

How Efficient are University Library Portals of NIRF Ranked Indian Universities? : An Evaluative Study

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ABSTRACT

Seeing the underlying value of having a unified interface to update users about library services and activities, most libraries have developed library portals. The paper aims to evaluate the contents and services of top ten NIRF ranked university library portals and score them in the classes of Excellent, Good, Average and Poor. Further, the study aims to investigate the most preferred type of content available on Indian university library portals. The top ten NIRF ranked university library portals were evaluated using a checklist based framework covering broad categories such as Information about general, information about the library's physical collection, Information about subscribed e-resources, information regarding the library's services, and Information regarding the use of social Web technologies. Findings suggest that six of the selected library portals were rated in the 'Average' class(scores 40-60 %), which shows that most of them lack essential user-oriented information. JNU's library portal carries maximum information for their users scoring maximum University Score of 28(62.22 %). Among the selected library portals 49.23 per cent prominently provide information about the library's collection, followed by general information(46 %) and information regarding library services(35.33 %). Only one portal exploits social networking features. The study report that the Indian university library portals suffer from issues like currency, transparency, visibility of collection, availability of online services, and uniformity. The findings of the study will help the portal development team to select the most common category of content describing information about services and facilities available on library portals. The existing portals can also improve their interface based on the findings of the present study. Assessment of existing university library portals of the national top ten university library portals in India is the first attempt to evaluate this kind of sample. The study's value lies in its evaluation framework, that's minimal in nature covering the minimum information categories that must be available on any university library portal.

Keywords: Content analysis; Library portal; University library websites; NIRF.

1. INTRODUCTION

No library can deny the information dissemination potential of university library portals. In the digital environment, the library users visit the library portal before even physically visiting the library. It increases the importance of information available on library websites or portals. Library portal is a single service-oriented platform where it is possible to view all e-resources and library services on a single platform. Seeing the underlying value of having a unified interface to update users about library services and activities, most libraries have developed library portals. Library portal is an online catalogue of library collections and services. These portals contain information about the various services available in the library and the peculiarities of the collection. There is a need for every library to facilitate its services and collection through a user-friendly interface by developing a library portal¹. The users can log in and familiarise themselves with the library without visiting them physically.

Higher education institutions (HEIs) play a vital role in any nation's development. Similarly, libraries play an essential role in supporting these institutions to achieve their goals by meeting the academic and information needs of faculty members and students. In India, there are 48 central, 126 deemed, 399 states and 334 private state universities². Most universities have their library portal, and various types of information have been provided on their portal. However, it is observed that there is no uniformity in the content provided by these library portals. So, the authors decided to study selected university library portals to identify the common elements available on most of the library portals.

2. LITERATURE REVIEW

Several studies have been conducted on the topic of library portals. These studies have focused on the areas such as content analysis of library portals, designing library portals, usability studies, and evaluation of library portals.

Raward, R.³ conducted a study entitled "Academic library websites design principles: development of a checklist". This study developed a Usability Index Checklist (UIC) and

suggested an apt method for evaluating website designs. The guidelines for designing the library portals have been given with the viewpoint of several professionals. Researcher opinionated that useful links should be linked to the websites homepage and use of graphics should be done with clear navigation, readability & functional consistency. In the paper, three main approaches have been given for effective website designing. The first approach is the ad-hoc approach, which is based on the designer's viewpoint and personal experience. The second approach focuses more on the evaluation of web resources. The third approach is based on research in Human-Computer Interface design. The researcher concludes that the use of a human-computer interface usability checklist will ensure the best design practices and models. The research concludes that the best practice for website design is a user-centered approach. Similarly, McGillis & Toms evaluated the use of an academic portal investigating the problems that users face while interacting with the library website⁴. They also analysed the information given on the library portal, they evaluated the categorisation and labelling of information. They found that websites are not designed as per the user needs. They strongly recommended that the library portal must be developed following a systematic, patron-driven approach.

Several case studies are available studying the usability and usefulness of library portals. Masrek, Jamaludin & Mukhtar conducted a study to examine an academic library portal of the University of Technology of MARA⁵. They evaluated the library portal by asking the opinions of students and faculty of the MARA University of Technology. The authors surveyed using a questionnaire containing both closed and open-ended questions. After analysing the responses, researchers found that the library portal fulfils the user expectations in all the asked aspects. In a similar study, Geetha, Mamatha & Farhana asked the perception and issues about the library portal among the research scholars and faculty members at the Kuvempu University, Karnataka⁶. The study found that most respondents use the library portal for fulfilling their academic needs. The researchers suggested conducting user orientation sessions for making the users aware of the library portals. A similar study is done on the use of the library portal of Aligarh Muslim University Library by engineering students⁷ and other studies⁸⁻⁹.

Some consolidated comparative studies of library portals are available, Kumar, Kannappanavar & Mestri conducted a case study using the content analysis method to understand the organisation of information, hyperlinks and the type of services offered on the library portals of Indian Institute of Technology¹⁰. They suggested a few measures for enhancing the quality of library portals. Balaji & Kumar evaluated the library portals of South Indian Technical Universities for knowing the implementation of web 2.0 tools in library websites¹¹. This study divides its research scope into four categories and subcategories. Using a weighted checklist, they calculated a consolidated score for each university. They observed that with the growth of web technology, the library websites have not developed simultaneously. They reported that private institutions have more user-friendly library websites in comparison to state-funded institutions. Haridasan

& Uwesh conducted a study on the 'Content analysis of central universities library websites in India'¹². In this study, researchers evaluated the content, coverage and features of Indian universities library websites. The study showed that most of the university library websites provide links for events, contacts, news and information about library hours. Some of the libraries interact with their users by feedback link. Most of the library websites provide OPAC for their users. All university library websites show library collection on their websites. Kaushik conducted a study on library websites of 28 National Institute of Technologies(NITs)¹³. The study showed that maximum library websites are missing some features such as mission statements, floor plan, plagiarism check facility, FAQ, Ask-a-librarian, update date of library websites and few libraries are using the application of web 2.0 in their portal. Kumar, & Verma analysed the contents of library websites of NAAC accredited 'A' grade universities situated in the western zone of India¹⁴. Through web-based total 26 university library portals were analysed. They observed that 76.9 per cent of library portals are linked with their university homepage. Most of the library (92.30 %) of libraries give information about the library. All library portals give information about library books, journals, e-journals and online databases. They reported that few of the library portals had social networking features.

3. OBJECTIVES

- To categorise the contents and services available on the university library portals
- To evaluate the contents and services of the selected university library portals and score them in the classes of Excellent, Good, Average and Poor
- To investigate the most preferred type of content provided by the selected university library portals
- To know the level of correlation between the calculated university score and the NIRF rank of the university
- To recommend the best practices for planning, designing and maintenance of a university library portal.

4. SCOPE AND LIMITATIONS

The scope of the study is in the area of library websites and library portals. This study is limited to the top ten Indian universities placed in the 2019 version of National Institutional Ranking Framework(NIRF) adopted by the Ministry of Human Resource Development, Government of India for ranking the colleges, universities and other higher educational institutions of India¹⁵. The selected universities are Indian Institute of Science(IISc), Jawaharlal Nehru University(JNU), Banaras Hindu University(BHU), University of Hyderabad(UoH), University of Calcutta(UoC), Jadavpur University(JU), Anna University(AU), Amritha Vishwa Vidyapeetham(AVV), Manipal Academy of Higher Education(MAHE), Savitribai Phule Pune University(SPPU). The names of the selected universities with their library website links, date of data collection and NIRF ranks are as listed in Appendix 1.

5. METHODOLOGY

The study followed a checklist based observation method to collect data. With the help of available literature and authors'

Table 1. Information regarding general information on library portal

About us	IISc	JNU	BHU	UoH	UoC	JU	AU	AVV	MAHE	SPPU	Per cent
History/About Us	1	1	1	1	1	1	1	1	1	1	100
Working Hours	1	1	1	1	1	1	1	1	0	0	80
News/Events/Updates	0	1	0	1	0	1	1	0	0	1	50
Directory	1	1	1	1	1	1	1	0	0	1	80
Library Rules	0	1	1	1	1	1	0	0	0	0	50
Photo Gallery	0	1	0	0	1	0	1	0	0	0	30
Library Map/Location/Floor Plans	0	1	0	1	0	0	0	0	0	0	20
Membership	1	0	1	1	1	1	0	1	0	1	70
FAQ	1	1	0	0	0	0	0	0	0	1	30
Date of Update	0	0	0	1	0	0	0	0	0	0	10
Contact Us	1	1	0	1	0	1	1	1	1	1	80
Feedback	1	0	0	0	0	0	0	0	0	0	10
Library Statistics	0	1	0	0	0	0	0	0	0	0	10
New Arrivals	1	1	0	0	1	1	1	1	0	0	60
Hits	0	0	0	1	0	0	0	0	0	0	10
Total	8	11	5	10	7	8	7	5	2	6	

1 = presence, 0 = absence

prior knowledge, a checklist of commonly expected features and services for a university library portal was prepared. The features and services listed in the checklist were divided into following categories:

- General Information about library (15 checklist items)
- Information about the library's collection, further divided into physical collection (10 checklist items) and subscribed e-resources (3 checklist items)
- Information regarding the library's services (15 checklist items), and
- Information regarding the use of social Web technologies (2 checklist items).

After the preliminary evaluation of the checklist, the library portals of the selected universities (listed in Appendix 1) were visited from 29th July to 03rd August 2019. The presence or absence of the features and services under each category was recorded in a matrix. The collected data was further analysed using MS-Excel.

6. RESULTS

6.1 General Information about the Library

In the first category, it was checked whether the library portal provides general information about the library or not. For this, a total of fifteen features were identified, and their presence or absence was checked (Table 1). It was observed that all the selected library portals (100 %) provide some information about the library; some of them include the history

of the library too. The information about the working hours of a library is an essential feature for a library portal. 80 per cent of selected library portals had information about the library working hours. Libraries of MAHE and SPPU are not providing information about the working hours on their library portal.

Similarly, 80 per cent of the library portals display information about membership and contact details. 80 per cent of libraries provide a directory of staff on their portals. 50 per cent of libraries are providing information regarding library rules & regulations, and new arrivals whereas only 50 per cent of library portals contained a section on News/Events/updates. Very few of them (10 %) had sections on the photo gallery, feedback, library statistics, and number of hits. It is also observed that the library portals of IISc and JNU library provide a section on Frequently Asked Questions (FAQ) for their users. Only 30 per cent of libraries provide information regarding library map and FAQ on their library portals.

In this category, it was found that the library portal of JNU provides maximum general information to their users followed by UoH, IISc, JU while BHU, AVV and MAHE provide least.

6.2 Information about the Library's Collection

Optimum use of library collection relies on the users' awareness about the collection and the access mechanisms deployed by the library. The library portal is one of the tools used to inform users about the library collection. To investigate

Table 2. Information about the library's collection

Library Collections	IISc	JNU	BHU	UoH	UoC	JU	AU	AVV	MAHE	SPPU	Per cent
Books	1	1	1	1	1	1	1	0	0	1	80
Journal/Newspaper	1	1	1	1	1	1	1	0	0	1	80
Audio/Video/CD/DVD	0	0	0	1	0	1	1	1	0	1	50
Maps	0	0	0	0	0	0	0	0	0	1	10
Manuscripts/ Archives	0	0	1	0	1	0	0	0	0	1	30
Thesis/Dissertations	1	1	1	1	1	1	1	0	0	1	80
Microform	0	0	0	0	0	0	0	0	0	0	0
Bound Volume	1	1	1	0	0	1	0	0	0	0	40
Rare/ Special Collections	0	1	0	0	0	0	0	0	0	0	10
Films	0	0	0	0	0	0	0	0	0	0	0
Electronic Resources											
e-Journals	1	1	1	1	1	1	1	1	0	1	90
e-Books	1	1	1	1	1	1	1	0	0	1	80
Scholarly e-Databases	1	1	1	1	1	1	1	1	0	1	90
Total	7	8	8	7	7	8	7	3	0	9	

1 = presence, 0 = absence

Table 3. Information regarding the library's services

Services	IISc	JNU	BHU	UoH	UoC	JU	AU	AVV	MAHE	SPPU	Per cent
OPAC	1	1	1	1	1	1	1	1	0	1	90
DDS	1	0	1	1	0	0	0	0	0	0	30
Bibliographic Services	0	0	0	0	0	0	0	0	0	0	0
Reference Services	1	1	0	0	1	1	0	0	0	1	50
Reprographic Services	0	1	1	1	0	1	1	0	0	1	60
Indexing Services	0	0	0	0	0	0	0	0	0	0	0
Reading Room	0	0	0	0	0	0	0	0	0	1	10
Internet Access	0	1	1	1	0	0	0	0	0	1	40
ILL	0	1	0	0	0	1	1	0	0	1	40
Book Reservation / Circulation	1	1	1	1	0	1	1	0	0	1	70
Translation Services	0	0	0	0	0	0	0	0	0	0	0
Purchase Suggestions	1	1	1	0	0	0	0		0	0	30
CAS	1	0	0	0	0	1	0		0	0	20
Remote Access	1	1	0	1	0	0	0	0	0	1	40
Institutional Repository	1	1	1	0	0	1	0	1	0	0	50
Total	8	9	7	6	2	7	4	2	0	8	

1 = presence, 0 = absence

Table 4. Information regarding the use of social web technologies

Web 2.0 Technology	IISc	JNU	BHU	UoH	UoC	JU	AU	AVV	MAHE	SPPU	Per cent
Social Networking profiles (Facebook/ Twitter/others)	0	0	0	1	0	1	0	0	0	0	20
RSS Feeds	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	1	0	1	0	0	0	0	

1 = presence, 0 = absence

Table 5. University wise analysis

NIRF '19 Rank	University	Category 1 (15)	Category 2 (13)	Category 3 (15)	Category 4 (2)	University Score (45)	Per cent Score
1	IISc	8	7	8	0	23	51.11
2	JNU	11	8	9	0	28	62.22
3	BHU	5	8	7	0	20	44.44
4	UoH	10	7	6	1	24	53.33
5	UoC	7	7	2	0	16	35.56
6	JU	8	8	7	1	24	53.33
7	AU	7	7	4	0	18	40.00
8	AVV	5	3	2	0	10	22.22
9	MAHE	2	0	0	0	2	4.44
10	SPPU	6	9	8	0	23	51.11
	Category Score	69/150	64/130	53/150	2/20		
	Per cent Score	46.00	49.23	35.33	10.00		

the availability of information about the collection of selected university libraries, a total of thirteen types of resources were identified, ten belonging to the physical collection and three belonging to electronic resources. The library portals were evaluated for the availability of information on these resources (Table 2). It is observed that excluding the portal of AVV, 80 per cent of the selected library portals provide information about the number of books, the number or list of subscribed journals/newspapers and Theses/Dissertations available in the library. 30 per cent of libraries are providing information regarding their manuscripts/archives collection. UoH, JU, AU, AVV, and SPPU provide information regarding Audio/Video/CD/DVD. The information about maps, microforms, films, and special/rare collection was absent from most of the library portals. The portal of JNU is providing information about their rare/special collections.

E-resources provide a high level of sophistication for the users in terms and accessibility and discoverability. The information regarding subscribed E-resources on library portal helps users in identifying whether the library has a subscription to it or not. Three checklist items were identified to ascertain the information about the availability of e-resources on the library portal (Table 2). 90 per cent of the selected library portals provide information about subscribed e-journals whereas only

80 per cent of library portals are providing information about purchased E-Books on their portal, and 90 per cent of library portals provide information about the scholarly e-databases subscribed by the library.

6.3 Information Regarding the Library's Services

In addition to the collection, libraries also offer their users some distinct services. For users to be aware of the services provided, the libraries must provide detailed information about the services on their library portal. To measure the availability of information

on the services offered by the library, fifteen checklist items were defined, and the library portals of each selected university were evaluated (Table 3). The OPAC is an important feature of a library portal it provides information about the availability of an item in a library. Table 3 acknowledges that almost all the top ten university library portals provide OPAC. Around 60 per cent of libraries are providing information regarding reprographic services and 70 per cent provide book reservation/circulation service and reference service on their portal. Out of ten, five university library portals give information regarding Inter-Library Loan(ILL). 40 per cent of library portals provide information about the availability of services like internet access, remote access, and institutional repository. 20 per cent of libraries provide information about Document Delivery Service(DDS) and provision for purchase suggestions on their portal. Library portals of IISc, JU and MAHE, provide information about CAS. Out of the selected ten universities, not a single university provides information regarding Bibliographic services, Indexing services, Reading room and translation services on their portal.

6.4 Information Regarding the Use of Social Web Technologies

Social Networking Websites provide a platform where

libraries can communicate about their activities, services, new arrivals, or any updated information to their users. To achieve this, the users must be made aware of the profile of the library on different social networking sites. To check the level of social media adoption by libraries, two criteria were identified, and each portal was evaluated (Table 4). It was found that out of selected portals only two libraries (20 %) are providing links to their social networking sites (Facebook, Twitter, etc.) profile pages. Similarly, RSS Feeds format helps users to subscribe to feed about any updates made on the library portal. It was found that none of the library portals provide RSS Feeds about the updates.

7. CATEGORY VIS-A-VIS UNIVERSITY

Table 5 shows a category vis-a-vis university comparison matrix; it is observed that based on the consolidated scores the library portal of JNU carries maximum information for their users scoring maximum University Score of 28(62.22 %) (Table 5). Whereas the library portal of MAHE provides the least information scoring University Score of 2(4.44 %).

Similarly, a category wise analysis was made to evaluate the most preferred type of content provided on the library portals. It was found that the information belonging to the Category 2: Information about the library's collection is available in most of the library portals (49.23 %), followed by general information and information regarding library services. Category 4: Information regarding the use of Social Web technologies is found in the least of the portals (10 %).

A Spearman's rank-order correlation was run to determine the level of correlation between the calculated university score and the NIRF rank of the university. Results of the Spearman Rank Correlation indicated that there appears to be a positive correlation between the NIRF Rank of the university and the obtained University score ($r_s(10) = 0.5273$, $p = 0.20$) but is insignificant at 95 per cent level of significance. Different results might be possible if the correlation is measured by selecting a bigger sample size.

Overall, the content evaluation of library portals of the selected NIRF ranked universities were rated not up to the mark as only a single library portal could score in the 'Good' class (60-80 %) whereas six library portals could score in the 'Average' class (40-60 %) and three library portals scored in the 'Poor' class (<40 %). Among the selected university library portals, one belonging to Jawaharlal Nehru University found to be most useful in terms of the availability of content on the library portal.

8. DISCUSSION

As the findings suggest that most of the selected library portals were rated in the 'Average' class, which shows that most of them lack essential user-oriented information. The following section discusses the most common issues found on the library portals.

8.1 User Connect

Most of the library portals lack features for increasing user engagement. Most of them do not provide any mechanism to collect feedback from the users; user feedback helps in

improving the quality of content and library services. Similarly, features such as FAQs, the mechanism to collect purchase suggestions from users are implemented by very few portals. Social networking sites provide an opportunity to connect with the users, limited availability of profiles on the SNSs shows that the libraries are missing this opportunity. The reasons could be the reluctance of university authorities towards embracement of SNSs also unavailability of social media policy is another important reason for this.

8.2 Currency

The library portals selected under the study did not provide the date of the last update of portal contents; similarly, most of them had incomplete information about opening hours. The issue of currency could be because most of the libraries do not have full-time staff to manage their portals.

8.3 Transparency

The library statistics not only helps the administration in making informed decisions but its availability on the portal also shows the openness of the library towards transparency. Further, library statistics and number of visitors/hits also creates a bandwagon effect among the users.

8.4 Visibility of Collection

Library portal acts as an essential tool for making users aware of the availability of rare books or a special collection that exists in a library. Availability of information on library portal provides increased visibility to underused areas of the collection. It was found that only one library portal among the selected library portals has information about rare books and special collections. This finding may be due to either unavailability of rare books or ignorance of library staff about the availability of rare books. The librarians must conduct collection evaluation studies to find out the rare books and opportunities for the creation of special collections in their libraries. Although, most of the library portals have adequate information about the availability of subscribed e-resources such as e-journals, e-books, and scholarly databases.

8.5 Availability of Online Services

Library portals can be utilised to provide online services to users. These services can be electronic versions of traditional services such as reference service or entirely new services. It was found that only half of the selected library portals either mention the availability of reference service or e-reference service. Most of the traditional services such as ILL, DDS, Indexing services, bibliographic services, translation services, and CAS are not provided through the library portals of the selected sample. One of the reasons for this could be that now all the above-noted services are taken over by the publishers and other aggregators. Similarly, other modern services like Institutional Repository, Remote Access, and internet access are provided by less than half of the selected library portals.

8.6 Uniformity

It was also found that the selected library portals had no uniformity in terms of content and services. The reason for this

could be unavailability of a common framework for library portal contents.

9. RECOMMENDATIONS

The University Grants Commission(UGC) in collaboration with Indian Library Association should formulate the National Minimum Framework for University Library Portals, underlying the minimum mandatory content that must be available to the users of the library through a library portal. This policy will help university librarians to demand human and other resources to manage their library portals and guide them about the content of the portals.

Similarly, the National Assessment and Accreditation Council(NAAC) and the National Institutional Ranking Framework(NIRF) should include the presence of the library portal as one of the decisive evaluation criteria.

The libraries should increase interactivity with their patrons using library portal for more profound user impact. Providing rules and regulations, library opening hours, current information, library usage statistics and hits, a mechanism to collect feedback, purchase suggestions, updating users about the new arrivals on the portal as well as through social media.

The library portals must make the unutilised but useful portions of the library's collection visible to the users. Eventually, this will increase usage statistics and generate the high usefulness value of the library.

Further, important services of a library such as a Reference service, ILL, CAS, DDS should not only be provided in offline mode but also should develop mechanisms to provide these services in online mode through the library portal.

It is vital to have skilled human resources to install and maintain a library portal. The library authorities should appoint staff with competence in handling library portals. The library team should work in collaboration with the university IT staff for obtaining the necessary support.

10. CONCLUSIONS

Library portal is a platform which provides services to library users, whatever, whenever, and wherever they want. It provides a single platform for users to familiarise themselves with the library without physically visiting the library. This study evaluates the contents of the selected university library portals. It is found that all university library portals are dissimilar to each other some of the portals lack the necessary information regarding users, whereas some portals are providing adequate information to the users.

The findings of the study will help the portal development team to select the most common category of content describing information about services and facilities available on library portals. The existing portals can also improve their interface based on the findings of the present study.

REFERENCES

- Letha, M.M. Library portal: A tool for web-enabled information services. *DESIDOC Bull. Inf. Technol.*, 2006, **26**(5), 11–16. doi: 10.14429/dbit.26.3.3691.
- University Grant Commission. 2018. <https://www.ugc.ac.in/> (accessed on 25 May 2019).
- Raward, R. Academic library website design principles: Development of a checklist. *Aust. Academic Res. Libr.*, 2001, **32**(2), 123–136. doi: 10.1080/00048623.2001.10755151.
- McGillis, L. & Toms, E.G. Usability of the academic library web site: Implications for design. *College Res. Libr.*, 2001, **62**(4), 355–367. doi: 10.5860/crl.62.4.355.
- Masrek, M.N.; Jamaludin, A. & Mukhtar, S.A. Evaluating academic library portal effectiveness: A Malaysian case study. *Libr. Rev.*, 2010, **59**(3), 198–212. doi: 10.1108/00242531011031188.
- Geetha, M.; Mamatha, K.R. & Farhana, F. Use of library portal by research scholars and faculty members at Kuvempu University: A survey. *DESIDOC J. Libr. Inf. Technol.*, 2013, **33**(6), 509–515. doi: 10.14429/djlit.33.5483.
- Fatima, N.; Ahmad, N. & Ahmad, S. Use of library portal by engineering and technology students at Aligarh Muslim University: A survey. *DESIDOC J. Libr. Inf. Technol.*, 2011, **31**(3), 168–174. doi: 10.14429/djlit.31.3.985.
- Mane, M. & Pange, B. University library portal as an effective knowledge management tool: A case study. *J. Indian Libr. Assoc.*, 2016, **51**(4). <https://www.ilaindia.net/jila/index.php/jila/article/view/21/16> (accessed on 28th May 2019).
- Savitha K.S. Content analysis of deemed university library websites of Karnataka state: A study. *Int. J. Digital Libr. Serv.*, 2016, **6**(1), 87-93. Retrieved from <http://www.ijodls.in/uploads/3/6/0/3/3603729/767.pdf>
- Kumar M.V.; Kannappanavar, B. & Mestri, M. Content analysis of Indian Institutes of Technology libraries web portals: A study. *DESIDOC J. Libr. Inf. Technol.*, 2009, **29**(1), 57-63. doi: 10.14429/djlit.29.1.231.
- Balaji B.P. & Kumar, V. Use of web technology in providing information services by south Indian technological universities as displayed on library websites. *Libr. Hi. Tech.*, 2011, **29**(3), 470–495. doi: 10.1108/07378831111174431.
- Haridasan, S. & Uwesh. Content analysis of central university libraries websites in India: A study. *J. Inf. Manage.*, 2014, **1**(2), 59-71. <http://splpjim.org/wp-content/uploads/2016/04/Article-1.pdf> (accessed on 25th May 2019)
- Kaushik, A. An evaluation of national institutes of technology (Nits) library websites. *DESIDOC J. Libr. Inf. Technol.*, 2015, **35**(3), 223–234. doi: 10.14429/djlit.35.3.8546.
- Kumar, N. & Verma, S. Content analysis of library websites of NAAC accredited 'A' grade university in west zone of India: A study. *J. Curr. Sci.*, 2018, **19**(11), 1-14. <http://ijournal.scienceacad.com/index.php/Int/article/viewFile/479/476>.
- National Institute of Ranking Framework. 2019. <https://www.nirfindia.org/2019/Ranking2019.html> (Accessed on May 26, 2019).

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Mr Sheel Bhadra Yadav is working as Assistant Librarian at Dharmashastra National Law University, Jabalpur. He has done B.E., M.Lib.I.Sc. and qualified UGC NET.

In the current study, he collected data and written the literature review section.

Appendix - I

Name of university	University Website	Library's website	NIRF Rank (Year 2019)	Date of Data Collection
Indian Institute of Science(IISC)	https://www.iisc.ac.in/	http://www.library.iisc.ernet.in/	1	29th July 2019
Jawaharlal Nehru University(JNU)	https://www.jnu.ac.in/main/	http://lib.jnu.ac.in/	2	29th July 2019
Banaras Hindu University(BHU)	http://www.bhu.ac.in/	http://internet.bhu.ac.in/bhulibrary/index.html	3	01st August 2019
University of Hyderabad(UoH)	http://www.uohyd.ac.in/	http://igmlnet.uohyd.ac.in:8000/	4	01st August 2019
Calcutta University(CU)	http://www.caluniv.ac.in/	https://www.caluniv.ac.in/libraries/library.html	5	01st August 2019
Jadavpur University	https://www.jmi.ac.in/	http://122.15.82.40:9900/	6	01st August 2019
Anna University	https://www.annauniv.edu/	https://library.annauniv.edu/	7	01st August 2019
Amrita Vishwa Vidyapeetham	https://www.amrita.edu/	https://www.amrita.edu/school/engineering/coimbatore/resources/library	8	3rd August 2019
Manipal Academy of Higher Education	https://manipal.edu/mu.html	https://manipal.edu/mit/mit-experience/library.html	9	3rd August 2019
Savitribai Phule Pune University	http://www.unipune.ac.in/	http://lib.unipune.ac.in:8002/	10	3rd August 2019