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Understanding the Role of Institutional Repository in Digital Preservation in Academic Libraries: A Review of Literature

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Abstract

One of the leading objectives of the libraries is to provide the latest and timely information to its clientele and keep them updated with the new arrivals related to their subject areas. However, a limited storage capacity of libraries is throwing a challenge before librarians from the beginning of libraries. The latest developments in the libraries for information management, preservation, and dissemination involve a high rate of computer technologies. Institutional Repository (IR) is a new breed which has the potential to store any amount of information in little space and preserve it for a long-term perspective. Therefore, many of the academic libraries are enforced to develop their Institutional Repositories (IRs).

The present study has started to find the solution to the burning problems before the academic libraries especially for planning, establishing, and maintaining the IRs for digital preservation. It is observed that the library managers are often confused when they asked to create IRs, design IR policy, motivated faculty, prepare budget estimates, etc. The study also covered various theoretical aspects related to the creation and maintenance of an IR in an academic environment and attempt to provide an understanding of digital preservation. The available literature about the significance of the IRs has revealed that the IRs are the need of the hour to showcase the research output of an institution. It does not only help to enhance the visibility of the intellectual work of faculties and researchers, but also support the scholarly communication among the academic community.

Keywords: Institutional Repository, Academic Library System, Digital-Preservation, scholarly-communication, Value, Planning, Strategies, Policies, Creation, Libraries-IRs, Digital –Archive, e-resources, e-Theses.

Introduction

The libraries in the academic institutions playing the role of the imparting knowledge to the academic fraternity of an institution since ages without discrimination for the dissemination of knowledge among student of different cultural heritage. However, during past few decades, it became difficult for the academic libraries due to the scarcity of space. The emergence of Institutional Repositories (IRs) is a new phenomenon that provides an opportunity for an institution to share its digitized intellectual wealth with the worldwide community of scholars and provide long-term preservation solution (Prosser, 2003). According to Nolan and Costanza (2006), presently the IRs are shifting rapidly multi-dimensional in the academic environment however, its consensus is not yet clear among the repository managers, scholars, and the faculties. Jones and McColl (2008) predict that IRs will soon be seen as a vital integral part of every academic institution's infrastructure. During the last couple of decade, a plenty of literature has generated on the topic of IRs on different aspects. Keeping in view the importance of literature on the topic of study this study started to find out the relationship between IR and digital preservation with a brief understanding of the role of IRs in digital preservation.

The digital preservation refers to the actions required to maintain access to digital materials beyond the limits of technological changes. It is the management of digital information over a period of time with long-term maintenance and up-gradation of files on digital storage mediums (Saini, 2013). The concept of digital preservation is more or less similar to IR as far as the preservation of digital document are concerns.

A literature review is a conceptually organized combination of a literature search results that provide a context for the research. It is neither a summary of the literature, nor merely description of the works, but it is a critical piece of information. The review of literature not only helps to refine ideas but also identify the methodology and procedure by which a particular problem solved. It gives a clear understanding of the work was done by others and what are the other areas of research are still unsolved. With the help of the literature review, several issues surrounded with planning, creation, and maintenance of an IR for visibility, preservation, and access to intellectual work such as research articles, E-theses, and dissertations, etc. of academic institutions address and discuss under subsequent sections.

The methodology of the study

This study is based on an intensive review of the online literature which includes research articles, conference papers, e-books, etc. downloaded from the various databases such as Science Direct, Emerald, Project Muse and Google Scholars, etc. because the author earlier has the access to above-mentioned databases. The literature for this study was collected through an online search using various logics and keywords. The objectives covered under study are discussed in the descriptive review of the literature on the topic of the study.

Objectives of the Study

- To understand and present theoretical aspects of Institutional Repository in the context of an academic library and the digital preservation.
- To know the significance of an Institutional repository through available literature.
- To identify the policy parameters discussed in the repository literature.
- To identify the key considerations for planning, creation, and maintenance of repositories for an academic library.

Institutional Repository: Concept and Meaning

An institutional repository is an online archive of the intellectual output created by the faculty and researchers of an institution to enhance the visibility and promote free access of the research at a single interface. The repository either may contains all the subject of the study of an intuition or it may a subject-specific, depend upon the capacity and interest of the intuition. An IR offers the widest possible sharing of faculty research through unrestricted access. According to Ware (2004), an IR is a web-based database of scholarly material recorded for long-term preservation using OAI-compliant software to collect, store, preserve and disseminate of the scholarly material in digital form among the academic communities. Darby, Jones, Gilbert, & Lambert (2009) described as many as three kinds of IRs such as institutional, subject and funder repositories those have slight similarities to each other in their purpose, usage, and software interface. The same can be differentiated in their scope, sources of authorship and funding criteria. The IRs as defined by Crow, (2002, 16p.) can be identified as a digital library that "capture[s] the original

research and other intellectual property generated by an institution's constituent population active in many fields."

Crow, 2002a has also described IR as "digital collections capturing and preserving the intellectual output of a single or multi-university community provide a compelling response to two strategic issues facing academic institutions. Such repositories:

- Provide a critical component in reforming the system of scholarly communication a component that expands access to research, reasserts control over scholarship by the Academy, increases competition and reduces the monopoly power of journals, and brings economic relief and heightened relevance to the institutions and libraries that support them; and

- Have the potential to serve as tangible indicators of a university's quality and to demonstrate the scientific, societal, and economic relevance of its research activities, thus increasing the institution's visibility, status, and public value.

- Provide a medium to digital preservation in the hand of academic libraries on the long-term basis and thus reduce the problem of paucity of space.

Planning and Strategies for Institutional Repositories

Planning and need assessment survey of IR is essential at the outset before its creation. Saini (2018) discuss it is the step where repository managers always confused. Suzanne Bell in an interview by Hitchens (2010) provides criteria to be taken into account while planning an Institutional Repository. Xia and Opperman (2009) insight that planning is crucial to implement IRs for different size and kinds. They emphasized the need assessment survey before installing and running an IR. Similarly, Swan and Carr (2009) also advocate for getting input for planning IRs, they favor a mandatory and standing plan for pre and post launching IRs of an institution. Rieh et al. (2008) investigated issues related to planning and policies of Institutional Repositories. Laxminarsaiah and Rajgoli (2007) discussed plans to build an IR through various file formats for different types of collection for maintaining uniformity.

According to Xia and Li (2007), the rate of full-text availability of articles is low therefore repository managers may formulate new strategies and plan to archive their documents in an IR. They suggested the policies should be framed in such a way that enhances access to

full-text. Ghosh (2009) discussed the subject coverage, types of items, access strategies, and policies to access the document at the national level to higher education researchers. Palmer, Lauren, and Newton (2008) present a close examination of the university libraries in which they compared choices, strategies, and conditions to content acquisition, preservation criteria and service provision for an IR. They also discuss the relations of IR with the academic library and reveals that the libraries are the originators and preserver to the IR to promote the research output of a particular institution in digital form.

Policies for IR and Digital Preservation

According to Swan and Carr (2009), there must be a mandatory policy for IRs for long-term digital preservation and discuss a mandatory policy for submission of research output for an IR. The teacher should encourage to submit the document themselves. A mandatory policy for collecting resources for submission to an IR is very important. In India, several libraries have signed MoUs with the INFLIBNET, an autonomous body of MHRD, Govt. of India to submit their research output to a nationwide repository i.e. eShodhsindhu, (eSS) of the e-Theses awarded by the Indian universities. The MoU mandate it to all participating Universities to maintain a platform to access e-Theses of an institution as well it links to the eSS. The policy drafted for collecting documents for an IR also made it compulsory to the supervising authority not only to submit the research work but also the document should free from all kind of plagiarism. Thus, the policy also supports a quality among the research output of an institution. This going to be a milestone in the digital preservation of e-theses in India which is available in public domain.

Palmer, Lauren, and Newton (2008) also support a mandatory policy for IR that contains a clear-cut explanation of Intellectual Property Rights, copyrights, and other legal concerns and more common factors need to be covered. The repository manages should think about intellectual concerns of the faculties, that provides permanent access. Cohen, (2001) estimates that the document downloads and other use of IR, make it essential to frame in the IR policy along with the intellectual and legal aspects.

Rieh et al. (2007) reveal that policymakers are thinking in a broader way to develop IR policies, practices, and its operations. They further support the pilot testing for implementing IR as a pre-determined step. In general, the suggestion also workout to

enhance the chances to know about strength and weakness of the IR system. The available infrastructure also required to be tested and identified before launching the IR. They further point out on policy decisions that the access point, user interface, search results and user awareness towards the planning of an Institutional Repository to be accessed digitally. Cohen and Deborah (2007) in their article have narrated the development of individual IR named as *DigitalCommons@ILR* at Cornell University and examined local policies and procedures. Xia (2007) in his article reveals that some institutions have mandatory IR policies. Further, the reveals that the institutions where the mandatory policy available, they received positive results. Van Westrienen and Lynch (2005) identify that European IRs have special provisions in their IR policies those supported under national level policies. It is, however, not visible among the most of the national policies as claimed by the authors. As far as Indian perspective is concerned, the IR is a small entity to be included in national level policies. After seven decades of independence, the government had constituted only a national knowledge commission in 2005. The report of the commission came out in 2007 that has proved a milestone in knowledge management and digital preservation in India. The importance of it shown as the very first time the significance of libraries has understood without giving importance to IRs in India. The absence of well-defined policies for IR is demotivating the creation of IRs. Neither library managers nor the local authorities and the government take interest to design such policies so that the IRs could be made mandatory in an academic environment. In absence of a mandatory policy for IRs, the faculty members are not motivated to deposit their research output in IRs.

Key Issues for Initiation of Repositories for Digital Preservation

Doctor and Ramachandran (2008) in their article shared the experience of creation of ICFAI Business School IR, where, they explore the importance of pilot testing of IR before launching. They suggested using latest technical tools to capture new interface and structural component. Doctor and Ramachandran (2008) also emphasis over intellectual capital and its sharing among research communities of the academic institutions Laxminarsaiah and Rajgoli (2007) describe how the idea of developing Institutional Repository at the ISRO-Head Quarter, Odisha was evolved and converted into the steps to build the IR. Sutradhar (2006) in his paper shared experiences gained at Indian Institute of

Technology, Kharagpur while creating an Institutional Repository. He demonstrates the ways of creating different communities in IRs by using various types of collection in open source software namely DSpace. Green (2009) through a descriptive review highlight the factors that lead to the digital library of British Council Library. They also identify goals, priorities and the mediums to provide the access to digital material. The article also provides an overview to make the IR collection permanently. Rieh et al. (2007) address the following questions related to finding answers before creating an Institutional Repository about the:

- *Leader:* Who will bear the responsibility of planning, pilot testing and implementation of Institutional Repository?
- *Funding:* What will be the source of funding?
- *Content:* What types of the document will be uploaded in IR? And what methods for content development need to be adopted?
- *Contributors:* Who will contribute to IRs like faculty or scholars or both?
- *Systems:* What systems will be adopted for information retrieval?

The authors did not mention the choices between the commercial and open source software selection for the IRs. However, the OSS is the first choice for creating an IR. Xia and Opperman (2009) discuss important considerations such as open access, full-text, operational style and content composition, etc., in repository practices to understand the primary challenges while planning a repository. Jones (2007) mentioned that after the groundwork for IRs, one must consider interoperability of IRs which is the most significant to create and design of an IR. Interoperability helps in different ways in many forms. It is the main character of an IR that can go long lasting with IRs. It is the ability to exchange metadata from one to another IRs. It is the function that has an inbuilt capability to join multiple IRs. Xia and Li (2006) proposed a group of factors i.e. depositors and availability of full-text articles that can provide a successful self-archiving practice to access research output of an institution.

Xia and Li (2007) appraise that the success of IR depends on self-archiving functions of IRs that expressed the need and provides ways to evaluate the progress of an IR. It is observed that many of the Indian IRs do not have self-archiving facility to the faculties and researchers. Other hands the repository managers have given freedom and responsibility to

upload the content of an IR. Because of this phenomenon, the majority of the faculty unwilling to upload their research output (Saini, 2013).

Digital Scholarly Communication and IRs

The IRs have potential to serve as a tangible indicator that shows the quality and support research activities in an academic institution. Mower and Chaufty (2009) explained the capacity of IRs to enhance opportunities for academic libraries to support and participate in the scholarly communication through digital information channel among research communities.

The collection of IRs is migrating into the digital form that adds values to the academic libraries for the scholars. Whereas Heath (2009) described the IR as an integral part of future research libraries and see IRs s key factor for networked scholarly communication in the digital environment. The trend of establishing IRs to support scholarly communication process to enhance the visibility of research output and providing access through intranet or internet to the scholars. The creation of IRs has dual benefits for contributors and consumers of information.

The literature of IR reveals that the choice to submit content to IRs is motivated a lot among scholars and faculties but as Xia, 2009 examines that faculties are less or not motivated to upload their research output to the IRs. It is also observed that repositories are either not supported or partially supported by self-archiving practice among faculties. Saini, 2013 reveals that the reason behind this demotivation is the lack of interest, fear of copyright violation and plagiarism among faculties, and the initiatives to motivate the faculties by the repository managers are the major concerns. Chen (2010) discuss the importance of IRs in form of its ability to preserve and disseminate the intellectual information and knowledge among scholars through its interactive user-interface. The research communities of an institution can be benefited through its content and online discovery tools. Cothran (2011) on the basis of statistics reveals the improvement in the usage of research output.

However, there are critics (Chan, 2004: Lynch, 2003) who argue about the limitation of IRs to focus only on content type i.e. e-Theses only, though they advocate to include a variety of grey literature, articles, reports, etc. should also be a part of IR content. Harnad

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(2008), believes that IRs should play its role to encourage open access movement and provide liberty to scholars to access in public domain.

Discussion

The online journal publishing is now becoming a trend in the academic environment. The open access models have emerged to support online journal publishing where faculties and scholars are interested to submit and publish the research. In this scenario, the IRs can prove a vital medium to enhance the visibility of the intellectual output of an institution to the wider community through the open access publishing during recent years. Although until the mid-2000s few libraries started launching their own electronic journals to enhance awareness about the IRs. The importance of scholarly communication has noticed in the open access environment. Though IRs over past two decades have emerged to accumulate the experience of libraries to help open access movement and provide a platform to open access publishing in the digital environment (Xia and Opperman, 2009).

Palmer, Lauren, and Newton (2008) in a case study identify a futuristic relationship between libraries and repositories for digital preservation. They noticed the increasing complexity in coordination among repository managers and faculties. Many problems to upload the document on IR along with the copyright issues. The librarian's other hand, seek to ask to furnish the documents, they give orientation to the faculties. However, the condition now is improving and they find it important to coordinate for visibility of their research output so that their contribution to knowledge domain can be recognized by the wider community. Rieh et al. (2007) in their study reveal that there is no relationship between the digital documents and the numbers of documents. The indefinite numbers of documents can be uploaded on the repositories. At the planning stage, all the functionalities and the basic requirement have to be done so that later on the problems can reduce. Xia and Li (2007) discover that the rate of author depositing practices is lower than the librarian in the collection deposition for repositories that can prove a big hindrance in the way to digital preservation. Green (2009) reveals that the digital material which is upload by the libraries on IRs gives an overview of the digital library system itself, hence it matters that how the interface and approach have adapted to maintain a repository and preservation parameters.

Cohen (2001) has express that library staff can play a significant role and able to establish a strategic relationship with the faculty to get their positive participation and in creating new opportunities. So, the libraries should allow its staff to contribute to IRs but also built a good relationship with available faculties. Sutradhar (2006) advocates that library staff should encourage to perform various activities like administering, registering and authenticate the submission of documents in IRs. He also suggests giving training to library staff about software and hardware handling. Van Westrienen and Lynch (2005) estimate countrywide in which Norway having more than 90% of books and theses, whereas, in France, the article collection exist at large, while the Austrian IRs have the primary sources in their IRs. So, it may assume that a combination of all sort of documents can be uploaded to an IR, in addition to just e-theses. Rieh et al. (2008) investigated the collection criteria and system features for the collection development of the Institution Repository project named as MIRACLE (Making Institutional Repository's Collaborative Learning Environment), further categorized some of the digital document types as archival, which may be obtained from special collections of the University Archives. Anuradha (2005) identified specific publication types in the collection of Institution Repository, those can be fitted for digital preservation and access to the research communities.

Conclusion

The Institutional Repositories have help to enhance the capacity of academic libraries through the digital migration of data for valued scholarly communication. Heath (2009) rightly predicted that IRs will be an integral part of future academic libraries. Nowadays, the role of librarian is visible who not only support the research and teaching but also efforts to enhance the scholarly communication for the research community worldwide. In this context Chen (2010) discuss that dissemination of intellectual output is the prime objective of IR that adds value and significance to the scholarly communication through the academic libraries. Swan and Carr (2009) predicted that the repository maximizes the access of intellectual output of an institution by offering open access. The last two decades are witnessed of the development of IRs in the academic libraries where they collect, organize, store, and preserve the digital documents for the long term. The digital content

generated by the faculties and scholars are now preserved to access in public domain, through a mandate passed by the respective parliaments. (Saini, 2018).

It is no doubt that IR has increased the global access, visibility and preserves digital content for the research communities. Yu (2006) expresses that digital preservation is the basic purpose of Institutional Repositories which have gained acceptance in the academic community as they enhance access to scholarly content. An important contribution of the IRs is that it preserves traditional scholarly material by empowering faculties to contribute their research articles and e-books.

In fact, the IR has encouraged the new form of scholarly communication and exploring new formats by adopting various technologies. The digital preservation has opened up multiple ways and adoption in the research communities that guarantee both long- and short –term access which can be exploited by the academicians who engage in research and development. It is worthy to mention that many campus communities are demanding such services in rapidly changing landscape so, expectations of them are so high to maintain such standard is becoming difficult for the repository managers. The reason to develop IR has emerged as they provide research-based access and preservation to the scholarships.

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