Available DSpace Repositories in Nepal: Describing their Local Adoptions[1]

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Abstract

Digital library making has been basic requirements for the modern libraries. Instead of documents in papers, information is acquired and managed in some digital platform. One of the digital library platforms is DSpace, started in 2002. The collection of digital documents in DSpace is named DSpace repository. The main collection in DSpace repository is institutionally generated digital documents; hence, it is also synonymously termed as institutional repository. This study explored the existing Institutional Repository System (IRS) that was built in DSpace software in Nepal. Nepal, in South Asia, developed IRS in 2009. Literature suggested extensive studies about IRS in other South Asian countries, while Nepal was reported rarely. Moreover, Nepal was described as scanter than reality. There are nine IRS built-in DSpace in Nepal, enriching the collection from 101 to 15218. Except for three IRS, all other five IRS have their customized userinterface. They are on the way to improving their collection. Open Learning Education (OLE) Nepal has the highest collection and has diversified types of collections for kids. It is developed as Children's Digital Library. Except for three IRS, all are academic. So, these IRS have accommodated documents for academic purposes. They served students, teachers, researchers, and scholars.

Introduction

There are important sources of information generated within an institution. The personnel of an institution could have published articles that may be listed in his/her

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personal website or blog, organizational reports, minutes, dissertation and thesis, and so on are different types of 'grey literature' produced in an institution. Documentation of such officially born items have signified higher value (Rakityanskaya, 2021); it demands cumbersome attention, confirmed willingness, dedicated manpower, and an effective system for an institution. These sources needed proper organization.

One of the key features of arranging those types of materials used in contemporary libraries is the ability to properly organize documents through digital means. The official born information sources are all within reach and accessible at the time of producing information sources, so acquiring, processing, and disseminating them through digital library software appears to be simpler when planning about it; however, the tireless effort on a daily basis is an essential routine task for their documentation. Such documents could be of ephemeral type, produced in some papers, knotted tied inside files, some photographs of programs, meeting minutes, press releases, proposals, project reports, progress reports, agreements, and many more types of documents are the collections of official documentation system(Kumar, 2009; Watson, 2007). In reality, it requires tireless dedication for organizing digital libraries of these documents.

In a traditional system that had organized physical copies were yet another herculean task. Hence, the digital collection, organization, preservation, and dissemination system of officially generated information sources, known as an institutional repository system (IRS) (Rakityanskaya, 2021; Watson, 2007) is the needed transformation. There was a practice of an official filing system in physical form, which is gradually become huge and unmanageable with many physical constrains. Those physical forms were possible transforming into digital form and organize in digital library software. DSpace is one of the popular software for the institutional repository (Bicknese, 2003).

Apart from document management aspect, IR system is one of the means enriching digital content. Mostly developed countries like USA, UK, European countries were at forefront for providing digital content. Whereas, developing counties are lagging behind. Now developing countries have gradually developed IRS for academic and official purposes(Arlitsch et al., 2021; Orsu, 2019). In South Asia India, Sri Lanka, and Bangladesh are prominent in the growth of IRS. Indian IRS has provided its database available to Open Archive Initiative-Protocol for Metadata Harvest (OAI-PMH) (Gul et al., 2019). The more digital content provided by particular country, the more developed

status of a country (Shah, 2019). Among different digital library software, DSpace is one among them. It is free and open-source software(Smith et al., 2003). DSpace is also popular choice for Nepalese libraries. Many instances of IRS were related to academic institutions (Kabir Khan & Sheikh, 2023), yet office libraries have also been relevant for developing IRS.

How is Nepalese IRS moving ahead? It is high time to identify the items being collected, and their organization practices. In addition, the use of open-source software DSpace was not specifically studied for IRS in Nepal. What are different types of collectionsbeing organized? What are the customizationsmade in DSpace for Nepalese IRS?These research questions are worthy to be explored. Such exploration could bring DSpace repository into the light so that fewer activities are encouraged and others could also develop IRS in Nepal.

The study aims exploring DSpace repositories availability in Nepal along with the identification of different types of digital items being collected, and exploring the adoptions being made in the DSpace repository.

Methods and materials

This study explored Google search with the search term 'DSpace Nepal', and find out the numbers of IRS built-in DSpace. The search was conducted 2022 December 15. The population of this study are those retrieved IRS built-in DSpace. In addition, some unclear information through those URL were clarified from librarians of those IRS through phone calls and text messages, where they informed about the working URL of their repository. While opening the retrieved URL on the Internet, some of them were unable to open a proper page, in such cases, with a special request, the librarians were asked to repair their IRS, and hence, explored the need for information from the IRS. The following information was sought while exploring IRS:

a. Collection item number
b. Customized things in the user interface of DSpace
c. Organization of different communities and collections
d. IRS initiation time
e. The provisions of authorization for users

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All these information was collected through the keen observation of IRS user interfaces, and some clarification was made through phone conversation and text messaging to relevant librarians.

The names of the IRS and their abbreviations are given as follows:

1. Nepal National Library (NNL)
2. Central Campus of Technology (CCT), Dharan
3. Tribhuvan University Central Library (TUCL) e-Library
4. Open Learning Education (OLE) Nepal
5. Central Department of Library and Information Science, Tribhuvan University (CDLIS)
6. Global College International (GCI)
7. Civil Aviation Authority Nepal (CAAN)
8. Nepal Army

These IRS were the study population, and they were descriptively interpreted during discussion and analysis, hence reached to the conclusion. All retrieved IRS of Nepal that were active while visiting those URLs were considered for the study.

Results and Discussion

While going through the search results of Google search, there was 10 DSpace repositories appeared, and 8 were active. DSpace 6.3 version was installed for all Nepalese institutional repositories. Most academic institutions have utilized DSpace, and some non-governmental organizations have also adopted it. The list of Nepalese institutional repositories in DSpace is listed in the given Table 1.

Table 1
List of Nepalese institutional repositories in DSpace

SN	Institution	URL	Total Items
1	NNL	http://archive.nnl.gov.np/	806
2	CCT, Dharan	http://202.45.146.37:8080/jspui/	223
3	TUCL	https://elibrary.tucl.edu.np/	13162
4	OLE Nepal	https://pustakalaya.org/en/	15218

SN	Institution	URL	Total Items
5	CDLIS, TU	http://elibrary.tucdlis.edu.np/	157
6	GCI	http://elibrary.gci.edu.np/	1141
7	Khwopa	https://elibrary.khec.edu.np/	180
8	NHRC	http://elibrary.nhrc.gov.np/	798
9	CAAN	http://dspace-caan.healthnet.org.np:8080/caan/	101
10	Nepal Army	https://www.nepalarmy.mil.np/nawc/library	NA

Source: Related IRS URLs, 2022

These lists were retrieved were name of the libraries parent organizations, their related URL for IRS and the total number of items stored in those URL are given in the table 1.Except CCT Dharan, all repository has registered with their own domain name, that means they were formally disseminated in web. CCT is premature in this regard.

According to the numbers of items stored in those IRS, the Open Learning Education (OLE) Nepal collection, which is devoted to children's educational material, has the highest numbers of items (15, 218). It has included textbooks, stories, novels, audio documents, and video documents. These documents are not institutionally produced documents though. DSpace software has extended scope in the variety of file format storage, and storage capacity is also large. OLE Nepal is an example of digital library with extended scope of file format. It has more text books, and reference books in textual, audio and videos. There were exercises for different levels of children. As the targeted users of OLE Nepal is basically children, it is special type of digital library.

Similarly, Tribhuvan University Central Library (TUCL) e-Library, which compiled Master's, M. Phil., and Doctoral theses and Asian Development Bank (ADB) reports, has the second-highest collections (13,162). Mostly these collections are institutionally produced documents except Asian Development Bank (ADB) reports that are foreign body reports. Based on the nature of documents, TUCL e-Library is an institutional repository. While the Civil Aviation Authority Nepal (CAAN), which has uploaded documents related to procedures, manuals, rules, and regulations, has the fewest collections. While TUCL e-Library is the university library and CAAN is an office library, OLE Nepal is essentially a digital children's library. The size of associated

libraries is indicated by these numbers of collections. Since the quantity of theses is always increasing, TUCL's electronic library has more room to expand in the future.

While comparing the item number of Nepalese IRS, the size of each institutional repository in Nepal at the moment (2019–2022) is comparable to India's collection of single institutional repositories from 2009–2012. Indian institutional repositories (IR) were also created in DSpace (Kalbande, 2012; Kumar, 2009; Tripathi & Jeevan, 2011). DSpace is the most popular IR software (Chaudhari & Patel, 2019).The size of institutional repository became one of the elements measuring how develop the country is. It has indicated how country's institutions are capable in generating digital content. Digital content is the theme of the country that is disseminated all around the world through the Internet. In the case of Nepal, it is in the situation that the number of item is kept in focus. Yet, Nepalese libraries are not discussing on the qualities of digital content as foreign countries do (Naseri et al., 2021). Rather Nepalese libraries are at the phase of considering on quantities. Hopefully, the time will demand to quality of digital content too.

As similar to the quantities and qualities of digital content of DSpace repositories matters, so do the user interface of Nepalese IR in DSpace is concerned. The more attractive, more user-friendly user-interface of IR has a capacity to encourage more users to use them. It has applied JavaServer Pages User Interface (JSPU) more than the Extensive Markup Language User Interface (XMLUI). These are two choices provided by DSpace version 6.x. The users have also equally accepted both types of user interfaces(Karki, 2022). While the community formation of these IR is unique for each. The description of each IRS clarified the functionalities of DSpace.

Table 2

Status of DSpace configuration, customization, and resource types.

IR	Customization	Communities	Sub-communities	Collection types	Authorization
NNL	NA	5	12	Archival text in Sanskrit, Reports, Books, Thesis, Journals	Required for archives
CCT Dharan	NA	5	5	Thesis, and Journal articles	NA

IR	Customization	Communities	Sub-communities	Collection types	Authorization
TUCL e-Library	changed color, logo, and name, added browsing filters	8	27	thesis, reports,	NA
TUCDLIS e-Library	changed color, logo, and name	10	21	Thesis, reports, class presentation, bulletin, articles	NA
Khwopa e-Library	changed color, logo, and name	8	1	Thesis, reports, bulletin, journal	NA
OLE Nepal	added cover pages of books, icons of sources	6	NA	audio, video, textbooks, practice books	NA
NHRC	Changed logo and name	10	NA	Thesis, reports, journal articles, act, policy, guidelines	NA
Nepal Army e-Library	NA	NA	NA	NA	NA
GCI e-Library	Changed logo and name	7	NA	e-books	required
CAAN DSpace repository	NA	5	NA	Manual, procedures, reports	required

Source: Relevant URLs 2022

Table 2 is for content organization aspect of IRS. For the content organization, IRS requires to define community, sub-community, and collection in DSpace. Apart from it, DSpace provide rooms for having changes as libraries' local need.Local adoptions in DSpace repositories were made in six repositories, particularly naming and given local institutional logo use. This type of localization is focused on appearance. . The basic metadata elements were used default, however, the lack of skill and knowledge of customization in DSpace was said to be the major reason for other kind of local adoption of DSpace repository (Om Nath Khatiwada, personal communication, January 27, 2023). Except two DSpace repositories, all have provided free and open access to their

repository. They supported the open access to information. Following is the description of individual IRS provided.

Nepal National Library (NNL).

Nepal National Library started IR in DSpace in 2019 (Sanjib Chaudhary, personal communication, January 27, 2023)which has added 806 items. The user interface of NNL IR is made up of JSPU, which has used the default provided by DSpace 6.x version. Altogether five communities were categorized namely Archives, Children'sCorner, Depository collection, Dissertation, and Serials. Only the community serial has a subcommunity named Journal is kept. The communities were devised as the local collection required. Any logo or name of NNL was not provided at the front. The search bar is at the top as it is in the default arrangement of DSpace.

Central Campus of Technology (CCT) Dharan

An academic institution, CCT Dharan has maintained IRSsince 2018 helped by Nepal Library and Information Consortium (NeLIC) (Om Nath Khatiwada, personal communication, January 27, 2023). There is no more support from NeLIC, hence, with the help of a local technician, CCT IR is in continuity without a personalized look. It has five departments: Biology, Food Technology, Microbiology BSc and MSc, Nutrition and Dietetics, and the Himalayan Journal of Science and Technology with one sub-community in each. It has the default DSpace JSPU interface without any customization.

Tribhuvan University Central Library (TUCL) e-Library

Having the second largest collection (13,162) among Nepalese IR, TUCL e-Library is serving all over the country with free permission to access. It has organized Masters', M. Phil., and Ph. D. level thesis, and Asian Development Bank (ADB) reports. ADB reports have been stored in NNL IR as well. It is duplicated task.

The interface has provided a local look with TUCL's official logo and name. The IRS is named TUCL e-Library. It has applied blue colour that is different from the given default colour. In the browsing filters have been added: submit date, institute name, level, and country. It facilitated precise information search. A high precision ratio of retrieved information is a good reason for selecting IRS(Abifarin & Imavah, 2019). There is multiple browsing options provided that helped for the precise information search.

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There are 8 communities formed inside which three communities: Question papers, Syllabus, and thesis have 9 sub-communities each based on the departments of the TU.

Central Department of Library and Information Science, TU (TUCDLIS) e-Library

It was started from 2020 onward (Nira Manandhar, personal communication, February 4, 2023) that uploaded 157 items, composited with thesis, reports, bulletin, class presentation, and articles. TUCDLIS e-Library presented its particular name and logo in the interface and the color blue is used. CDLIS publication CDLIS Bulletin has been highlighted at the front of the e-Library.

Khwopa Engineering College (Khwopa) e-Library

The newly formed (2022) Khwopa e-Library has reports, conference proceedings, journals, and a thesis (Dibyendra Hyoju, personal communication, January 27, 2023). Two logos represented two institutions, so it is a kind of consortium. However, it has only added 180 collections. The dark blue and red colour combination was used as it officially matched colour for it. It has eight communities, where the thesis was kept in two different communities named Architecture Thesis, and Master Thesis.

Open Learning Education (OLE) Nepal

OLE Nepal is a children's digital library having the largest collection (15,218). It is like a digital publisher for children's education. Its user interface is widely customized. Browsing categories were changed that has six categories. It has audio, video books, and textbooks for different grades.

Nepal Health Research Council (NHRC) e-Library

Special library NHRC has focused on research, so it has the greater value and use of e-library. Sky blue color has been used instead of the default color green and used both the parent organization's logo and institutional logo too. It has 798 collections built.

Nepal Army e-Library

Due to the compulsory authorization required to view the Nepal Army e-Library, any further information is unavailable.

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Global College International (GCI) e-Library

It has managed e-books related to the subjects taught in the college that is related to their curriculum. The logo and name were localized in GCI e-Library. It has 1,141 collections built. Users are provided their username and password for accessing them. There are 12 communities as per the program that they are running.

Civil Aviation Authority DSpace repository

According to the nature of documents, five communities are organized and uploaded collections accordingly. There are no customizations made in the user interface. It was built on the DSpace xmlui interface. It is the only IRS that has used xmlui. The DSpace repository of CAAN has assisted for the document audit of the office (Goma Banjade, personal communication, January 2, 2023).

Almost similar types of information sources are accommodated for all IR of Nepal except OLE Nepal. Books, reports, rules, procedures, manuals, articles, thesis, are major types of items collected in Nepalese DSpace repository. Kumar (2009)has also identified such sources that were equally true for the Nepalese IRS. In Asian open access repositories, thesis and journal article are the mostly uploaded items types (Shah, 2019).

These IR has made institutions digitally visible and accessible remotely though there are limited collections. It has significantly contributed to the collection, organization, and preservation of institutionally born information resources, which, otherwise, were unnoticed and unused. So, these IR are very important.

The arrangement of communities was devised based on either academic programs or types of documents. TUCL e-Library, CCT Dharan, GCI e-Library, and Khwopa e-Library have maintained the academic programs as communities, while NNL, CAAN DSpace repository, NHRC, OLE Nepal has based the communities on the types of documents. However, TUCDLIS e-Library has founded on subjects being taught in the department. So, academic institutions have emphasized academic programs, and other non-academic institutions have focused on types of documents as the foundation of communities' arrangement. However, there is not any standards guidelines prescribed for making communities and collections.

The thesis is one of the common groups maintained by all academic IRS. Collections are books, reports, procedures, manuals, bulletins, and a thesis. Similarly, all the IRS have either customized user interface (UI) or use the default UI. All IRS made institutional documents visible to users. The knowledge organization in those IRS had

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been helpful for the need of students and teachers' educational needs. The official knowledge organization has also benefited from locating required documentsinstantly. Moreover, the CAAN DSpace repository has greatly inputted for the annual document audit as per the regulation of civil aviation authority (Goma Banjade, personal communication, January 2, 2023).

Conclusion

Though only 10 IRS in Nepal is identified, all of the IRS are built on DSpace open-source software. DSpace has facilitated organizing information sources in a number of communities, and the name of the communities, sub-communities, and collections was assigned as per the requirement of several academic programs, and the nature of documents. DSpace has greatly contributed to organizing and preserving official documents digitally. All organizations have, however, maintained hundreds and thousands of documents only, hence, the extension of document numbers is very important for future development. In addition, improvement in the user interface is needed. DSpace facilitated the desired customization, nevertheless, such customizations demand technical expertise.

The description is significant for tracing the development of digital libraries in Nepal. Digital libraries are synonymously understood with online electronic resources, but the institutional digital resources are overlooked. In fact, these resources are unique sources, and it greatly helped for organizing institutional memory too.

For the further development of IRS, the number of item deposited to IRS should be increased. At the other hands, the number of IRS are also required to increased. It demands relevant manpower and priority from library authorities too. The more customization as per local needs were fulfilled, the more use would increase. The habit of using IRS would help for the better of us DSpace software. The free-open source software DSpace has extended potentiality for the development of digital library in Nepal.

Acknowledgments

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