Institutional Repositories and their Role in Knowledge Management: A Study of PAU Repository

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Abstract

Higher educational institutions, particularly agricultural universities, have a tripartite mandate which includes teaching, research, and extension. Open access initiatives have resulted in the growth and development of repositories where researchers can share their work for more visibility and impact. Institutional output can be better preserved and widely shared through institutional repositories. Librarians have better skills in managing knowledge; thus, collaborating with IT professionals can play a crucial role in managing and disseminating an institution's research output. In today's time, librarians have also involved themselves in assisting their organizations in demonstrating researchers and faculty impact of their research using conventional and alternative metrics. This article discusses the concept of knowledge management, institutional repositories, and their role as a green route to publication and disseminating institutional knowledge with particular reference to PAU repositories' structure, growth, and development. It is an exploratory study taking into account the repository's genesis, growth, and development. This study helps understand the concept of knowledge management and institutional repositories.

Keywords: Institutional Repositories, Knowledge Management, PAU Repository, Scholarly Communication, Resource Sharing

Introduction

Knowledge builds on existing knowledge, and past events help generate new knowledge. Higher educational institutions are considered knowledge

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houses where information is exchanged between teachers, scientists, researchers, and students, thus resulting in the development of new knowledge. New knowledge can be generated through human efforts during educational and research activities in any institution. The information generated can be shared through books, journal articles, theses, technical reports, case studies, etc. It has become essential for an institution to compile all the intellectual output in one central place for easy access and dissemination.

Open access initiatives have compelled organizations, particularly universities, to manage their intellectual assets for more visibility and impact. Often, it has been observed that generated information or knowledge is unknown to anyone, and it remains grey literature if not properly recorded and managed. Therefore, an institution or university needs to capture its intellectual knowledge produced as a whole and share it with the broader community. Institutional repositories can be the first choice to showcase the performance of an institution if properly developed and managed.

Knowledge Management

Knowledge management is considered a strategic tool in organizational effectiveness, and it has emerged as a vital resource in building economies. Knowledge has an economic value, the stock of which is never finished by its use; instead, the value of knowledge to an economy comes from its sharing with others (Brinkley, 2006). Knowledge management in higher education refers to managing knowledge assets to improve educational performance for more visibility and impact. It involves several processes that call for continuous changing of organizational efforts in anticipation of future demands and threats (Malhotra, 1998). In other words, it is an effort that "links people with knowledge content" (Hayward, 2000).

Knowledge management is a "Systematic process of identifying, capturing and transferring information and knowledge which people can use to create,

improve and compete." According to Duffy (2000), knowledge management is a process that enables individuals of an organization to acquire, share and advantage knowledge to desired objectives collectively. Petrides (2003) defined knowledge management as a "set of practices, which help improve data and information sharing in decision-making." Ramanujan and Kesh (2004) defined knowledge management as "an organizational ability to gather, organize, share and analyze the knowledge of individuals and groups across the institution in ways that directly impact performance."

Technology and Knowledge Management

The Internet has changed the way we display information or access data. Knowledge management involves capturing, organizing, accessing, and using desired information, requiring sophisticated hardware and software tools. The processes will respond best if supported by powerful easy to use technologies. Technological support has enabled organizations to transform knowledge from an abstract concept to a tangible and manageable one. Therefore, information and technology have a strong relationship, which helps develop new processes for designing and developing new information cultures.

Knowledge management involves several processes such as creation, capture, organization, access, and use. Knowledge is created through scientific discovery or discussions, which can be lost or not used if not captured, which is possible through technology by documentation, digitization, representation, and storage. The following necessary process in knowledge management is knowledge sharing which is the major pillar and central component of a successful knowledge management process. Nonanka (1995) added that knowledge sharing gives an overall view of an organization as a living organism where everyone is a knowledge worker rather than a machine for processing information. Kidwell, Vander Linde, and Johnson (2000) conceptualized the potential benefits and application of knowledge management in higher education and advocated for portal-based access.

Further, for research-related knowledge management, they were of the view to create a repository for research outcomes. Collaboration plays an essential role in organizational knowledge management (Serban & Luan, 2002). Sharing of knowledge takes place in everyday life in discussions or other forms of social interactions like sharing experiences that can be personal, economic, political, and social. In a learning institution, sharing knowledge can take a seminar, conference, journals article, report etc. As information sharing has reached unprecedented proportions with the use of information communication technologies, it is now possible for any researcher to share their work with others through the central repository of an institution. In higher learning, knowledge management is at the core of its existence, and effective communication of knowledge, whether explicit or tacit, must be there (Ismail, 2012).

There are four barriers to successfully sharing and transferring knowledge: ignorance, adoption, absorptive capacity, and lack of relationship between giver and receiver. Developing an institutional repository or knowledge base for any academic institution will be helpful and economical. Its open-access features will enhance the accessibility to traditional, grey, and institutional knowledge. Developing countries like India have also made good progress in managing their knowledge resources, resulting in repositories like Shodganga, Krishikosh, TKDL, Vidyanidhi, NISCAIR online periodical repository, etc. Further National Digital Library of India is a great initiative to provide free single window access to a vast amount of knowledge.

So, all knowledge management activities encompass how to create (Learning process), disseminate (Sharing), and measure (Intellectual capital) knowledge related assets (Liao & Wu, 2010)

Open Access Initiatives

Open access movement facilitated by digital and network technologies proposes different access models for accessing scholarly content. It provides

end-users with access to the content free of charge and frees most copyright and licensing restrictions. As per the Council of Australian University Librarians (CAUL), open scholarship and FAIR (Findable, Accessible, Interoperable Reusable) scholarly practices result in inefficient dissemination of knowledge which facilitates faster scientific discovery and problem-solving.

It refers to online, free of charge access to literature. As per Budapest Open Access Initiatives (BOAI), open access removes price and permission barriers so that any user can freely read, download, copy, distribute, print, and use the content for lawful purposes. Authors have control over the integrity of their work and the right to be adequately acknowledged. Copyright holders can manifest their consent to open access for using one of the creative commons licenses (fair use) and retain the right to block the distribution of misattributed copies. Thus, the mandate for OA as per BOAI and CAUL (Council of Australian University Librarians) is to build infrastructures, such as institutional repositories. Which help in open access and to promote the access of scholarly information and its availability in the public domain without economic restrictions; to collaborate with researchers, authors, research institutions, and publishers to raise awareness regarding open access initiatives and practices; to work for implementation of policies that facilitate fair use of copyrighted material for educational and research purposes.

Objectives of the study

The present study aims

a. To study the role of academic libraries in the development of IR
b. To discuss the growth and development of PAU repositories
c. To study different types of documents in the PAU repository
d. To study the interface features of the PAU repository

The present study is exploratory and will help understand the concept of knowledge management and the development process of institutional repositories. The basic workflow described will provide a better idea scholarly communication process. The reader will have information about repositories developed in agricultural education.

Methodology

The study has been carried out considering the previous studies done in the relevant context. The role of librarians and academic libraries in the development of institutional repositories has been contextualized. Annual reports and websites of the institution under study have been explored to get the desired information to fulfill the study's objectives.

Institutional Repositories and KM

Open access to the institution's scholarly output contributes to vital academic good, which ultimately determines the prestige and reputation of an Institution. Institutional repositories provide a platform for processing scientific works, which further develops a new dynamic range of knowledge. It further empowers institutes to control their research outputs while ensuring accessibility in open- access. Institutional repositories of any institution provide an opportunity to share its intellectual wealth with a community of scholars and a place for the long-term preservation of scholarly content (Prosser, 2003). Marsolek et al. (2018) further added that I could make a substantial difference in ensuring grey literature's preservation, increasing its reach, and, in many cases, providing a form of legitimacy to these items published outside traditional realms.

Crow (2002) defined institutional repositories as "digital collections that capture and preserve the intellectual output of university communities." It is a new scholarly publishing paradigm that adds more to the visibility and prestige of an institution

Lynch (2003) defined IR as "An institutional repository is an organization-based set of services that the organization offers to the community members to manage and disseminate digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials including long term preservation where appropriate as well as organizational access and distribution". In other words, it is the database of scholarly recorded material for long term preservation using OAI-compliant software to collect, store, preserve and disseminate scholarly material in digital form among the academic communities

It is clear from above that an institutional repository is an excellent platform for knowledge sharing and preservation. Institutional Repositories are being created to manage and preserve digital assets of intellectual output and the cultural heritage of an institution. Faculty, students, and administrators can archive their material for preservation and future access. It may be limited to one department, Institution, or consortia of several institutions. Collaboration through consortium helps in cost reduction and enhanced access to digital content. It may include preprints, post-prints of journal articles, technical reports, theses and dissertations, annual reports, teaching-learning material, works of art, photographs, video recordings, etc. Institutional Repositories have gained acceptance in the academic community by enhancing access to scholarly content. An essential contribution of the IRs is that it preserves traditional scholarly material by empowering faculties to contribute their research articles.

The services of academic libraries have transformed with the application of the Internet and digital technologies. These are not limited to the library's four walls, but anyone from anywhere can access its resources with a click of a button. In his study, Robertson (2010) revealed that librarians could offer better guidance to organizations, researchers, and students as they are occupied in open educational resources through metadata management, resource description, and information literacy and promoting open licensing. They have redefined their role primarily from supporting teaching

and learning to increased emphasis on research support services by spreading awareness about research and publication ethics through literacy programs of an institution. Agate et al. (2017) opined that librarians involved in scholarly communications must move beyond the limited set of standard publication types towards a wide range of more complex research output so that grey literature finds a place in library strategies despite its evidence high value to communities. Librarians know about the possibilities of open educational resources and assume their role in promoting the same use. Institutional repositories thus can be one of the services organized by the library to manage and serve digital information created by the community to be served (Oguche, 2018). Digital preservation is the essential purpose of Institutional Repositories, which have gained acceptance in the academic community to enhance access to scholarly content. Libraries can play an essential role in the creation and management of institutional repositories, which contribute significantly to the dissemination of knowledge (Nurdin & Mukhlis, 2019).

The main aspects of the implementation of institutional repositories are (i) Development of scientific work which calls for policy regulation about the mandatory deposition of softcopy of the scholarly work in a desirable format in the library (ii) Processing of scientific work means validation of the work based on technical aspects by the library (iii) Promotion and dissemination of IRs in increasing its visibility and access through library outreach programs and social networking sites. The development of institutional repositories requires good governance, including processing, promoting, and distributing scholarly works.

There are two ways of capturing knowledge in institutional repositories: Self-archiving and mediated archiving. The workflow of IR begins with (a) publishing or presenting of research work by researcher/Staff (b) Submission of research work in prescribed format (c) Verification & checking for completeness as well as the creation of metadata (d) Review by the administrator and addition in the collection.

Institutional Repositories in Agriculture

ICAR has undertaken various digital initiatives in reforming agricultural education and research: CeRA, Krishikosh, Argoweb, e-krishishiksha, etc. Realizing the importance of organizational knowledge for the growth and development of agricultural education E-Granth subproject was initiated under National Agricultural Innovation Project (NAIP) to develop a platform for providing digital access to a vast amount of information available in the National Agricultural Education and Research system (NARES) of India. Under this initiative digital repository has been developed to capture, digitalize and share organizational knowledge to fulfill the needs of the scientific, teaching, and research community. Further, preserving and providing enhanced access to knowledge already available in print form was also digitalized. Punjab Agricultural University contributes university theses to the krishikosh repository and has also developed its institutional repository by digitizing its scholarly print content.

Krishikosh

The Krishikosh is a unique repository of knowledge in agriculture and allied science. It has a collection of theses, old and valuable books, old journals, institutional publications, technical bulletins, project reports, lectures, preprints, reprints, and other grey literature spread all over the country in different state agricultural universities and ICAR institutes. It provides a software platform for implementing open access policy for individual institutions' self-managed repositories with centralized integration. It is collectively managed centrally aggregated with an integrated search facility. Majorly krishikosh repository comprises of thesis collection of participating institutes. Krishikosh has improved the accessibility coupled with the preservation of content. PAU Library is currently receiving one copy of the Thesis in a CD form which is being checked for completeness of the record in the desired format so that it can be uploaded to the repository. After authentication, the record is uploaded for broader dissemination and access. PAU has majorly contributed Theses

towards the KRISHIKOSH collection, and some of the newspaper clippings are also part

PAU Repository

In addition to the central repository of agricultural knowledge PAU has also managed to preserve its institutional knowledge available in the form of old print theses, journal articles, research reports, and other valuable publications by digitizing it with the financial support of ICAR received for digitization of library resources under library strengthening scheme of ICAR. The said repository is full-text campus-wide accessible to teachers, students, and university staff. Digital content has been managed and hosted on the E-Quest platform with all technical support provided by Total Library Solutions Pvt Ltd, New Delhi. The main aim was to preserve the content and enhance access to all teachers, researchers, and other stakeholders. The library received a digitization grant, which helped it convert institutional knowledge accumulated over the years in print form to digital format for easy access. Digitization of library resources was a herculean task for which proper planning and implementation were required. Since the digitization of theses of all SAUs from 2000 to 2007 was already undertaken by CCSHAU, Hisar under the KRISHIPRABHA project, it was decided to digitize first the print theses submitted before 2000 followed by institutional journals and other important institutional publications such as package of practices, newsletters, research reports, and PAU archival publications. PAU repository so developed now has in its collection theses submitted before the year 2000 institutional publications namely Journal of Research (now Agricultural Research Journal), Progressive farming, Changi Kheti, Package and Practices, PAU archival collection, research reports, Newsletters, Bulletin, etc. The interface is very user-friendly, as shown below (Fig 1).

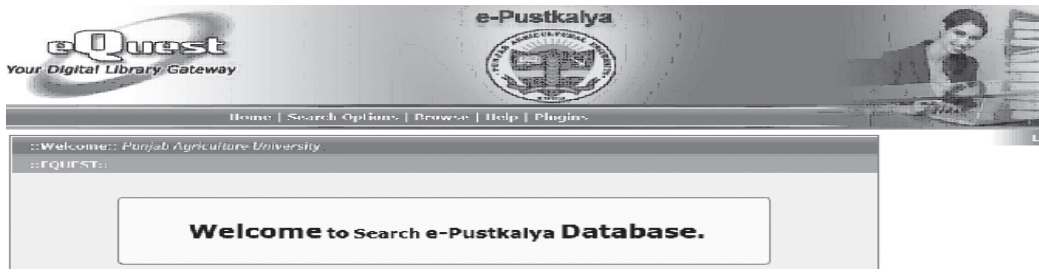

Fig-1 The interface of the PAU Repository

Collection: It has a digitized collection of different types of documents as follows:

- PAU Theses
- Periodicals- Agricultural Research Journal, Progressive farming, Changi Kheti, Horticulture newsletter and Horticulture bulletin.
- The archival collection of PAU such as packages and practices, Handwritten notes, Dr. Randhawa collection and research reports

Search facility: 24449 records are available in the repository, full text searchable in PDF format. PAU repository can be searched collection-wise. Further, Users can browse the theses collection author wise, title wise, and college wise using primary as well as advanced search options (Fig 2)

Fig-2 Search facility

Fig-3 Agricultural research Journal

Full-text digital record: With a single click user can have access to a full-text record (Fig 4)

Fig-4 PAU publication full-text record

Conclusion

Institutional repositories contribute immensely to disseminating scholarly knowledge, thus playing a significant role in scholarly communication in the open era. They help preserve and disseminate institutional knowledge. Therefore, proper planning and management of Institutional repositories are necessary for effective knowledge management in institutions of higher learning. Academic libraries are becoming critical players in developing and successfully implementing institutional repositories. Librarians with expertise in publishing and copyright issues collaborate with teachers and researchers for more visibility and impact. They have redefined their role

from supporting teaching and learning to increased emphasis on research support services by spreading awareness about research and publication ethics through literacy programs of an institution. Every institution should work towards the growth and development of the repository, be it content type or its promotion and dissemination, so that no one should be deprived of the required information

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