
INFLIBNET has played a significant role in the skill development of the working library professional in the university.	13	4	5	4.38	.506
Library professionals have been trained to utilise suitable technology for various services.	13	4	5	4.31	.480
INFLIBNET has evolved over the years into an impressive nodal agency for skill development and capacity building of library professionals at the university.	13	4	5	4.38	.506
Through the participation of library staff in short-term and long-term training programmes, conventions (CALIBER & PLANNER) OF INFLIBNET have resulted in capable human resources for the university library.	13	3	5	4.15	.801
Valid N (listwise)	13				

A five-point Likert Scale with five rating scales ranging from 'strongly agree' to 'strongly disagree' was employed to get respondents' perspectives on various dimensions of Shodhganga. Nine statements related to Shodhganga were framed, and responses collected from all the respondents on the given statements are illustrated below.

The mean values calculated against each of the statement/variables corresponding to various dimensions of the Shodhganga project of INFLIBNET, as illustrated below, show a firm agreement regarding its usefulness for and impact on the libraries amongst the university librarians of all the thirteen central universities.

As illustrated above in Table 16, the mean values against each statement/variable corresponding to various dimensions of the Shodhganga project of INFLIBNET have been calculated per the perspectives collected against each statement/variable on a five-point Likert Scale. Against the first variable, 76.9% (10) respondents strongly affirmed their support, while 23.1% (3) agreed that Shodhganga is an important open-access initiative of INFLIBNET. Considering Shodhganga as the largest ETD in India, 46.2% (6) respondents strongly agreed, while 53.8% (7) agreed. Regarding the third variable, effective in checking duplicity of research work, 61.5% (8) of respondents agreed strongly, and 38.5% (5) agreed. 53.8% (7) of respondents preferred to agree, and 46.2% (6)

Table 21: Paired Samples Test for Pre-and-post impact of INFLIBNET

Paired Statements		Paired Differences					t	df	Sig. (2-tailed)
		Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
					Lower	Upper			
Pair 1	BEFORE_1. Before the launch of INFLIBNET: - Automation & Networking of university libraries - AFTER_1: - After the launch of INFLIBNET: - Automation & Networking of university libraries	-1.846	1.281	.355	-2.620	-1.072	-5.196	12	0.00022 3
Pair 2	BEFORE_2. Before the launch of INFLIBNET:- Union catalogue for the holding of the university libraries (IndCat) - AFTER_2: -After the launch of INFLIBNET:- Union catalogue for the holding of the university libraries (IndCat)	-2.077	1.320	.366	-2.875	-1.279	-5.671	12	0.00010 4
Pair 3	BEFORE_3. Before the launch of INFLIBNET: - Pooling, sharing of resources amongst university libraries - AFTER_3. After the launch of INFLIBNET:- Pooling, sharing of resources amongst university libraries	-2.462	1.127	.312	-3.142	-1.781	-7.878	12	0.00000 4
Pair 4	BEFORE_4. Before the launch of INFLIBNET: - Online repository of theses of universities (Shodhganga) - AFTER_4. After the launch of INFLIBNET: - Online repository of theses of universities (Shodhganga)	-2.923	1.115	.309	-3.597	-2.249	-9.451	12	0.00000 1

Pair 5	BEFORE_5. Before the launch of INFLIBNET: - Online repository of Research-in progress (Shodhgangotri) - AFTER_5. After the launch of INFLIBNET: - Online repository of Research-in progress (Shodhgangotri)	-2.385	1.387	.385	-3.223	-1.547	-6.200	12	0.00004 6
Pair 6	BEFORE_6. Before the launch of INFLIBNET: - E-journal consortium for the universities (UGC-INFONET & e-ShodhSindhu consortium) – AFTER_6. After the launch of INFLIBNET: - E-journal consortium for the universities (UGC-INFONET & e-ShodhSindhu consortium)	-2.538	1.198	.332	-3.263	-1.814	-7.638	12	0.00000 6
Pair 7	BEFORE_7. Before the launch of INFLIBNET: - Enhancement in research productivity of the universities – AFTER_7. After the launch of INFLIBNET:- Enhancement in research productivity of the universities	-2.308	1.032	.286	-2.931	-1.684	-8.066	12	0.00000 3
Pair 8	BEFORE_8. Before the launch of INFLIBNET: - Access to plagiarism detection software (PDS) AFTER_8. After the launch of INFLIBNET: - Access to plagiarism detection software (PDS)	-2.769	1.235	.343	-3.516	-2.023	-8.084	12	0.00000 3

Pair 9	BEFORE_9. Before the launch of INFLIBNET: - Online database of faculty members, researchers, etc. (VIDWAN & IRINS) - AFTER_9. After the launch of INFLIBNET: - Online database of faculty members, researchers, etc. (VIDWAN & IRINS)	-2.846	1.281	.355	-3.620	-2.072	-8.011	12	0.00000 4
Pair 10	BEFORE_10. Before the launch of INFLIBNET: -Regular ICT-based skill development/professional development of university library professionals. - AFTER_10. After the launch of INFLIBNET: - Regular ICT-based skill development/professional development of university library professionals.	-1.769	.832	.231	-2.272	-1.266	-7.667	12	0.00000 6
Pair 11	BEFORE_11. Before the launch of INFLIBNET: -Promotion of the use of standards and protocols in the university libraries for uniformity and exchange of information - AFTER_11. After the launch of INFLIBNET: - Promotion of the use of standards and protocols in the university libraries for uniformity and exchange of information	-1.462	1.127	.312	-2.142	-.781	-4.677	12	0.00053 5

Pair 12	BEFORE_12. Before the launch of the availability of a regular platform for sharing ideas and practices for the implementation of emerging and dependable technologies (CALIBER) in university libraries – AFTER_12. After the launch of INFLIBNET: - The Availability of a regular platform for sharing ideas and practices for the implementation of emerging and dependable technologies (CALIBER) in university libraries	-1.692	1.548	.429	-2.628	-.757	-3.941	12	0.00196 0
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strongly agreed regarding the fourth variable of the table, supporting faculty and research scholars in their research. 38.5 % (5) of respondents strongly agree, and 61.5 % (8) agree that research work has been made visible through Shodhganga, the fifth variable. Regarding the management of the thesis and its online visibility, the sixth variable of the table, 69.2% (9) of respondents agreed with this fact, while 30.8% (4) strongly agreed. As regards the seventh variable, concerning the status of awareness and satisfaction of Shodhganga among faculty members and research scholars, 38.5 % (5) of respondents strongly agreed with it, 38.5 % (5) agreed, and 23 % (3) preferred nothing to say. Respondents were also urged to rate the statement that there has not been any visible difference post-implementation of the Shodhganga project. 30.8 % (4) strongly agreed, 23.1 % (3) agreed, and 15.4 % (2) preferred nothing to say. In contrast, 23 % (3) of respondents disagreed, and 7.7 % (1) strongly disagreed. Considering Shodhganga has succeeded in its purpose, the ninth variable of the table, 30.8 % (4) respondents strongly agreed, 61.5 % (8) agreed, and 7.7 % (1) preferred nothing to say. As illustrated in the table, the mean values show a very strong agreement regarding its usefulness for and

impact on the libraries amongst the university librarians of all thirteen central universities.

iv. e-ShodhSindhu consortium

To ensure equitable access to international scholarly journals and other prominent databases, a consortia-based subscription of electronic resources, e-ShodhSindhu, was launched in 2016 by INFLIBNET. It is a flagship programme of INFLIBNET. Respondents were asked to rate the various variables concerning e-ShodhSindhu on a five-point rating scale consisting of options strongly agree to disagree strongly. 53.8 % (7) of respondents strongly agreed, and 46.2 % (6) agreed with the first variable that the e-journal consortium by INFLIBNET has facilitated the availability of scholarly international e-journals and bibliographic databases to universities and libraries. Against the second variable, 38.5 % (5) of respondents strongly agreed, and 61.5 % (8) agreed that E-consortium has manifold increased the availability of e-resources to library users. E-ShodhSindhu has been a significant step. The third variable of the table was strongly rated by 53.8 % (7) of respondents, and 46.2 % (6) agreed with it. Eventually, there was a quality impact on the academic and research work of the universities; 46.2% (6) respondents agreed strongly with this statement, while 53.8 % (7)

agreed, the fourth variable. In response to the fifth variable of the table, 7.7 % (1) respondents strongly agreed with the statement, and 76.9 % (10) agreed. In contrast, 7.7% (1) disagreed strongly, and another 7.7% (1) opposed. E-ShodhSindhu has enriched the library's e-collection, the sixth variable; 46.2% (6) agreed strongly with this statement, and 53.8 % (7) preferred to be agreed. 30.8% (4) of respondents agreed strongly, 53.8 % (7) preferred to agree, and 15.4 % (2) neutral for the seventh variable of the table that the e-journal consortium has subsequently enhanced the university's research output qualitatively and quantitatively. Concerning satisfaction among faculty members, research scholars, and other library users regarding using the e-ShodhSindhu consortium, the eight statements, 30.8 % (4) of respondents agreed strongly with this statement, and 53.8 % (7) preferred to agree. In contrast, 15.4 % (2) remained neutral. If the e-consortium needs more coverage of e-resources in Arts and Humanities and Social Sciences, the ninth statement, 15.4% (2) respondents agreed strongly, and 23.1 % (3) agreed with this. In contrast, 46.2 % (6) opted for neutrality, and 15.4 % (2) preferred to disagree. Respondents were asked if more e-resources needed to be made available under the e-ShodhSindhu consortium, the tenth variable; 30.8% (4) chose to agree strongly, and 69.2 % (9) agreed with this statement. In the absence of the e-ShodhSindhu (UGC-Infonet) consortium, it would not have been easy to fulfil the requirements of e-resources for the faculty members and research scholars, the eleventh variable, 23.1 % (3) chose to agree strongly, and 76.9 % (10) agreed with the statement. In response to the variable twelfth statement of the table that the availability of e-consortium to libraries has resulted in enhanced downloading of research papers, was rated strongly agreed by 30.8% (4), 46.2 % (6) as agreed, and 23.1 % (3) as neutral. Descriptive statistics based on the perspectives against each variable collected, as illustrated above, were calculated. The calculated mean values indicate a significant agreement amongst the university librarians regarding the effectiveness of the e-ShodhSindhu consortium (Table 17).

v. ShodhChakra

A new initiative of INFLIBNET launched in May 2022 to provide an online integrated research management portal. Respondents were assessed if they knew of such a new initiative and whether such an integrated mechanism was available in the university libraries. 76.9% (N=10) confirmed their awareness, while 23.1% (N=3) responded negatively. Further, 53.8% (N=7) denied having such a mechanism in the libraries before INFLIBNET launched. In contrast, 38.5% (N=5) preferred neutrality, and 7.7% (N=1) affirmed the availability of such a system in their university.

vi. Human Resource Development/Professional Development

INFLIBNET, through its various training programmes and workshops, has been playing a catalytic role in the capacity building and skill development of working library professionals. Simultaneously, through organising conventions, CALIBER and PLANNER provide a platform for exchanging ideas and awareness of various emerging areas in the LIS domain. Perspectives of librarians have also been collected on various aspects of INFLIBNET's human resource development activities, employing a five-point Likert Scale.

INFLIBNET has played an essential role in the capacity building/ skill development of serving university LIS professionals. The first statement of the table was rated by 38.5% (5) of respondents as strongly agreed and 61.5% (8) as agreed. Such initiatives of INFLIBNET have enabled LIS professionals to utilise suitable technology for various library services, which is the second variable. 30.8 % (4) of respondents affirmed this strongly, and 69.2 % (9) agreed. 38.5% (5) of respondents strongly seconded and agreed that over the year, INFLIBNET has evolved into an impressive nodal agency in the country for skill development and capacity building of university library professionals. At the same time, 61.5% (8) of respondents agreed with it. Participation of LIS professionals in various short and long-term training programmes and conventions (CALIBER & PLANNER) of INFLIBNET has transformed LIS

professionals into capable human resources for the universities. This fourth variable has been strongly seconded by 38.5% (5) respondents, and an equal number of respondents (38.5%;5) agreed. At the same time, 23.1% (3) preferred to remain neutral. Based on the above perspectives, descriptive statistics were calculated, and the outcome is illustrated in Table-.

The mean values indicate a very positive agreement amongst librarians regarding the role of INFLIBNET in developing future-ready, capable human resources for university libraries.

vii. Before and the after impact of INFLIBNET

INFLIBNET has been striding to transform university libraries since its inception per its mission and vision. It was considered pertinent to have respondents' perspectives on university libraries' pre-INFLIBNET and post-INFLIBNET status. Respondents were asked to opt for and mark the preferred scale between 1 to 5 against the given conclusive statement depicting the pre-and post-INFLIBNET era distinctly. The respondents rated all the significant and relevant initiatives of INFLIBNET, including twelve variables, as illustrated in Table 21. Based on the responses received on the preferred scale from 1 to 5 against each statement for the pre-and post-phases of INFLIBNET, inferences were drawn using the relevant statistical test (Significance Test) to assess the visible impact of INFLIBNET on the resources and services of university libraries. For this purpose, a paired sample t-test (two-tailed test) at a 95% confidence level has been conducted against the statements/variables corresponding to the pre-and post-INFLIBNET period. As illustrated in the table, there is a significant difference between the calculated value of 't' and its corresponding tabulated value at the given df (degree of freedom). The p-value against all the twelve paired statements illustrating the pre-and post-impact of INFLIBNET's initiatives on libraries, as shown in Table 21, stands much less than 0.05. The lower p-value indicates that the change observed post-inception of INFLIBNET is statistically significant. Besides, the calculated value of 't' against the paired statements also infers that the impact of

INFLIBNET's initiatives is highly significant. It is therefore deduced that INFLIBNET has played a significant role in transforming the university libraries, namely the automation and networking of libraries (Pair-1, p-value=0.000223, t=-5.196), development of union catalogue, IndCat (Pair-2, p-value=0.000104, t=-5.671), resource sharing among university libraries (Pair-3, p-value=0.000004, t=-7.878), developing a national ETD platform Shodhganga (Pair-4, p-value=0.000001, t=-9.451), research-in progress project Shodhgangotri (Pair-5, p-value=0.000046, t=-6.200), enabling access to scholarly e-journals through e-journal consortium (Pair-6, p-value=0.000006, t=-7.638), enhancement in research productivity of the universities (Pair-7, p=0.000003, t=-8.066), enabling access to PDS to libraries (Pair-8, p-value=0.000003, t=-8.084), developing expert database Vidwan and IRINS (Pair-9, p-value=0.000004, t=-8.011), capacity building and skill development of library professional (Pair-10, p-value=0.000006, t=-7.667), promotion of standard and protocol (Pair=11, p-value=0.000535, t=-4.677), and providing CALIBER a platform for sharing ideas (Pair=12, p-value=0.001960, t=-3.941).

FINDINGS OF THE STUDY

The prime objective of the study has been to assess if the varied services, activities, projects, and programmes of INFLIBNET have transformed the university libraries per its mission and vision. The research data analysis, as illustrated above, has led to the following significant findings.

- Most university librarians have accepted that assistance from INFLIBNET has played a transformational role in the onset of library computerisation activities and have been provided financial assistance by INFLIBNET for the purpose (Table 2). Many previous studies aligned with the findings (Devi & Singh, 2006; Kumar & Arora, 1996; Pal, 2017; Salgar & Murthy, 2003; Subba Rao, 2001; Pandey, 2018; Upadhyay, 2005). Although all librarians knew the ILMS 'SOUL' developed by INFLIBNET, only a few have used this ILMS to manage library operations (Table 3). Further, open-source LMS 'KOHA' and other LMS

were used in the libraries (Table 4).

- Most libraries have an Information Scientist appointed, which indicates the adoption of the UGC/INFLIBNET (8th FYP) mandate for ensuring smooth computerisation and implementation of emerging technologies. However, for some libraries, no such appointment has been made. (Table 5).
- Most respondents recognised IndCat as a suitable tool for resource sharing (Table 6), and most of them have also contributed bibliographic records of the holdings of their libraries to it (Table 7). A whopping percentage of librarians considered IndCat one of the best union catalogues developed by INFLIBNET for Indian universities (Table 6). Further, libraries have been using IndCat for almost all the purposes for which it has been conceptualised and operationalised by INFLIBNET. It is used for resource sharing (Table 6), copy cataloguing (Table 8), collection development (Table 9), and checking duplicate acquisition of resources (Table 11). This establishes the significance of the IndCat database amongst university libraries.
- Almost all the universities (twelve out of thirteen) have signed an MoU (Memorandum of Understanding) with INFLIBNET regarding their participation in the Shodhganga project (Table 12). Only two universities have confirmed receipt of funds from INFLIBNET towards establishing ETD labs and digitising theses backfiles (Table 13). There is scope for improvement in the management of theses in some universities where backfiles are still waiting to be uploaded to the Shodhganga portal (Table 14).
- Compared to the Shodhganga project of INFLIBNET, libraries have not actively participated in the Shodhgangotri project, though it is considered a prerequisite to the Shodhganga project. The study affirms the active participation of only four university libraries out of thirteen being part of the study (Table 15).
- Interpretation of the perspectives collected on

various dimensions of the Shodhganga has affirmed that most of the librarians have considered and recognised it, either strongly or moderately, as a great open-access initiative of INFLIBNET towards transforming the online management of theses in the library. This project has been considered significant in supporting faculty members and research scholars in their pursuit of research. The mean values calculated against each of the statement/variables corresponding to various dimensions of the Shodhganga project of INFLIBNET, as illustrated in Table 16, show a firm agreement regarding its usefulness for and impact on the libraries among the university librarians of all the thirteen central universities. Many previous studies aligned with the outcome of this study (Dutt, 2017; Jhamb & Samim, 2017; Nanthini & Varghese, 2018; Panda, 2016)

- Analysis and interpretation of the perspectives collected on various dimensions of the e-consortium programme of INFLIBNET illustrate that the university librarians agreed to strongly agree in considering the e-journal consortium programme of INFLIBNET a significant step in ensuring access to quality e-content in the university library, which has led to enhanced e-collection of their libraries. The mean values calculated against each of the statement/variables corresponding to various dimensions of e-ShodhSindhu and its predecessor consortium of INFLIBNET, as illustrated in Table 17, show a firm agreement regarding its usefulness for universities and impact on the libraries amongst the university librarians of all the thirteen central universities. Many studies conducted earlier on evaluating the impact of accessibility to scholarly journals to universities are akin to the findings of this study as well (Arora et al., 2013; Arora & Trivedi, 2010; Chand & Arora, 2008).
- Most of the university librarians (ten out of thirteen) were aware of such an initiative of INFLIBNET (Table 18). Further, such an integrated portal facility was only available in some of the libraries before the introduction of

such a project by INFLIBNET to the universities (Table 19).

- The mean values calculated against each of the statement/variables corresponding to various dimensions of the Human Resource Development/Professional Development programme of INFLIBNET, as illustrated in Table 20, show a firm agreement regarding its usefulness for capacity building and skill development of library professionals and its corresponding impact on the functioning of university libraries amongst the university librarians of all the thirteen central universities. Many previous studies aligned with the conclusions (Devi & Singh, 2006; Karn & Das, 2009; Salgar & Murthy, 2003; Waghmode, 2014)
- The analysis of paired sample tests (t-test), illustrated in Table 21, corresponding to the status of libraries during pre-and-post stages of INFLIBNET, establishes a vital role of INFLIBNET in transforming the university libraries through its various initiatives. The findings of the study conducted earlier assessing the impact of INFLIBNET are in tune with the outcome of this study (Pal, 2017; Ramesh, 2011; Upadhyay, 2005).

CONCLUSION

The study's outcomes led to the conclusion that INFLIBNET, over the years, has significantly impacted the transformation of university libraries. The findings illustrate that INFLIBNET's initiatives towards automation and networking of university libraries, participation of libraries in university union catalogue (IndCat), digital management of thesis (Shodhganga), management of research-in-progress (Shodhgangotri), enabling access to scholarly e-journals to universities, and professional development of the serving library professionals for embracing emerging technologies are very significant. Most of the respondents (University Librarians) have weighed and affirmed the role of INFLIBNET. However, there is scope for improvement concerning many projects of the INFLIBNET.

The outcome suggests that most university libraries preferred using 'Koha' ILMS over 'SOUL' ILMS. This warrants INFLIBNET to identify the reasons in-depth and, if needed, make efforts to improve the SOUL so that its optimum use can be ensured in the university libraries. Some libraries still possess backfiles of the theses, which were supposed to be made available on the Shodhganga portal for its global visibility and for other underlying purposes embedded behind the initiative of the Shodhganga project. INFLIBNET must provide all necessary assistance to all such universities to complete the uploading process at the earliest. There is much scope for improvement towards the participation of universities in the Shodhgangotri and Shodh-chakra projects. The study has revealed that more coordinated efforts between INFLIBNET and universities are needed. The e-Shodhsindhu consortium has made possible the accessibility of quality scholarly international e-journals to universities, significantly impacting academic and research work. Before introducing such an e-consortium, accessibility to international e-journals and other e-resources was limited in libraries.

The study also concluded that INFLIBNET, through its various training programmes, conventions, workshops, etc., has led to capacity building and skill development for the university LIS professionals. The objective of INFLIBNET towards developing a future-ready, capable human force that could embrace emerging and challenging technologies has been accorded by the respondents.

The outcome of this study affirms that since its inception, INFLIBNET, during its three-decade-long journeys, as deduced by the study, has largely achieved its objectives, per the set mission and vision, in transforming the university libraries directly and specifically. It has successfully ensured an atmosphere of resource sharing, access to knowledge and enhanced research output, standard practices, visibility and management of research output, research management system, promoting academic integrity, scientific and research communication channels, etc., by employing emerging and dependable technologies. However, as the study reveals, there has been scope for improvement in all areas, and this juggernaut should

not stop unless the country gets genuinely transformed into a global knowledge leader, where there is an equitable share of access to knowledge and the creation of knowledge.

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