CHAPTER I

Introduction: Scholarly Communication and the Open Access Movement

1.0 Communication:

In 1928, the English literary critic and author I.A. Richards offered one of the first definitions of communication as a discrete aspect of human enterprise. According to him, "communication takes place when one mind so acts upon its environment that another mind is influenced, and in that other mind an experience occurs which is like the experience in the first mind, and is caused in part by that experience."[1] Communication involves the successful transmission of information through a common system of symbols, signs, behavior, speech, writing, or signals. It is the process of sharing ideas, information, and messages with others in a particular time and place. It includes writing and talking, as well as nonverbal communication (such as facial expressions, body language, or gestures), visual communication (the use of images or pictures, such as painting, photography, video, or film), and electronic communication (telephone calls, electronic mail, cable television, or satellite broadcasts). Communication is a vital part of personal life and is also important in business, education, and any other situation where people encounter each other.

The history of communication[2] dates back to the earliest signs of life. In fact, communication has evolved from the early days when it used to include speech, symbols, cave paintings, petroglyphs, pictograms, ideograms, writing, and alphabet. The oldest records of written

1. Communication (n.d.). In *Encyclopædia Britannica* 2006 Ultimate Reference Suite DVD. Retrieved July 23, 2010.
2. History of communication. (2010, July 12). In *Wikipedia*, The Free Encyclopedia. Retrieved July 23, 2010, from http://en.wikipedia.org/w/index.php?title=History_of_communication&oldid=373126932

language dates from year 3000 BC[3]. Human communication was revolutionized with speech about 200,000 years ago. Symbols were developed about 30,000 years ago, and writing about 7,000 years ago. On a much shorter scale, there have been major developments in the field of communication in the past few centuries. The landmark development in the arena of communication was the invention of the printing press in 1400 AD which influenced the growth of scholarly communication by greatly boosting the production of formal documents, which soon became the favored form of communication among the scholars.

The traditional modes of informal communication include various types of face-to-face encounters such as meetings, conferences, seminars, workshops, classroom lectures. More recently in the IT era, it now incorporates blogs, discussion groups, listserves, etc. These are grouped under invisible college. Other informal communication methods include e-mail, electronic bulletin boards, online teleconferencing/video, chatting, webinars, etc. These technologies are forging virtual societal networks — communities of geographically dispersed individuals who have common professional or social interests[4]. Informal communication is based on the realization that an agency cannot be effective without personal interaction among the workers and is personal, unofficial, and mostly verbal. It seeks to involve workers in organizational matters as a means of maintaining their enthusiasm, loyalty and commitment. The advantages of informal communication[4] include: less official and less intimidating, enhance the free flow of new ideas and plans, personal, interactive (allows both parties to discuss and explore the hidden dimensions of organizational matters in a two-way communication pattern), a convenient way of explaining and an atmosphere of free, yet discreet discussion. Certain limitations may occur in informal

---

3. Communication (n.d.). In *Microsoft Encarta* online. Retrieved from http://encarta.msn.com
4. Communications. (n.d.). University of Arkansas at Little Rock. Retrieved July 23, 2010, from http://ualr.edu/dllauferswei/cj3306/formalcomm.html

communication like - it may be too loose and therefore difficult to define or apply systematically, spread of inaccurate information and half-truths, indiscriminate disclosure of classified information, etc.

In contrast with informal communication, formal communication moves through the formal channels and is mostly in black and white. It can be a presentation or written piece that strictly adheres to rules, conventions and is free of colloquial expressions. Formal communication was designed primarily as a means of controlling agency activities and personnel through the circulation of authoritative policies and procedures stating what was to be done when, where, how, and by whom. Formal communication has always been considered the "regular" system (or "channels") of communication within the organizations. The purpose of formal communication is to command, instruct, and finalize matters through the application of regulations[5]. Formal communication has several advantages as it is more binding, precise, there is lesser probability of misinterpretation, is traceable at all times and can be preserved, establishes responsibility of the sender and receiver, saves time and effort that would otherwise be consumed in informal talks. It may have certain limitations also like it can be sometimes rigid or limiting, lacking explanation, costly to produce and more delivery time.

1.1 From Communication to Scholarly Communication:

We have travelled a lot as far as communication is concerned, from the early forms of communication to modern era of satellite communication. In the historic times, communication used to be the medium to fulfill the basic necessities of life and served as a building block for the evolution of the society, whereas today a new facet of “scholarship” has added to the simple concept of communication. Today, we talk of “Scholarly Communication” and various issues related with it. Scholarly communication involves sharing and evaluating research

5. Communications. op.cit. p2

results, findings, and observations among peers, colleagues and researchers by informal and formal means. The Association of College and Research Libraries (ACRL) has defined scholarly communication as the "system through which research and other scholarly writings are created, evaluated for quality, disseminated to the scholarly community, and preserved for future use. The system includes both formal means of communication, such as publication in peer-reviewed journals, and informal channels, such as electronic listservs."[6] Cornell University Library has explained scholarly communication as the process used by scholars to share the results of their research[7]. It is an umbrella term which covers a range of topics, including the economics of publishing; the rising cost of books and journals, commercial versus private distribution of the research findings; the evolution of scholarly disciplines and its effect on publishing; the interactions of academic reward systems and publishing; copyright and digital rights management; open access; institutional repositories. In the traditional model of scholarly communication, the scholars affiliated to any institution create the information. This piece of intellect is then sent to the publishers for repackaging and reproduction and dissemination on payment basis to the scholarly community. One of the fundamental characteristics of scholarly research is that it is created as a public good to facilitate inquiry and knowledge. A substantial portion of such research is publicly supported, either directly through federally-funded research projects or indirectly through state support of researchers at state higher-education institutions.

According to Mamidi Koteswara Rao[8], there are many groups

---

6. American Library Association (n.d.). *ACRL Principles and Strategies for the Reform of Scholarly Communication*. Retrieved July 23, 2010, from http://www.ala.org/ala/mgrps/divs/acrl/publications/whitepapers/principlesstrategies.cfm
7. *Transforming Scholarly Communication and Libraries*. (n.d.) Retrieved December 11, 2006, from http://www.library.cornell.edu/scholarlycomm/index.html.
8. Mamidi Koteswara Rao, (2001) "Scholarly communication and electronic journals: issues and prospects for academic and research libraries", *Library Review*, Vol. 50 Iss: 4, pp.169 - 175

involved in the scholarly communication process who have directly or indirectly shaped the past and are going to witness a major paradigm shift in the light of the electronic revolution. He has grouped them as: creators – authors; publishers - commercial and noncommercial; libraries - facilitators of information; institutions - academic and research; readers - society at large. Welcome Trust has identified main players of scholarly communication as the commercial publishers; the not-for-profit sector; research libraries; academic researchers; library and research funders. All the major players in this process have evolved or are evolving new strategies to cope with the situation. Each of the main player has different objectives and different ways of working. Each of them can be influenced in different ways. The authors on one side and publishers and libraries on the other are trying to establish viable partnerships to be sustained for a longer period of time.

1.2 Scholarly Communication in Crisis:

ACRL Scholarly Communications Committee in its document "Principles and Strategies for the Reform of Scholarly Communication" [9] has acknowledged the stress and crisis in the formal system of scholarly communication. According to ACRL, the second half of the 20th century is being dominated by the interests of commercial publishers. This has happened more specifically in scientific, technical, and medical (STM) fields. The journal publishing industry has also become increasingly consolidated and is now dominated by a small number of international conglomerates. Prices for scholarly journals have risen well above general inflation in the economy and also above the rate of increase of library budgets. Libraries have tried to cope up with price increase through a variety of strategies, including subscription cuts and reductions in monographic purchases. In addition to escalating prices, quantity of scholarly information has also increased substantially

9. American Library Association. op.cit.p., 4.

resulting in a significant reduction in access to scholarship. Only those who afford to pay the price decided by the publishers have access to the article. The original creator of the intellectual work has no control over the price. In fact, he or she looses his or her right once the publisher accepts it for publication. The Library and Information Center, Georgia Institute of Technology[10] considers scholarly communication crisis as the current and future erosion of access to the scholarly literature resulting from the inability of institutional library budgets to keep pace with the rising cost of journal subscriptions and scholar's increasing loss of rights to his work as a result of signing away copyright.

The advancement in electronic publishing, though promising in many respects, presents numerous new challenges and threats to access. As journals move from print to electronic form, the legal framework for their use changes from copyright law to contract law. It governs publisher licensing agreements, which often include undesirable limits on use, eliminating forms of access that would have been permitted in the print environment under principles of fair use. Individual libraries tend to have limited bargaining power in negotiating publisher licensing agreements that provide desired levels of access for users as well as rights for such services as interlibrary loan. Libraries also face loss of content in licensed aggregated journal databases when agreements between publishers and aggregators change. The electronic environment also poses significant challenges for long-term preservation of and access to information. Since most libraries do not actually own and store the content of the journals they license in electronic form, new models for preservation must be developed. Changes in technology platforms pose other serious preservation challenges. Access to scholarship is further threatened when powerful commercial interests advocate changes in copyright law that limit the public domain and significantly reduce principles of fair use, particularly for information in digital form. These

---

10. Georgia Tech Open Access and Scholarly Communication. (n.d.). Retrieved July 23, 2010, from http://www.library.gatech.edu/scholarlycommunication/

issues and trends will continue to adversely affect the system of scholarly communication, unless they are successfully addressed by the higher education community. Libraries and their institutions worldwide can no longer keep up with the increasing volume and cost of scholarly resources. Journal price increases of more than 215% over the last fifteen years has forced libraries not only to cancel journal subscriptions but to purchase fewer books. Less specialized material is being published, and university presses are threatened with closure.[11]

Cornell University Library[12] has described the scenario among the top research libraries in North America. These libraries have been spending more money on fewer publications for at least the past fifteen years. The prices of serials has increased by 226%, library expenditure on serials has gone up by 192%, and the serials titles purchased by large academic research libraries has decreased by 7%. The Consumer Price Index during the same period has increased by only 57%. Countries of the third world (who are economically weak) are the worst sufferers. They can't afford to acquire even a fraction of reputed journals and databases. The proliferation of new journals and the "twigging" of established journals into smaller sub-specialities, combined with rising prices, especially in the sciences, have dramatically reduced the capacity of research libraries to purchase resources required by their scholarly communities. The proliferation of electronic journals and the various pricing models for this information has further complicated the acquisition issue, both for libraries and for publishers.

In US, from 1986 to 2002, the Consumer Price Index rose 64 percent, journal prices rose 227 percent, and book prices rose 75 percent. A research library spent 227 percent more on serials in 2002 than in 1986, but the number of titles purchased increased by only 6 percent. In addition, book purchase actually declined by 5 percent.

---

11. Ibid..
12. Atkinson, R. (n.d.). The Crisis in Scholarly Communication. Cornell University Library. Retrieved July 23, 2010, from http://www.library.cornell.edu/colldev/StatementOnCrisis.htm

Further discussing the increasing volume of information, from 1986 to 2002, the number of journals published increased by 58 percent. During the same period, world-wide production of books increased approximately 50 percent. It also considered the mergers of different publishing groups as a cause of journal inflation[13] . Association of Research Libraries (ARL) also carried out a similar study for the years 1986-2006 and the results clearly indicate the exponential rise of journal prices and its effect on the acquisition of monographs.

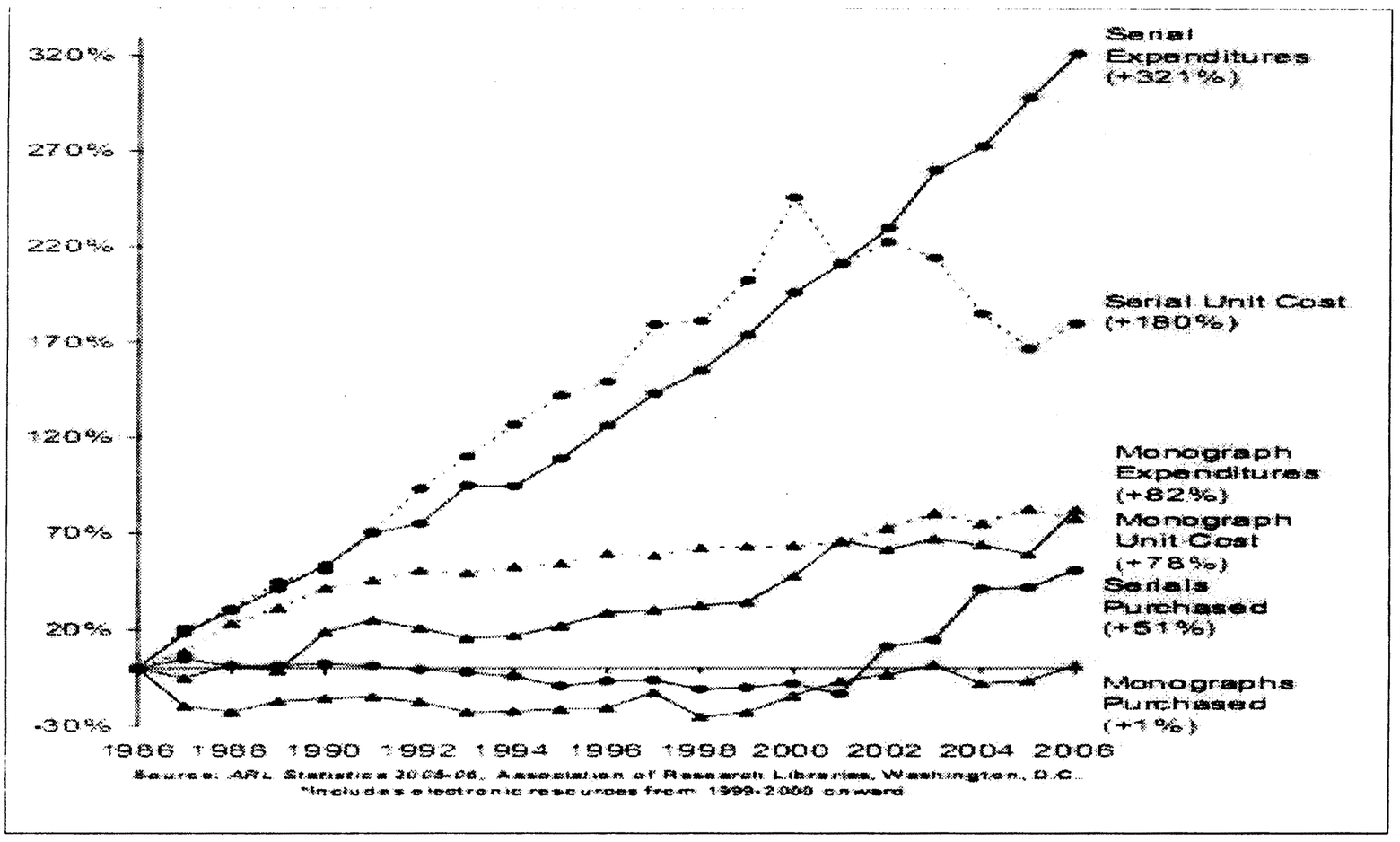

Figure 1.1 Serial Expenditures 1986-2006, ARL Libraries[14]

Lee C. Van Orsdel and Kathleen Born in their articles entitled "Periodicals Price Survey 2008: Embracing Openness"[15] and "Reality Bites: Periodicals Price Survey 2009"[16] have carried out the periodicals

13. University of California. *The Facts: The Economics of Publishing.* (n.d.). Reshaping Scholarly Communication. Retrieved July 23, 2010, from http://osc.universityofcalifornia.edu/facts/econ_of_publishing.html
14. Association of Research Libraries. "Graph 2: Monograph and Serial Costs in ARL Libraries, 1986-2006." *ARL Statistics*, Association of Research Libraries, Washington, D.C. 2005 – 2006. Retrieved July 23, 2010, from http://www.arl.org/bm~doc/monser06.pdf
15. Van Orsdel, L., & Born, K. (2008, April 15). Embracing openness. *Library Journal*, 133(7), 53-58. Retrieved December 14, 2008, from http://www.libraryjournal.com/article/CA6547086.html.
16. Van Orsdel, L., & Born, K. (2009, April 15). Reality Bites: Periodicals Price Survey 2009. *Library Journal*, 134(7), 36-40. Retrieved August 15, 2009, from

price survey for the year 2008 and 2009 respectively. Some of the findings of their survey is presented in the table 1.1 below:

S.No.	Discipline	Average Price Per Title ($)	
		2008	2009
1	Chemistry	3490	3690
2	Physics	3,103	3,252
3	Engineering	1,919	2,047
4	Biology	1,810	1,980
5	Technology	1,776	1,950
6	Astronomy	1,671	1,781
7	Geology	1,554	1,632
8	Botany	1,521	1,581
9	Zoology	1491	1510
10	Math & Computer Science	1,411	1,472
11	Health Sciences	1,330	1,401
12	Food Science	1,311	1,390
13	General Science	1,213	1,174
14	Geography	1,086	1,145
15	Agriculture	1,034	1,089

Table 1.1 Average Price for Scientific Disciplines: 2008-2009

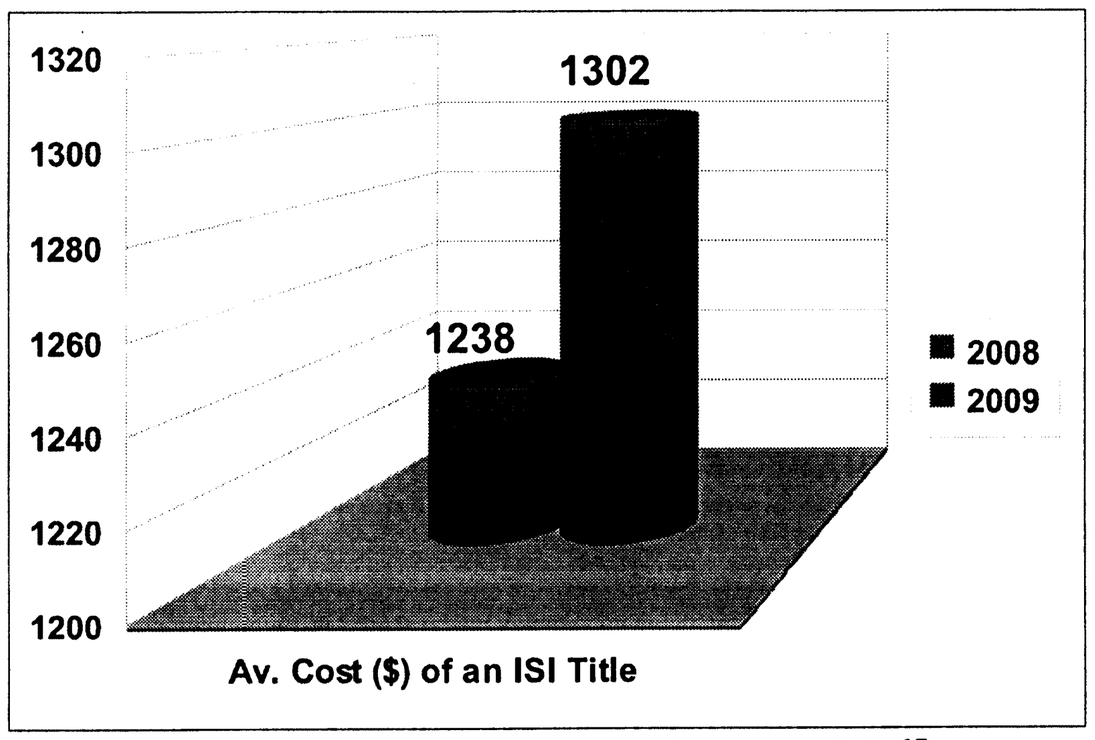

Figure 1.2 Average cost of an ISI title[17]

---

http://www.libraryjournal.com/article/CA6651248.html.

17. Ibid.

1.3 Solution to the Crisis: The Open Access

Thus we find that the scholarly communication is witnessing an increase in journal subscription price, additional cost for online access with print subscription, static and shrinking library budgets. On the other hand, publishers having commercial motives and they earn huge profits out of the business model based on intellectual assets of scholars and academic institutions which are not for profit organizations. Thus, the scholars are not able to acquire even a small portion of scholarship for academic purposes and are heavily dependent on publishers for wider-dissemination of their work and also to use the scholarly work of the peers. Open Access is one such system which can effectively and efficiently deal with such a crisis. Open Access (OA) means free availability of digital scholarly information without any financial, geographical, or any other type of access barrier. The universal philosophy of OA is to break free all the knowledge barriers. OA documents are available on the Internet, permit any user to read, download, copy, distribute, print, search, or link to the full texts of the articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the Internet itself without violating copyright laws by properly acknowledging and citing the work.

Open Access is an effective model of scholarly communication which empowers the academics and the libraries to break the monopoly of publishers, makes access to knowledge move equitable by eroding the age old financial, legal or technical barriers. It allows the author to retain copyright. By understanding, adopting, harnessing and leveraging open access, countries of the developing world or economically weaker countries can access, use and implement the global research output to enhance their development process. Open Access offers them a

significant vehicle to attain the status of a "Knowledge Society" or "Knowledge Economy". There are many initiatives at the international level including India and other third world countries for advocacy of open access.

The following section presents summary of significant writings on scholarly communication and open access by various authors and organizations.

1.4 Literature Review

Canadian Association of Research Libraries (CARL)[18] (2002) in its paper entitled "A guide to setting up an institutional repository" defined an institutional repository as a digital archive of an academic institution's intellectual output. It discussed the major steps that must be taken to set up an IR, pre-implementation, implementation and post implementation. It also described the document type, subject headings and format under metatdata part of pre-implementation, covered software installation, technical requirements and potential problems in the implementation section, described interface design, archiving policies, quality control, documentation, copyright, registering the repository, promotion and advocacy in the "Post-Implementation" section.

Research Library Group - Online Computer Library Centre (RLG-OCLC)[19] (2002) defined the attributes of a trusted digital repository and its compliance with the reference model for an open archival information system (OAIS). It highlighted the responsibilities of a trusted digital repository and recommended that organizations should develop a process for the certification of digital repositories; research and create tools to identify the significant attributes of digital materials that must be

18. Canadian Association of Research Libraries ((2002, September 27). *A Guide to Setting-Up an Institutional Repository*. Retrieved July 23, 2010, from http://www.carl-abrc.ca/projects/institutional_repositories/setup_guide-e.html
19. RLG-OCLC (2002), "*Trusted digital repositories: attributes and responsibilities*", Retrieved December 20, 2005 from www.rlg.org/legacy/longterm/repositories.pdf

preserved; research and develop models for cooperative repository networks and services; develop systems for unique, persistent identification of digital objects that expressly support long-term preservation; consider IR issues and define the minimal metadata required for long-term management. It also articulated a framework of attributes and responsibilities for trusted, reliable, sustainable digital repositories capable of handling the range of materials held by large and small research institutions.

Canadian Association of Research Libraries (CARL)[20] (2003) described the rich and heterogeneous collection of locally produced digital content of the Canadian University campuses such as pre -prints, e-prints, research reports, image, maps, audio and video files, etc. It explained how IRs expand access to research, reassert control over Canadian scholarship by the Canadian academic community, provided a sustainable management system for digital content and explained the benefits of adopting IRs including the preservation and usage of these digital content for progress in academic arena which was ignored earlier. It has mentioned that scholarly content once created should be preserved so that it can be used for all times to come and IRs can help in achieving this goal.

Barton, Mary R. and Waters, Margaret M[21] (2004) in their paper entitled "Creating an institutional repository: LEADIRS workbook" described comprehensively the concepts and initial steps of building an IR, explained the planning of IR services including the development of service module, creating service definition, ways of organizing content, examples of IR service definitions, time planning, staffing and marketing IR services. The authors discussed features of choosing an IR software

20. Canadian Association of research Libraries (CARL) (2003), "*Institutional Repositories Position Statement*", Retrieved July 10, 2006 from http://www.carl-abrc.ca/projects/ir/selfarchiving.pdf.
21. Barton, M. R. & Waters, M. M. (2004), "Creating an institutional repository: *LEADIRS workbook*", Retrieved December 15, 2005 from http://dspace.org/implement/leadirs.pdf

platform like CDSware, CONTENTdm, Dspace, Eprints, Fedora, Greestone, etc. and legal and regulatory environment and policy development issues like copyright and content licensing, etc. They provided guidelines for cost modeling for IRs including their costs, overhead or indirect costs, cost recovery services, etc.

Chan, L.[22] (2004) in his paper entitled "Supporting and enhancing scholarship in the Digital Age: The role of open-access institutional repositories" observed that the scholarly communication and publishing are increasingly taking place in the electronic environment and with a growing proportion of the scholarly record now existing only in digital format, serious and pressing issues regarding access and preservation are being raised that are central to future scholarship. He examined the emerging trend of university based IRs designed to capture the scholarly output of institution and to maximize the research impact of this output and discussed the relationship of this trend to the open access movement. He also highlighted the challenges and opportunities for using IRs to promote new modes of scholarship. According to him, planning for an IR, arranging sufficient manpower, convincing the authorities and then motivating the teaching community is a challenge but these can be overcome as the institution may have the basic infrastructure and the minimum manpower for establishing the IR.

Genonai, Paul[23] (2004) in his paper entitled "Content in institutional repositories: a collection management issue" discussed the challenges faced by many libraries in developing and manging an IR and addressed the issue of content in repositories. He suggested that the librarians need to approach the task of content development by applying some of the

---

22. Chan, L. (2004), "Supporting and enhancing scholarship in the Digital Age: The role of open-access institutional repositories", *Canadian Journal of Communication*, Vol.29, pp.277-300 . Retrieved July 15, 2006 from www.eprints.rclis.org/archive/00002590/01/Chan_CJC_IR.pdf.
23. Genoni, P. (2004), "Content in Institutional Repositories: A Collection Management Issue", *Library Management*, Vol.25,no.6-7, pp.300-306. Retrieved Jan 15, 2006 from www.espace.lis.curtin.edu.au/archive/00000908/.

procedures and skills associated with collection management within more traditional environments. He considered the types of content that might be suitable for IRs and mentioned that several recent Australian reports have recommended the need for a more standardized and regulated approach to the content of IRs as it will make the sharing of information more effective.

Hughes, Carol A.[24] (2004) in her paper entitled "EScholarship at the University of California: A case study in sustainable innovation for open access" described the eScholarship program which is a joint effort of the University of California Libraries and the California Digital Library. She discussed the context that gave rise to the creation of the eScholarship repository, the logistical issues involved in setting up a multi-campus persistent repository for scholarly output and future issues to be addressed in developing experimental reconfigurations of the components of scholarly communication in collaboration with communities of scholars.

Horwood, Lyne *et al.*[25] (2004) in their paper entitled "OAI compliant institutional repositories and the role of library staff" highlighted the role of librarian as a continuation of their existing functions of acquiring, organizing and making readily available the resources needed by academic staff and students. They mentioned that the library staff are collaborating with IT staff and academics to disseminate scholarly material and the learning objects emanating from their institutions. The paper discussed the open Archives Initiative and its Protocol for Metadata Harvesting, which provide the technical structure to support the repositories and enable their interoperability for searching purposes.

---

24. Hughes, Carol .A. (2004), "EScholarship at the University of California: A Case Study in Sustainable Innovation for Open Access", *New Library World* Vol.105,no.1198-1199, pp.118-124. Retrieved Dec 15, 2005 from www.ifla.org/IV/ifla72/papers/155-Mark_Shearer-en.pdf.
25. Lyne Horwood...[et.al] (2004), "OAI compliant institutional repositories and the role of library staff", *Library Management*, Vol.25,no. 4/5, pp.170-176. Retrieved Jun 15, 2006 from http://arc.cs.odu.edu:8080/dp9/getrecord/oai_dc/unimelb.edu.au/oai:unimelb.edu.au:302.

They also outlined the skills needed by library staff as well as the pitfalls and problems they may face in persuading academic staff of the virtues of IRs.

Proquest (Digital Commons)[26] (2004) in its white paper entitled "Digital commons" discussed the digital commons system as a comprehensive suite of web-based tools designed to give administrators and editors the ability to quickly create customizable collections of publications such as journals, dissertation collection, etc. and to efficiently manage the submissions. The paper highlighted the technical requirements and the work flow for creating, submission and publication of digital objects and explained various modules and features of the system such as administrative system, template system and supporting utilities email, search engine, etc.

Smith, Mackenzie[27] (2004) in her paper entitled "Libraries in the lead: the institutional repository phenomenon" observed the status of libraries in the networked and digital environment. She attempted to find ways in which they can respond and explored how libraries can help scholars communicate in a networked era. She discussed the changing role of libraries in an age of web publishing and Google and explored the possibility of preservation of digital collections. She also explained the role of Institutional repositories in addressing these issues and observed that more research is needed on the economics and incentive models of institutional repository operations, and the legal constraints to information sharing may hinder academics from optimal communications. She stressed upon the need for increasing faculty awareness, use of institutional repositories and educating them regarding copyright issues

---

26. Proquest (2004), "Digital Commons: A Technical white Paper". Retrieved Mar 25, 2006 from http://umi.com/products_umi/docs/DC_TechnicalWhitePaper_Nov2004wFormat.pdf.

27. Mackenzie Smith. (2004) Libraries in the Lead: The Institutional Repository Phenomenon. *Breaking Boundaries: Integration & Interoperability* (pp.1610 - 1725). Melbourne: Victorian Association for Library Automation Inc. Retrieved December 15, 2005 from http://www.vala.org.au/vala2004/2004pdfs/69Smith.PDF

and the benefits of open access to scholarship.

Wheatley, Paul[28] (2004) in his paper entitled "Institutional repositories in the context of digital preservation" focused on the requirements, functions and use of digital preservation in an institutional repository and provided an overview of existing IR software as well as details of working systems and their core aims and purposes. He described the aims for effective digital preservation and the preservation process. He also described open source institutional repository softwares like: ARNO, CDSare, Dspace, ePrints, FEDORO and MyCoRe. The author recommended integration of preservation functions with IR design, modular, flexible and extensible IR architecture, community wide effects and also appended a glossary of various key terms and technical terms at the end of the report.

Allard, Suzie, Mack, T. R., and Feltner-Reichert, M.[29] (2005) in their paper entitled "The librarian's role in institutional repositories: A content analysis of the literature" identified topics that are being addressed in the IR literature, and observed the role of librarian in IR products. They revealed that the concepts found in the IR literature can be grouped into five major themes- definition, implementation, management, outcomes and librarian's role. The authors highlighted six roles of librarians in the IR environment: understanding software, project planning and management, collection definition, metadata guidance, submission reviews and author training.

---

28. Wheatley, Paul, Institutional Repositories in the Context of Digital Preservation , Digital Preservation Coalition, *Technology Watch Series Report* 04-02, March 2004 Retrieved December 15, 2005 from http://www.dpconline.org/docs/DPCTWf4word.pdf
29. Allard, Suzie, Mack, T. R., & Feltner-Reichert, M. (2005), "The librarian's role in institutional repositories: A content analysis of the literature", *Reference Services Review*, Vol.33, no., pp.325-336. Retrieved July 11, 2005 from http://www.emeraldinsight.com/Insight/viewContentItem.do?contentType=Article&contentId=1513184.

Bailey, C.W., Jr.[30] (2005) in his paper entitled "The Role of Reference Librarians in Institutional repositories" discussed the relationship of open access to institutional repositories and examined the possible roles of reference librarians in IRs. He presented IRs as different identities from scholars' personal web sites, academic department archives, institutional e-print archives, disciplinary archives and suggested new organizational roles for reference libraries that are built on their current functions. He emphasized that the reference librarians must play a key role in IRs as their jobs may be transformed by the emergence of Irs.

Bell, Suzanne, Foster, N.F. and Gibbons, Susan[31] (2005) in their paper entitled "Reference librarians and the success of institutional repositories" reviewed the purpose, method and selected results of a study of faculty work practices, especially on the creation, location, and use of grey literature and the design and use of IRs. They also reviewed six key research findings related to the understanding and attitudes faculty members hold regarding IR collections and explained why librarians find it difficult to attract participation from the perspective user community comprising teachers and scholars. The authors recommended new strategies for IR design, recruitment of content, outreach by librarians and listed the practical steps that librarians can take to improve faculty participation in repository projects and to increase access to grey literature for all scholars. They also proposed an expanded role for librarians as liaisons to faculty who wish to share their work and the practical steps they can take to improve faculty participation in repository projects and to increase access to grey literature for all scholars.

---

30. Bailey, C.W., Jr. (2005), "The role of reference librarians in institutional repositories". *Reference Services Review*, Vol.33,no., pp.259-267 Retrieved Feb, 2005 from. www.escholarlypub.com/cwb/reflibir.pdf

31. Bell, Suzanne, Foster, N. F., & Gibbons, S. (2005), "Reference librarians and the success of institutional repositories", *Reference Services Review*, Vol.33,no.3, pp.283-290. Retrieved March 2006 from www.emeraldinsight.com/Insight/viewContainer.do?containerType=Issue&containerId=22693

Benjelloun, Rida[32] (2005) in her paper entitled "Archimede: a Canadian solution for institutional repository" highlighted the main features of Archimede, an institutional repository system developed by Universities Laval. She discussed the document management functionalities, dissemination mechanics compatible with open archive initiative protocol for metadata harvesting (OAI-PMH); an indexing and searching framework (LIUS) and a selective dissemination of information service. She opined that the development of an IR system resting on OSS framework and application program interface could lead to impressive results in a short time with minimum investment.

Buehler, M.A. and Boateng, Adwoa[33] (2005) in their paper entitled "The evolving impact of institutional repositories on reference librarians" shared the experiences of Rochester Institute of Technology (RIT) librarians regarding the role played by the reference librarians in establishing and operating an IR. The authors conducted a literature review on a range of published works during 1999-2005 to find the background of IRs and to incorporate it with the authors' own experiences. The paper discussed how IRs impact reference librarian roles and careers and how they can accept their changing roles in the emerging scenario.

Das, Anup Kumar, Sen, B.K. and Dutta, Chaital[34] (2005) in their paper entitled "Digitization of scholarly materials in India for distance and open learners" highlighted the importance of IR and observed that

---

32. Benjelloun, Rida, "Archimede: a Canadian solution for institutional repository", L*ibrary Hi Tech* (2005), Vol.23,no.4, pp.481-489. Retrieved July 2006 from www.emeraldinsight.com/.../viewContentItem.do?contentType=Article&hdAction=lnkhtml&contentId=1529589.
33. Buehler, M. A. & Boateng, A. (2005), "The evolving impact of institutional repositories on reference librarians", *Reference Services Review*, Vol.33,no.3, pp.291-300. Retrieved July 2006 from https://ritdml.rit.edu/dspace/bitstream/1850/1369/1/MBuehlerArticle09-2005.pdf.
34. Das, Anup Kumar and Sen, B. K. and Dutta, Chaitali (2005), "Digitization of scholarly materials in India for distance and open learners", *Proceedings ICDE International Conference on Open and Distance Education*, New Delhi (India). Retrieved Jun 2006 from www.eprints.rclis.org/archive/00005577/fullmetadata.htm.

documents like theses and dissertations, seminar papers, journal articles, etc. are being found more in the repositories. They also highlighted the problems of the repositories in India and observed that the concept and practice of IRs needs to strengthened through the regular review of the collection development policies. The authors suggested that posting of IRs is necessary in list serves, web search engines, metadata harvesting services in order to popularize them. They mentioned that IRs will facilitate individual researches to get international attention and recognition.

Das, Anup Kumar, Sen, B.K. and Dutta, Chaitali[35] (2005) in their paper entitled "Collection development in digital information repositories in India" mentioned that a number of national level institutions are digitizing their own information resources in India including dissertations, theses, research reports, working papers and research papers. They opined that all such digitized materials can be made available to the learners of distance education so that they can can explore the universe of knowledge. They suggested that open distance learning (ODL) institutions can form a consortium that will plan, coordinate and implement a national level learning objects repository or digital repository for the benefit of distance learners of the country. They stressed on the need of a digital rights management system which can be interlined with the repository to address the copyrights and others related issues.

Dill, Emily and Palmer, K.L.[36] (2005) in their paper entitled "What's the big IDeA? considerations for implementing an institutional repository" presented the experiences of the authors and the library staff

---

35. Das, Anup Kumar, Sen, B.K. and Dutta, Chaital (2005), "Collection development in digital information repositories in India", Vishwabharati@TDIL, 17, pp. 91-96. Retrieved Jun 2006 from http://tdil.mit.govinlapr2005.htm.
36. Dill, Emily and Palmer, K. L. (2005), "What's the big IDeA? Considerations for implementing an institutional repository", *Library Hi Tech News*, Vol.22,no.6, July 2005, pp.11-14. Retrieved August 2006 from https://idea.iupui.edu/handle/1805/365.

at Indiana university-Pudue University Indianapolis (IUPUI Digital Archives). They outlined issues which needs to be considered while starting an IR, the skills, people, philosophies, and resources required to implement an IR and emphasized that an institution should focus on its specific and unique purpose based on the needs of the users for creating an IR. They opined that success of IR is not dependent upon the abundance of all these components, rather a thoughtful consideration of goals and resources are most important. They stressed upon the importance of proper planning of the IR so that there can be optimum utilization of the available resources leading to creation of a successful institutional repository.

Fedora Development Team.[37] (2005) in its white paper entitled "Fedora open source repository software" discussed the problems faced by content managers in managing complex multi-media rich content. They highlighted many key features of Fedora including powerful digital object model, extensible metadata management, expressive inter-object relationships, web service integration, version management, useful preservation facility, etc. The paper highlighted cases where Fedora has been used for digital preservation, commercial content system, IRs, multimedia web sites, digital library collections and distributed digital libraries and explained the architecture, functionality, working, service framework and other aspects of Fedora software.

Graham, J-B., et al.[38] (2005) in their paper entitled "Digitizing a gap: a state-wide institutional repository project" illustrated how one medium-sized academic library was able to use a web based digitization and

---

37. Fedora Development Team (2005), "Fedora Open Source Repository Software: White Paper". Retrieved Jul 2006 from http://www.fedora.info/documents/WhitePaper/FedoraWhitePaper.pdf#search=%22Fedora%20open%20source%20repository%20software%22 (accessed July, 2006).

38. Graham, J-B., et al. (2005), "Digitizing a Gap: A State-wide Institutional Repository Project", *Reference Services Review*, Vol.33,no.3, pp.337-345. Retrieved July 2006 from www.emeraldinsight.com/Insight/viewContentItem.do?contentType=Article&contentId=1513185

repository project to increase and promote communication and relationship between the library and the university community. They traced the history and development of the cornerstone Project- the Network of Alabama Academic Library's (NAAL) state-wide digital repository project. They described the steps taken by medium-sized academic library to participate in a state-wide IR project to improve the liaison activities and form new relationships with departments across the campus. The authors concluded that using the digital repository project helped bridge gaps between departments that had limited or no involvement with the library and resulted in a new and improved interdepartmental relationship.

Hayes, Helen[39] (2005) in her paper entitled "Digital Repositories: helping universities and colleges" discussed the importance of IRs for Universities and colleges as a tool to manage and capture intellectual assets. She reported that a digital repository can contain a wide range of materials for a variety of purposes and users. She explained the significance and role of IRs for institutions, staff as well as the students, and differentiated between the concept and functioning of an IR and a content management system. She emphasized that if IRs are to support academic institutions in achieving their various objectives, then they must be able to collaborate with other systems and must also comply with 'Open standards'.

Jenkins, Barbara, Breakstone, Elizabeth and Hixson, Carol[40] (2005) in their paper entitled "Content in, content out: the dual roles of the reference librarian in institutional repositories" opined that the

---

39. Hayes, Helen (2005), "Digital repositories, helping universities and colleges briefing paper", JISC (Joint Information Systems Committee). Retrieved Jun 2006 from www.jisc.ac.uk/uploaded_documents/JISC-BP-Repository(HE)-v1-final.pdf
40. Barbara Jenkins, Elizabeth Breakstone and Card Hixson (2005), "Content in, content out: the dual roles of the reference librarian in institutional repositories", *Reference Services Review*, Vol.33, no.3, pp.312-324. Retrieved July 2006 from www.emeraldinsight.com/Insight/viewContentItem.do?contentType=Article&contentId=1513183.

reference librarians have vital role to play in helping authors to submit their content to IRs, as well as in educating users to search such repositories effectively. They recommended that the reference librarians should play a greater role in IRs as their knowledge of the specialized research needs and scholarly communication patters of the different disciplines can inform them about the IRs growth. They concluded that at many institutions, IR development has relied heavily on technical and administrative staff and that reference/subject librarians have not played as active role as they can.

Lynch, C.A.[41] (2005) in his paper entitled "Metadata harvesting and the open archives initiative" argued that institutional repositories can serve as a scholarly enterprise and if properly developed, it may lead to the advancement of a surprising number of goals and address an impressive range of needs. He suggested that universities need to invest in IRs aggressively, thoughtfully and carefully. The author believed that IRs can change the landscape of scholarly communication.

Phillips, Holly, Carr, Richard and Teal, Janis[42] (2005) in their paper entitled "Leading roles for reference librarians in institutional repositories: one library's experience" described an academic health science center library's leadership roles in implementing IR initiative. They discussed that the reference librarians are strategically placed to promote and administer IR initiatives successfully and the professional challenges rests in reference librarian's readiness to become scholarly publishing change agents. The paper well documented the successful approach to incorporate IR projects into existing library roles in addition to providing new leadership opportunities for the reference librarians.

---

41. Lynch, C. (2001), "Metadata Harvesting and the Open Archives Initiative", *ARL Bimonthly Report 217*, Retrieved Dec. 2005 from http://www.arl.org/newsltr/217/mhp.html.

42. Phillips, Holly, Carr, Richard and Teal, Janis (2005), Leading Roles for Reference Librarians in Institutional Repositories: One Library's Experience, *Reference Services Review*, Vol.33,no.3, pp.301-311. Retrieved Jul 2006 from https://repository.unm.edu/bitstream/1928/464/1/Phillips_IR_Roles.pdf .

They observed that the reference librarian is in a better position to manage the IR related activities including the management of awareness campaign among the academic community of the organization.

Rankin, John[43] (2005) in his paper entitled "Institutional repositories for the research sector: feasibility study" positioned institutional research repositories in the wider national and digital global environments and presented the rationale and business case for investment. He defined the programme of work currently envisaged and examined the cultural changes required to establish a repository framework. He described the technological changes that will be required and examined the software options available, proposed action to take the programme forward to the next stage and opined that different institutions will have different repository needs and priorities. He recorded relevant facts, issues and options, allowing each institution to draw conclusions appropriate to its own situation. He also discussed the needs, benefits and plan of action for IRs.

Rowlands, Ian[44] (2005) in his paper entitled "Scholarly communication in the digital environment: the 2005 survey of journal author behaviour and attitudes" made a substantial contribution to the ongoing debate about the potential of open access publishing and institutional repositories to reform the scholarly communication system. He observed that the journal publishing sector is facing enormous challenges and opportunities as content increasingly migrates to the web. His paper highlighted an assessment of the attitudes and opinions of more than 5,000 senior researchers and thus contributed both to the development of public policy as well as more realistic commercial strategies. He

---

43. Rankin, John (2005), "Institutional repositories for the research sector: feasibility study", National Library of New Zealand. Retrieved August 2006 from www.ifla.org/IV/ifla72/papers/151-Carnaby-en.pdf .
44. Ian Rowlands, David Nicholas, (2005) "Scholarly communication in the digital environment: The 2005 survey of journal author behaviour and attitudes", *Aslib Proceedings*, Vol. 57, no. 6, pp.481-497

observed that senior researchers are rapidly becoming more informed about open access publishing and institutional repositories but they are still a long way off reaching a consensus on the likelihood that these new models will challenge the existing order, nor are they in agreement whether this would be a positive or a negative development.

Ruthven, Tom[45] (2005) in his paper entitled "To protect and serve: making digital repositories safe and accessible for the long term" discussed various issues related to the sustainability of repositories, the material they hold, their nature and types. He opined that it is not only important to create digital content but its preservation for future use should be the main goal. He emphasized that protection of the digital content and its long term access can be ensured by establishing sustainable IRs. He opined that protection and user-centric services should be the motto of the IRs.

Securing a Hybrid Environment for Research Preservation and Access (SHERPA)[46] (2005) in its document entitled "Creating a persistent preservation environment for institutional repositories" discussed the proposal submitted by the arts and humanities data services (King's College London) and the University of Nottingham which aimed to create a collaborative shared preservation environment. The paper summarized the scope, purpose and objectives of the project along with the details of project partners, project governance, project description and explained in detail the project management. It described the infrastructure needed, the metadata requirement, repository archiving policy, preservation actions and implementation. The document mentioned that the project brings together the SHERPA institutional repository systems with the preservation repository established by the

---

45. Ruthven, Tom (2005), "To Protect and Serve : Making Digital Repositories Safe and Accessible for the Long Term". *Information Online 2005* : 12th Conference and Exhibition held in Australia", Retrieved July 2006 from www.nla.gov.au/padi/topics/71.html.
46. Sherpa, D.P (2005), "Creating A Persistent Preservation Environment For Institutional Repositories". Retrieved July 2006 from www.jisc.ac.uk/index.cfm?name=project_sherpa2.

Arts and Humanities Data Service (AHDS) to create an environment that addresses all the requirements of different phases within the life cycle of digital information.

Donald, J. W.[47] (2006) in his paper entitled "Managing report digital assets in higher education: an overview of strategic issues" discussed the crisis in scholarly communications especially in scientific, technical, and medical fields and felt that efforts to build new models of scholarly communications based on rights to self-archiving, institutional repositories and innovative publishing tools is the need of the hour. He raised several issues about the organization of scholarly communication and articulated that economics of scale and the complexities associated with intellectual property rights management may prove that individual libraries need more centralized and collaborative mechanisms to achieve these objectives. He stressed on the need to find means of financial resources for developing and sustaining IRs.

Harned, Stevan[48] (2006) in his paper entitled "Maximizing research impact through institutional and national open-access self-archiving mandates" opined that no research institution can offer to provide all the journals its researchers may need. He recommended that once a paper is accepted for publication, the authors final draft must be deposited into the institutional repository. He mentioned that to make self-archiving successful, the repository needs to be mandated and access privileges to the full-text of the submitted articles should be set as either open access or restricted access. He further suggested that the decision regarding setting up the degree of access privilege can be left up to the author. He concluded that articles made "open access (OA)" by self-archiving are

---

47. Donald J. Waters (2006), "Managing report digital assets in higher education: an overview of strategic issues", *ARL Bimonthly Report 244*. Retrieved July 2006 from www.arl.org/newsltr/244/assets.html.
48. Harned, Stevan (2006), "Maximizing research impact through institutional and national open-access self-archiving mandates".*Current Research Information Systems*. Bergen, Norway, 11-13 May, 2006. Retrieved July 2006 from http://eprints.ecs.soton.ac.uk/12093/.

cited twice as much, but not all the authors will abide by the self-archiving mandate making it mandatory to submit their papers in the institutional archives.

Joint, Nicholas[49] (2006) in his paper entitled "Institutional repositories, self-archiving and the role of the library" raised some unresolved questions about the practical implementation and management of institutional repositories – in particular, the level of resources needed to support the process of self deposit into institutional repositories. He found that metadata creation and the formulation of digital preservation policies for institutional repositories require significant resource, if they are to be carried out well. He suggested that the libraries and the librarians are well placed to give input to the metadata and digital preservation activities inherent in building institutional repositories. His paper made a strong case for librarian-mediated deposit rather than pure self-archiving as the future of building institutional repositories.

Kennan, M.A. and Wilson, Concepcio´n[50] (2006) in their paper entitled "Institutional repositories: review and an information systems perspective" indicated that research can build on existing knowledge already gained by IS researchers to enhance the understanding of IR. They argued that research can also lead to learning to create more successful IR implementations, more successful dissemination of refereed research output and other intellectual and research contributions of institutions such as universities. They highlighted some examples from LIS literature which may provide strategies for libraries and other organizations to speed up their implementation of IR to provide access to and management of their own institutions refereed

---

49. Joint, N., (2006), "Institutional repositories, self-archiving and the role of the library" *Library Review*, Vol.55,no.2, pp. 81-84. Retrieved July 2006 from www.epress.lib.uh.edu/sepb/techrep.htm.
50. Kennan, M.A. and Wilson, Concepcio'n, (2006), "Institutional repositories: review and an information systems perspective", *Library Management*, Vol.27 no.4/5, pp. 236-248. Retrieved July 2006 from www.dlist.sir.arizona.edu/1200/.

research output. The paper brought together recent opinion and research on IR and OA to provide librarians and other information managers with a review of the field and proposed further research on IR and OA.

Rea, Devakos[51] (2006) in his paper entitled "Institutional repositories in Canada. towards user responsive institutional repositories: a case study" reported about the University of Toronto's implementation of an institutional repository in which a range of qualitative research methods were used to tap early adopter and library concerns. The author argued that modified qualitative research methods may be useful to new library projects and provided practical information and a model which may be useful for others implementing repository services or other emerging technologies. His paper gave an insight on how libraries can face the initial hurdles while establishing an IR.

Shearer, Kathleen[52] (2006) in her paper entitled "Step by step guide to setting up and institutional repository" discussed some of the challenges of implementing IRs in Canada. The author found that there are a number of important issues confronting implementers of institutional repositories which contributed in the work plan of the CARL Institutional Repositories Project. The paper presented an up to date account of the state of institutional repositories in Canada.

Westell, Mary[53] (2006) in her paper entitled "Institutional repositories: proposed indicators of success" proposed indicators for measuring the success of institutional repositories based on their demonstrated

---

51. Rea, Devakos (2006), "Institutional Repositories in Canada. Towards user responsive institutional repositories: a case study", *Library Hi Tech*, Vol. 24 no. 2, pp.173-182. Retrieved Aug 2006 from www.emeraldinsight.com/Insight/viewContainer.do?containerType=Issue&containerId=23987.
52. Shearer, K. (2002), "Step by Step Guide to Setting Up and Institutional Repository", *Canadian Association of Research Libraries*, Retrieved Feb 2006 from http://www.carl-abrc.ca/projects/ir/setting-up.htm.
53. Westell, Mary (2006), "Institutional Repositories in Canada. Institutional repositories: proposed indicators of success", *Library Hi Tech*, Vol.24,no.2, pp. 211-226. Retrieved Aug 2006 from www.epress.lib.uh.edu/sepb/techrep.htm.

integration with other research initiatives. She examined the web sites of selected Canadian universities which are participating in the Canadian Association of Research Libraries Institutional Repository project and revealed that the Canadian IR community is on the way to the proposed model future – integration with existing university research practices. The paper provides a basic framework for evaluating IR projects and highlighted the areas where the library can generate additional support for such worthwhile projects.

Kaur, A.[54] (2007) in her paper entitled "Electronic Journals and Scholarly Communications" considered the recent developments in information communication technologies, more particularly the advent of Internet and World Wide Web (WWW) and explained the shift from traditional print journals to electronic journals. She opined that the surge in e-journals publishing was caused when libraries and individuals scholars began accessing information resources on the WWW in mid 1990s. The paper discussed about the shift from paper to digital form and its affect on the traditional alignment, the role of the primary stakeholders (mainly scholars, universities, libraries and publishers) and evolution of e-journals. She discussed the role of e-journals and assessed the role of current players — scholars, universities, libraries and publishers and the environment of conflict among them. The author attempted to resolve the conflict through various journal publishing models emerging from library cooperation and concluded that the current approach will lead to scholarly communication becoming less commercialized.

Van Orsdel, L.[55] (2007) in his paper entitled "Embracing Openness"

---

54. Kaur, A. (2007). "Electronic Journals and Scholarly Communications". Information Studies, 13(4), 227-239. Retrieved December 12, 2008, from *Library, Information Science & Technology Abstracts database*.
55. Van Orsdel, L., & Born, K. (2008). "Embracing Openness". Library Journal, 133(7), 53-58. Retrieved December 14, 2008, from *Library, Information Science & Technology Abstracts database*.

discussed the unprecedented change witnessed by the scholarly communications with publishers, scholarly societies, scientists and other scholars, librarians and legislators engaged in strategies of various kinds to push change in directions that favour their individual goals. He categorized the strategies broadly into change in the publishing market, academy and public policy and examined each set of strategies in terms of desired changes and opposing forces. He also identified the trends that are likely to have an impact on the scholarly publications.

Drake, M.[56] (2007) in his paper entitled "Scholarly communication in turmoil" reported the changes affecting scholarly communications, open access (OA), peer review, institutional repositories and increasing author awareness of copyright issues, archiving and preserving and faster communication tools as the key factors that can solve the issues confronting scholarly publishing. He discussed the problems faced by librarians as a result of inflation in journal prices along with budgets that do not keep pace with increasing costs. The author argued that the major costs of scholarly publishing are not borne by publishers and considered that the Internet and OA influence authors' and institutions' views on copyright and author rights, in which publishers let the authors deposit reprints, reproduce authored materials for classroom use and insist on copyrights to publish their work.

Johnston, Wayne[57] (2007) in his paper entitled "The library as an agent for transforming scholarly communications" focused on the significance of libraries as agents for the transformation of scholarly communications and the role it plays in educating the faculty. He opined that the impact of crisis in scholarly publishing can be measured from its intensity and

---

56. Drake, M. (2007, February). "Scholarly Communication in Turmoil". (cover story). *Information Today*, 24(2), 1-19. Retrieved December 12, 2008, from Library, Information Science & Technology Abstracts database.
57. Johnston, Wayne. (2007, January). "The Library as an Agent for Transforming Scholarly Communications". IATUL *Annual Conference Proceedings*, 17, 1-7. Retrieved December 12, 2008, from Library, Information Science & Technology Abstracts database.

only open access movement can safeguard the interests of researchers, authors, libraries and publishers. He argued that scholars in the 21st century face new opportunities and new challenges as traditional publishing models evolve and alternative models emerge.

Barwick, J.[58] (2007) in her paper entitled "Building an institutional repository at Loughborough University: some experiences" provided a summary of the experiences of setting up an institutional repository at Loughborough University, focusing on some of the key issues that it was necessary to consider, the choices made and the challenges overcome. She outlined the various decision processes involved during the 12-month pilot phase including choosing appropriate software, customizing DSpace, implementing licenses and gathering content for the repository. She highlighted some of the challenges involved in setting up an institutional repository and gave insight into the different types of work involved in the setting up of an institutional repository.

Morrison, H. and Waller, A.[59] (2008) in their paper entitled "Open access and evolving scholarly communication" discussed the Canadian Library Association's (CLA's) open access advocacy and mentioned that CLA encourages Canadian libraries to support policies requiring open access to research supported by Canadian public funding, raise awareness of library users about open access, support the development of open access in all its varieties and encourage authors to retain their copyright. The paper described the role of Canada's research funding agencies including the Social Sciences and Humanities Research Council (SSHRC), Canadian Institutes of Health Research (CIHR), and the Natural Sciences and Engineering Research Council (NSERC). The

---

58. Barwick, J. (2007). Building an institutional repository at Loughborough University: some experiences. *Program: Electronic Library & Information Systems*, 41(2), 113-123. http://dx.doi.org/10.1108/00330330710742890.
59. Morrison, H., & Waller, A. (2008, September). "Open access and evolving scholarly communication". *College & Research Libraries News*, 69(8), 486-490. Retrieved December 12, 2008, from Library, Information Science & Technology Abstracts database.

authors also discussed Canadian university libraries' program called 'Synergies'.

Prem Chand and Arora, Jagdish[60] (2008) described the initiative of the University Grants Commission of India in setting up the INFONET Digital Library Consortium in order to provide access to scholarly communication to the academic community in India. They highlighted the usage trends of e-resources during 2004-2007 and concluded that there has been a qualitative increase in overall usage, although it is also dependent on a high-bandwidth connection.

Rieger, Oya Y.[61] (2008) in his paper entitled "Opening up institutional repositories: social construction of innovation in scholarly communication" focused on institutional repositories as a case study to examine the design of a new scholarly communication technology from a social constructiveness perspective. He discussed the role of institutional repositories as online databases of scholarly material such as articles, reports, datasets to enable and foster sharing, discovery, and archiving of scholarly resources produced at a given institution. The paper derived inferences from the social construction of technology theory, actor-network theory and the socio-technical interactions networks model. He also stressed that a social constructive framework provides an effective method for uncovering multiple perspectives that frame the design and appropriation of institutional repositories.

Fyffe, R. and Welburn, W.[62] (2008) in their paper entitled " ETDs, scholarly communication, and campus collaboration" explored the benefits of repository programs for Electronic Theses and Dissertations

---

60. Premchand, and Arora, Jagdish. "Access to Scholarly Communication in Higher Education in India: Trends in Usage Statistics via INFLIBNET." *Program: Electronic Library and Information Systems* 42, no. 4 (2008): 382-390. DOI: http://dx.doi.org/10.1108/00330330810912061

61. Rieger, Oya Y. "Opening Up Institutional Repositories: Social Construction of Innovation in Scholarly Communication." *Journal of Electronic Publishing* 11, no. 3, (2008). DOI: http://dx.doi.org/10.3998/3336451.0011.301

62. Fyffe, R., & Welburn, W. (2008, March). "ETDs, scholarly communication, and campus collaboration". *College & Research Libraries News*, 69(3), 152-155. Retrieved December 12, 2008, from http://www.ala.org/ala/mgrps/divs/acrl/publications/crlnews/2008/mar/etdsschcommcampucollab.cfm

(ETDs) for students and universities, including the increased visibility, operational efficiency, knowledge-sharing and issues for administrative discussion with particular focus on copyright management. According to the authors, the ETDs constitute a major part of grey literature which although useful are ignored and not preserved for the future use. They also discussed the challenges connected to open access publishing and the role of UMI Dissertation Publishing.

Ober, J.[63] (2008) in his paper entitled "A view toward the public side of scholarly communication" defined the scholarly communication as the system of people, procedures and tools through which the results of research and scholarship are registered, evaluated, disseminated and preserved. The author presented a list of the primary stakeholders in a scholarly communication system, which includes researchers and scholars, libraries and librarians and publishers. The author reviewed ways in which academic libraries serve the public directly and explained the reasons of paucity of public library engagement in public access to public research results.

Hahn, K.[64] (2008) in his paper entitled "Talk about talking about new models of scholarly communication" argued that although many new forms of scholarly exchange have reached an advanced state of adoption, scholars and researchers generally remain remarkably naive and uninformed about them. He stressed upon the increasing importance of dialogue at research institutions and the involvement of a much wider group of researchers and scholars. He considered active engagement by those undertaking research and scholarship for ensuring the advancement of research and scholarship and the role of research

---

63. Ober, J. (2008, February). "A View Toward the Public Side of Scholarly Communication". *Against the Grain*, 20(1), 18-22. Retrieved December 12, 2008, from http://www.arl.org/sparc/bm~doc/atg_ober_final.pdf
64. Hahn, K. (2008, January). "Talk About Talking About New Models of Scholarly Communication". *Journal of Electronic Publishing*, 11(1), 1-1. DOI: http://dx.doi.org/10.3998/3336451.0011.108

libraries in educating stakeholders about new models. The paper discussed the recent changes, concerns and dangers before the scholarly communication movement.

The University Council at Boston University[65] (2009) approved an Open Access plan to support an open-access system by making the online availability of the scholarly works of faculty and staff. It was observed that the initiative will allow the development of an archive of the research and scholarship produced by the college faculty and that it was the first initiative where the university as a whole has taken a stand as opposed to a single school or college.

Miller, R.[66] (2009) in his paper entitled "Open access battles to democratize academic publishing" advocated the democratization of academic publishing by adopting open access methods and approach. He described that most of the academics are still constricted by the 20th-century scholarly communication system thus restricting free access to knowledge. He opined that in order to gain credibility, academics must earn their recognition by getting published in a small, exclusive group of scholarly journals, which are still produced on paper. He observed that it is ironic to note that the Web itself was invented by scientists to share information more easily and yet academics are blocking the easy sharing and access of information.

Houghton, John[67] (2009) in his report entitled "Costs and benefits of research communication: the dutch situation" submitted to the SURFfoundation, Netherlands compared the existing publication models

---

65. Boston University libraries. (2009). "University Council approves Open Access plan: BU Libraries anticipate key role". Retrieved April 2009, from http://www.bu.edu/phpbin/news-cms/news/?dept=847&id=52357
66. Miller, R. (2009, April). Open Access Battles to Democratize Academic Publishing. *EContent,* 32(3), 32-36.
67. Houghton, John (2009). Costs and Benefits of Research Communication: The Dutch Situation. SURF foundation. Retrieved June 21, 2009, from http://www.surffoundation.nl/en/publicaties/Pages/CostsandBenefitsofOpenAccessPublicationIlTheDutchSituation.aspx

and observed that the greatest advantage is offered by the open access model. He opined that by adopting this model, Netherlands can save EUR 133 million and even if Netherlands was the only country to adopt this publication model and continued to pay for accessing periodicals published by other countries worldwide, there would still be a saving of EUR 37 million. The report also discussed implications for funders, researchers, universities and research institutions, publishers and publishing industry, research libraries, government and central agencies.

Luzi, D. et al.[68] (2009) conducted a survey aiming at identifying documentation, organization as well as technological resources that could be the basis for future development of institutional repository for the National Research Council (CNR), Italy. The authors opined that the success of institutional repositories depend upon a sound collaboration among the different stakeholders within the scientific organization and highlighted that it is necessary to have minimum set of conditions fulfilled in planning, designing and supporting a new IR including a declaration by the scientific institution indicating its official commitment to the OA policy. They stressed that the scholars have to be personally motivated and supported to populate IRs and an information network is essential to support the activities connected with the submission and management of scientific contents while promoting an OA culture. They concluded that despite a limited number of OAI complaint repositories developed under the autonomous initiative of some CNR research units, there existed suitable environment for the development of an IR.

Abrizah, A.[69] (2009) in his paper entitled "The cautious faculty: their awareness and attitudes towards institutional repositories "reported on a

---

68. Luzi, D. et al. (2009). Towards an Institutional Repository of the Italian National Research Council: A Survey on Open Access Experiences. *Grey Journal* (TGJ), 5(1), 35-47. Retrieved May 4, 2009 from http://opensigle.inist.fr/handle/10068/698002
69. Abrizah, A. (2009). The cautious faculty: their awareness and attitudes towards institutional repositories. *Malaysian Journal of Library & Information Science*, 14(2), 17-37. Retrieved from Library, Information Science & Technology Abstracts database.

web-based survey carried out on academics of a research intensive university in Malaysia. He investigated their use of open access repositories, advocacy undertaken, and reasons for contribution or non-contribution to Institutional Repositories (IRs). His survey explored the faculty's awareness, experiences and opinions of open access publishing, and the university's IR. Responses were received from 131 academics from 14 faculties, institutes and centres at the university. He concluded that more than 60% of the respondents allowed the deposit of theses and dissertations, the academics wanted to find many more types of material in the repository as users, while they were willing to deposit as authors. He stated that the greatest deterrents were the ownership of copyrights and plagiarism.

Morrow, A., and Mower, A.[70] (2009) in their paper entitled "University Scholarly Knowledge Inventory System: A Workflow System for Institutional Repositories" discussed the services of the University Scholarly Knowledge Inventory System (U-SKIS) as workspace for institutional repository staff. They mentioned that U-SKIS tracks files, communications, and publishers' archiving policies to determine what may be added to a repository. They described the creation of U-SKIS, addressed the educational role U-SKIS plays in the scholarly communication arena, and explores the implications of implementing scalable workflow systems for other digital collections.

Bankier, J., Foster, C., and Wiley, G.[71] (2009) in their paper entitled "Institutional Repositories—Strategies for the Present and Future" argued that institutional repositories (IR) are tools to support, disseminate, and showcase the scholarly communications and intellectual life of an institution. They opined that a successful repository requires

---

70. Morrow, A., & Mower, A. (2009). University Scholarly Knowledge Inventory System: A Workflow System for Institutional Repositories. *Cataloging & Classification Quarterly*, 47(3/4), 286-296. doi:10.1080/01639370902737307.
71. Bankier, J., Foster, C., & Wiley, G. (2009). Institutional Repositories—Strategies for the Present and Future. *Serials Librarian*, 56(1-4), 109-115. doi:10.1080/03615260802665423.

planning and a defined focus, as well as an attractive name and design. They suggested that to achieve success, the IR must serve faculty on faculty's terms; the librarian's role is to collaborate with faculty and ensure that the services of the IR meet faculty needs.

Sawant, S.[72] (2009) in her paper entitled "The current scenario of open access journal initiatives in India" gathered the data related to open access journal initiatives in India with respect to its type, funding agency/host organization, full text availability, article charges, etc. She stated that all 178 open access journals were peer reviewed, indexed and abstracted in various indexing and abstracting services, listed with DOAR and Open-Jgate.

Cullen, R., and Chawne, B.[73] (2010) in their paper entitled "Institutional repositories: assessing their value to the academics community" investigated the development of institutional repositories in New Zealand, exploring factors affecting the adoption and success of institutional repositories. They collected data from a series of interviews with library managers and compared with the findings from a randomised national survey of academics. The findings suggested that the librarians are positive about the value of their institutional repository and the progress made towards recruiting content for it. It also indicated that academics had been slow to deposit their own work and to access the work of others. It concluded that the future long-term sustainability of institutional repositories depends on gaining a stronger commitment from the academic community.

Bird, C.[74] (2010) in his paper entitled "Continued adventures in open access: 2009 perspective" suggested that many publishers have actively

72. Sawant, S. (2009). The current scenario of open access journal initiatives in India. *Collection Building*, 28(4), 159-163. Retrieved from Library, Information Science & Technology Abstracts database.

73. Cullen, R., & Chawne, B. (2010). Institutional repositories: assessing their value to the academic community. *Performance Measurement and Metrics*, *11*(2), 131-147. DOI: 10.1108/14678041011064052

74. Bird, C. (2010). Continued adventures in open access: 2009 perspective. *Learned Publishing*, 23(2), 107-116. doi:10.1087/20100205.

responded to the open access (OA) movement and have developed a variety of new models and policies as a result. He mentioned that majority of journals adopting OA models, seek to cover costs from authors/funders. Meanwhile numerous fully OA journals have been launched, and a few subscription journals have made the transition to full OA. He revealed that fully OA models relying upon author-pays model are viable, depending on authors being able and willing to pay publication charges and other influential factors including rejection rate. It mentioned that most authors continue to rank other considerations, including speed of publication, quality of peer review, and impact factor, as more important than a journal's OA policies, although funder and university-level mandates seem likely to have an increasing influence on an author's choice of where to publish. He also suggested that OA leads to an increase in online usage.

Vahlquist, A., Egelrud, T., & Andersson, A.[75] (2010) in their article entitled "Moving Towards Open Access: High-quality Research and Publication is Essential, but Visibility of the Work is Critical" opined that for the rapid dissemination of scientific research, immediate open access of an article on the Internet is preferable. They argued that for the sake of quality and readability, the paper first has to pass a peer review process and undergo at least some type of professional editing, which takes time and money. They suggested that while the costs can be reduced by not producing a printed version of the journal and by choosing a non-profit publisher, sufficient income must come from subscriptions, submission fees, page charges or advertisements. They indicated that adopting a policy of immediate open access means that all subscription fees will eventually disappear and the interest of advertisers will reduce thus putting burden of the cost of quality control and editing entirely on the authors who submit the papers (unless institutional

---

75. Vahlquist, A., Egelrud, T., & Andersson, A. (2010). Moving Towards Open Access: High-quality Research and Publication is Essential, but Visibility of the Work is Critical. *Acta Dermato-Venereologica*, 90(1), 3-5. DOI: 10.2340/00015555-0795

funding and/or donations are available). They informed that as of January 2010 the editorial board of Acta Dermato-Venereologica has decided to move stepwise toward open access, to shorten the embargo time to 6 months from publication until the article is freely accessible to everyone and to retain a printed version in parallel with the e-version for some years to come. They also encouraged all authors to place accepted papers in their university repository in order to promote rapid dissemination of their results.

Rodríguez-Armentia, N., and Amat, C. (2010)[76] in their paper entitled "Is it worth establishing institutional repositories? The strategies for open access to Spanish peer-reviewed articles" examined open access to the Spanish scientific literature via investigation of a sample of peer-reviewed articles in seven subject categories. They concluded that of the 28,259 papers published in 2000, 26.89% were freely accessible, with the share varying among disciplines. They suggested that articles in the social and behavioral sciences were the most widely available for free. Their findings included that in clinical medicine, life sciences, arts and humanities and social sciences open access was mainly based on the publishers' side, while subject-based repositories were dominant in physical, chemical and earth sciences and deposit on homepages was the preferred strategy in engineering, computing and technology. They opined that the fastest way to gain open access is to deposit in subject-based repositories and the longest delays are related to deposits in homepages and especially to institutional repositories.

Berry III, J. (2010)[77] in his paper entitled "New Hope for Open Access" commented on open access to health research funded by the U.S. National Institutes of Health (NIH). He stated that the current policy,

---

76. Rodríguez-Armentia, N., & Amat, C. (2010). Is it worth establishing institutional repositories? The strategies for open access to Spanish peer-reviewed articles. *Learned Publishing*, 23(3), 193-203. doi:10.1087/20100303.
77. Berry III, J. (2010). New Hope for Open Access. *Library Journal*, 135(7), 10. Retrieved from http://www.libraryjournal.com/article/CA6725229.html?nid=2671&rid=

mandating that published conclusions of NIH-sponsored research must be open to the public within a year, was achieved after much campaigning with the government. He opined that scholarly publishers oppose free open access because they want to be paid for their content, which is excessive in his view because the research is already paid for.

Greyson, D., Morrison, H., and Waller, A. (2010)[78] in their article entitled "Open Access in Canada: A Strong Beginning" provided updates on the open access (OA) publishing of the Canadian Library Association. They mentioned that four of its journals showed a record at the top of their disciplinary rankings according to Thompson Reuters. They further stated that during its Open Access Week, PubMed Central Canada was launched, which will provide access to openly available Canadian medical research.

Creaser, C. (2010)[79] in his paper entitled "Open Access to Research Outputs—Institutional Policies and Researchers' Views: Results From Two Complementary Surveys" investigated the effects and impact of open access to research outputs in UK. He stated that the researchers were largely unaware of their institutions' policies with regard to open access, or whether they had an institutional repository. His surveys found that many researchers maintained a suspicion of open access publications, both as authors and as users of scholarly material, together with a degree of ignorance about open access and the role of institutional repositories. He suggested that a degree of culture change is needed as institutions develop repositories with a view to future research assessment requirements, and more funders adopt open access mandates for the outputs from research which they fund.

---

78. Greyson, D., Morrison, H., & Waller, A. (2010). Open Access in Canada: A Strong Beginning. *Feliciter*, 56(2), 60-63. Retrieved from http://www.resourceshelf.com/2010/04/22/open-access-in-canada-a-strong-beginning-full-text-article/
79. Creaser, C. (2010). Open Access to Research Outputs—Institutional Policies and Researchers' Views: Results From Two Complementary Surveys. *New Review of Academic Librarianship*, 16(1), 4-25. doi:10.1080/13614530903162854.

Sánchez-Tarrag, N., and Carlos Fernández-Molina, J. (2010)[80] in their paper entitled "The open access movement and Cuban health research work: an author survey" assessed the level of knowledge about and the attitudes of the Cuban health researchers towards the open access movement. They conducted a descriptive, cross-sectional study from March to June 2007 and they opined that the best known initiatives for researchers were those related to biomedical sciences, i.e. PubMed Central, HINARI and BioMed Central. They also stated that the rate of publication in open access journals and deposit in open access repositories was low and that most of researchers (85%) agree to upload a copy of their papers onto an open access repository if their institution requests so. They emphasized upon the need for the promotion of the beneficial aspects of the open access movement, as well as training and encouragement for researchers so that they can take full advantage of the potential of this movement.

Herb, U. (2010)[81] in his paper entitled "Sociological implications of scientific publishing: Open access, science, society, democracy, and the digital divide" argued that open access accelerates scientific communication, relieves the serials crisis, reduces the digital divide, facilitates participation and levels disparities.

Chaudhuri, J., & Thohira, M. (2010)[82] in their article entitled "Usage of Open-Access Journals: Findings from Eleven Top Science and Medical Journals" outlined usage patterns of open-access and hybrid-open-access journals in selected scholarly publications. They analyzed more than 1,100 citations from eleven top science and medical journals (eight

80. Sánchez-Tarrag, N., & Carlos Fernández-Molina, J. (2010). The open access movement and Cuban health research work: an author survey. *Health Information & Libraries Journal*, 27(1), 66-74. doi:10.1111/j.1471-1842.2009.00852.x.
81. Herb, U. (2010). Sociological implications of scientific publishing: Open access, science, society, democracy, and the digital divide. *First Monday*, 15(2), 1. Retrieved from http://firstmonday.org/htbin/cgiwrap/bin/ojs/index.php/fm/article/view/2599.
82. Chaudhuri, J., & Thohira, M. (2010). Usage of Open-Access Journals: Findings from Eleven Top Science and Medical Journals. *Serials Librarian*, 58(1-4), 97-105. doi:10.1080/03615261003623070.

traditional, one open-access, and two hybrid-open-access journals) for 2004, 2006, and 2008. They concluded that in most cases, the usage of open-access journals increased from 2004 to 2008.

1.5 Inferences from the Literature Review:

All the studies discussed above have equivocally endorsed that scholarly communication forms the building block and provides the necessary framework for a knowledge society. Scholarly communication has the potential to harness the global intellectual asset in a collective way thus bridging the knowledge gap among the countries of the world. But at the same time, the literature review reveals that there is a serious threat to the scholarly communication because of various factors including the escalating prices of journals and databases. Libraries are finding it difficult to cope up with this inflation resulting in decline in number of journals they were subscribing previously. The decline in the purchasing power in turn is affecting the user community comprising teachers, research scholars, scientists, etc. as they are devoid of the new knowledge. The study strongly advocates Open access as the most viable solution to overcome the barriers of scholarly communication as it can increase the recognition of the authors. To achieve this, authors are being encouraged to submit their work in open access journals and/or Institutional Repositories.

The literature review also reveals that there are many open access initiatives in the form of open access journals as well as open access institutional repositories. While open access journal initiatives are dependent upon the publishers and societies who are already in the business of journal publication, the Institutional Repository initiative has to be propounded by academic institutions, research organizations, governments, etc. The literature contains many examples where IR initiatives have been successful including the cases in which organizations have acted single-handedly as well as collaboratively like

consortia approach or establishment of national level IR networks. The need of the hour is that more and more academic institutions should take the initiative to build digital repositories so that the scholars of their institution can contribute in the knowledge creation and preservation without any difficulty. Unless measures are taken to solve the challenges of free flow of knowledge, the society cannot grow uniformly and universally.

1.6 Research Problem (Statement of the Problem)

There are many factors that have brought changes in methods of scholarly communication. The publication behavior of academic community which is the most crucial component of scholarly communication has been affected greatly because of these factors. Today, we find new expectations and demands from them pertaining to the access, dissemination and exchange of scholarly contents. One of the significant factors is the "digital publishing technology" which is changing the access mechanism and dissemination patterns very rapidly facilitating broader visibility and availability of the research output. The traditional model of scholarly publication including books and journals, both in print and online, has not delivered the goods the way scholars want as they have a number of barriers including financial and copyright restrictions. One reason could be the steep rise in the subscription price of journals that has deprived the weaker economies from having access to peer-reviewed scholarly literature. Also the grey literature having content of great academic value and tacit form of knowledge by and large remains invisible to the potential users. The reason could be attributed to the absence of a well defined scholarly communication model for capturing, managing, preserving and dissemination of such type of literature. Open access has the potential to address the issue of non-availability of scholarly and grey literature provided it is supported by robust and flexible OA publishing tools like freely available journal

publishing software, e.g., Open Journal System and IR softwares, e.g., DSpace, EPrints. Open access advocacy has also gained momentum through blogs, wikis and institutional websites. The open access enabling tools can be of great help for the developing countries that have limited access to scholarly research. Apart from accessing scholarly contents, they can manage and preserve their knowledge produced by the higher education system of theses countries. In a country like India, this becomes more important as the higher education system here is huge, robust and diversified. It has one of the largest 'Higher Education System in the world with 24 Central Universities, 215 State Universities, 100 Deemed Universities, 5 institutions established under State Act and 13 institutes of national importance apart from around 17,000 colleges including 1800 women's colleges[83]. Total number of universities in India is around 400. The number of technical institutions imparting Engineering, Medical and other technical education makes the strength much bigger. Such a large pool of academic intellect must be producing significant amount of scholarly literature in one form or other. PhD Theses, dissertations, project works are just tip of an iceberg. Creation of intellect is not only limited to the direct contributions of the teachers, researchers and other academic administrators. Higher education organizations acquire/produce large amount of academic documents through conferences, seminars, workshops and tutorials being organized in their respective campuses. They also produce implicit knowledge units which remained untapped by the traditional modes of publication and dissemination. Many Indian universities and organizations have valuable manuscripts which are considered to be a part and parcel of national heritage.

In light of the above facts, several genuine questions may be raised: How many of them are finding appropriate platform for publication of

---

83. India 2009. (n.d.). Research Reference and Training Division. Publications Division, Ministry of Information and Broadcasting, Government of India. Retrieved July 25, 2010, from http://rrtd.nic.in/

their scholarly work? Whether all that has been produced is disseminated world wide? Even their availability and access among themselves is under doubt. Does there exist any mechanism for assessment of the total intellectual output produced by them? What about their recognition and acknowledgment of their precious work? These issues along with other serious issues mentioned below constitute the domain of the research problem under study.

- Universities and colleges having lesser budget can't afford to subscribe costly journals.
- There is lack of awareness and initiatives regarding Open Access (OA) and Institutional Repositories (IRs) in the University setup of Indian Higher Education System.
- Scholarship of great research value remains untapped and under utilized.
- Absence of total Knowledge Management (KM) solution for the university.
- Lesser visibility and recognition of Indian universities at the international level.
- Lesser recognition of Indian authors.
- No easy and quick platform for researchers to publish their work.
- Visibility and research profile of Indian authors is low/ cited less.
- Scholarly digital objects including Theses and Dissertations, Manuscripts, Teaching and Learning materials, Conference Proceedings and other types of grey literature remains underutilized.

In this light, the researcher has analyzed the existing IRs in India and prepared a blue print for developing such IRs for university libraries in India.

1.7 Objectives of the Study:

The objectives of the study include:

1. To determine and conceptualize the role of IRs in current scenario.
2. To evaluate IR as a tool for grey literature management and digital library services.
3. To study the current stage of development of IRs in India and abroad.
4. To find the implications of IRs for Indian universities in particular.
5. To evaluate the publishers' policy for authors regarding self-archiving policy for academicians affiliated to Indian universities.
6. To study the available IR softwares and identify the suitable one for Indian universities.
7. To envisage the role of UGC/NAAC and INFLIBNET in developing and managing a National Repository of Digital Scholarship.
8. To prepare ready-to adopt blueprint for developing IRs of desired features for Indian universities.

1.8 Hypotheses

1. Indian authors are not getting their due acknowledgment or recognition for their scholarly contribution.
2. There exists no uniform mechanism for management and access to PhD theses being produced by Indian universities.
3. Europe and America have more number of repositories as compared to Asia and Africa owing to privilege of already existing ICT infrastructure.
4. Very few Indian universities have their own IRs.
5. Indian IRs do provide accessibility and usage statistics.
6. Indian IRs have satisfactory document submission rate.
7. Peer-reviewing is mandatory for inclusion in the IRs of India.
8. Indian IRs offer both self-archiving and the facility of mediated

deposit.

9. Publisher copyright policy is verified before accepting any submission.
10. Most of the Indian IRs have deployed DSpace for establishing IR for their institution.
11. Most of the internationally reputed commercial publishers do not allow authors for self-archiving of the pre-print or post-print of their works.
12. University libraries in India can play a major role in developing Institutional Repositories (IRs).
13. It will be difficult for the libraries to setup IRs as it will be a financial burden.

1.9 Research Methodology

The present study collected data from the repositories of India specifically and the global IR tends in general with issues discussed above as focal points. The universe of the present study constituted repositories of the world for general overview and Indian repositories (Table 1.1) for the detailed study. Census method was used for data collection from the Indian repositories. An online questionnaire was prepared and distributed to all the accessible repositories so as to collect data on the issues like management, funding, staffing, software being chosen and implemented by the IRs, etc. Relevant information was also gathered from their respective websites. The data for the present study was also collected from online databases like Directory of Open Access Repositories (OpenDOAR), Registry of Open Access Repositories (ROAR), Cross Archive Search Services for Indian Repositories (CASSIR), Open Archive Initiatives (OAI), etc. For authors' resources and copyright issues, the web-sites of some important organizations like Joint Information Systems Committee (JISC), The Society for the Promotion of Area Resource Centres (SPARC), Association of Research Libraries

(ARL), etc. were consulted. The complete set of data thus collected was then analyzed and interpreted using various statistical methods to infer guidelines for developing a uniform policy for IRs in Indian universities.

SN	REPOSITORY NAME	Organization
1	DSpace at Vidyanidhi (Electronic Theses & Dissertations, ETD)	University of Mysore, Karnataka
2	Open Access Repository of IISc Research Publications + ETD	Indian Institute of Science, Bangalore
3	IIA Repository	Indian Institute of Astrophysics (IIA), Bangalore
4	NISCAIR Online Periodical Repository	NISCAIR, New Delhi
5	RRI Digital Repository	Raman Research Institute (RRI), Bangalore
6	DRS at NIO	National Institute of Oceanography (NIO), Goa
7	NAL Institutional Repository	National Aerospace Laboratories (NAL) Institutional, Bangalore
8	OpenMED@NIC	National Informatics Centre (NIC), New Delhi
9	EPrints@IITD	Indian Institute of Technology, Delhi
10	DSpace at CUSAT	Cochin University of Science and Technology, Cochin
11	Catalysis Database	IIT, Madras
12	DSpace@IITB	Indian Institute of Technology Bombay, Mumbai
13	DSpace@INFLIBNET	INFLIBNET, Ahmedabad
14	MGU Theses Online	Mahatma Gandhi University (MGU), Kerala
15	Dspace@NITR	National Institute of Technology, Rourkela
16	DSpace@TU	Thapar University, Patiala
17	DSpace at IIMK	Indian Institute of Management, Kozhikode

18	DSpace at NCL	National Chemical Laboratory (NCL), Pune
19	DSpace at NCRA	National Centre for Radio Astrophysics, Pune
20	MDI Open Access Repository	Management Development Institute (MDI), Gurgaon
21	Librarians' Digital Library (LDL) (DSpace@DRTC)	Documentation Research and Training Centre (DRTC), Indian Statistical Institute, Bangalore Centre
22	DSpace at IBS Ahmedabad (DSpace@IBSA)	ICFAI Business School, Ahmedabad
23	Kautilya Digital Repository at IGIDR	Indira Gandhi Institute of Development Research, Mumbai
24	IMSc Eprint Archive	The Institute of Mathematical Sciences, Chennai

Table 1.2 List of Indian Repositories

1.10 Chapterisation

Chapter I : Scholarly Communication and Open Access Movement.

This chapter discusses the current scenario in scholarly communication, issues prevailing and the solutions available before the scholarly community. It describes the serial crisis and its implications on the libraries worldwide. The chapter presents the concept and importance of open access as a solution to the serial crisis. It also presents the literature review and its inference with respect to the present study. The research problem, the objectives, the hypotheses, the research methodology and the tentative chapterization of the present study are also described in this chapter.

Chapter II : Open Access: an Emerging Paradigm in Scholarly Communications.

This chapter discusses the issues in scholarly communication and the recent changes it has witnessed. The emergence of open access

movement as a solution to the scholarly communication crisis has been described. The chapter attempts to trace the landmark initiatives in the history of open access movement and its emergence in India. The advantages of OA to the academicians including teachers, researchers and students in general have been described. It also explains the benefits of OA to the higher education institutions, economically weaker countries and the society at large. The two methods of achieving open access - open access journals and open access institutional repositories are discussed in this chapter. It also briefly discusses other forms of open access like open access books and open courseware.

Chapter III: IR Components and its technical requirements.

This chapter describes the major components of an institutional repository starting from the planning stage to the implementation stage. The crucial components like interoperability, metadata, metadata standards, metadata harvesting protocol like OAI-PMH are discussed in this chapter. This chapter presents the concept, importance and the issues involved in self-archiving and the authors' rights.

The chapter also discusses the hardware requirements for creating an institutional repository. It includes server requirement, storage space, backup utility, etc. The chapter focuses on the open source softwares for creating IRs while mentioning the names of the commercially available softwares for the same. It mentions the features of two very popular repository softwares viz., DSpace and EPrints. The chapter also deals with the concept and significance of metadata harvesting and interoperability as without them the repositories cannot achieve open access in reality.

Chapter IV: Open Access Repositories of the World: an Overview.

This chapter provides a global perspective of the present status of IRs in the area of institutional repositories. For this, it has derived data

from OpenDOAR and other databases and presents continent-wise breakup of the world repositories. This also includes the world's topmost e-print and disciplinary repositories in terms of collection. A comparative study is done to gain better insight of the global repositories. Special emphasis is made on the major global collaborative repository development programmes including the national level initiatives.

Chapter V: Institutional Repositories in India: an Analysis of the Current Status.

This chapter focuses on the current status of institutional repositories specially in India. It tries to analyze all the working repositories of India irrespective of the type of institution they belong to. The analysis covers the collection strength, the collection type, the language supported, the software implemented and wherever possible the collection growth rate of the repositories. The repositories that have become non-functional have only been enlisted.

Chapter VI: Data Analysis and Interpretation.

This chapter focuses on the analysis and interpretation of the data collected through questionnaires sent to IR managers or administrators and other online databases and web services as discussed in research methodology. For this, data is tabulated in tables and presented in pictorial representations like bar graph, pie-charts, etc.

Chapter VII: Findings, Suggestions and the Blue-Print.

Based upon the observations and findings given in the previous chapters, this chapter attempts to present a blue-print for developing user-friendly and easily manageable institutional repositories for Indian universities It includes the assessment of available infrastructure and HR as well as the issues of budgeting, staffing, monitoring, quality

control, effective knowledge service, security, etc. This chapter also suggests creation of "Digital Scholarship Portal of India (DSPOI)" to augment the open access movement in our country on the pattern of successful national repositories world wide.

Bibliography

Appendices