Chapter 7
SUMMARY, CONCLUSION AND SUGGESTIONS

This chapter presents summary of the study which highlights the main findings. It describes the summary of objectives, identification of population and methodology before going on to the highlighting the main findings of the study with relating to the objectives of the study. The chapter concludes with suggestions for future research.

7.1 Objectives, Identification of Population & Challenges

7.1.1 Objectives
The primary objective of the study was to document the efforts now in progress i.e. Open access movement with sharp focus on Institutional repositories, which is one of the important means of achieving open access. The present study examined institutional repositories developed in India from two perspectives: ‘IR Development and Management’ and ‘Users of institutions having IR’. The main goal of IR Development and Management survey was to identify the wide range of practices involved in developing and managing an institutional repository, whereas Users of institutions having IR survey investigated knowledge, practice and opinions about IR among the users of the institutions having institutional repositories. They included scientists, faculty members, students, etc. who may or may not be using the IR facility.

7.2 Identification of Population of the study

7.2.1 IR Development and Management
One of the first steps in the data gathering process was the identification of population i.e. all institutional repositories in India and obtaining an electronic mailing list of web administrators of respective institutional repositories. To compile the list of institutional repositories the researcher used various sources of information as follows:
1. Literature
2. Search by search engines especially Google
3. Directories of archives / repositories
4. Cross Archive Search Services for Indian Repositories (CASSIR)
5. Blogs
6. Open source software websites
7. Education & Training institution websites especially Indian institutions
8. Circulating mails in LIS and other forums / discussion groups

Thus after identification of 16 institutional repositories and e-mail addresses of web administrators of these repositories, researcher sent e-mails containing URL of the web questionnaire no. 1 (Appendix III) and requested to fill the required data in the questionnaire.

7.2.2 Users of institutions having IR

Obtaining electronic mailing list of Users of IR: Users included researchers, faculty members, students, etc. who may or may not be using the IR facility. To compile the list the researcher took the help of various websites as follows:

   A. Institution web sites
   B. Departmental web sites
   C. Users own websites

All the institutions had listed the researcher / scientist / students e-mail ids on their websites. Researcher visited websites of all the institutions, departmental websites such as IISc, ISI etc. as well as own websites of users wherever mentioned on institutions websites. In this way list of users were compiled.

From this compilation 35 users were selected from every institution making a total of 490. They were sent e-mails containing URL of the web questionnaire and requested to fill data in the web questionnaire no. 2 (Appendix IV).
7.3 Challenges of the study

7.3.1 IR Development and Management
In case of few Institutional Repositories, e-mail addresses of web administrators given in their web sites were not functional. E-mails were getting bounced or delivery was failing. In such cases researcher collected e-mail list of librarians by visiting home pages of libraries of respective institutions and contacted the web administrators through theses addresses.

7.3.2 Users of institutions having IR
All the institutions had listed the researcher / scientist / student e-mail ids on their website. However for the institutions namely NIO, NCL and IIAP students e-mail ids were not listed. In such cases researcher had sent e-mails to the web administrator to get the e-mail ids of the students. However the researcher did not receive any response from them. Researcher had visited personal web pages / departmental websites of faculty members or scientists and collected PhD student’s e-mails ids. In many of such cases these e-mail ids were not functional, messages such as delivery failed was received, so researcher had to send email to the next user of the institution.

7.4 Research Methodology
The study was divided into two parts each having separate set of objectives namely– IR Development and Management, and Users of institutions having IR. Two separate surveys were conducted to obtain data for two sets of objectives.

The data collection tool applied for the study was web questionnaire, which was created with the help of software provided by surveymonkey.com. The questionnaire was made available online to respondents for filling in data.

7.4.1 Developing two separate questionnaires
Questionnaires were developed with the help of earlier studies made in their areas by various authors at different times.
4.4.1.1 IR Development and Management (Questionnaire No. 1)
Various areas in development and management of IR were identified on the basis of knowledge gained through reading of available literature as well as various studies conducted in the area of institutional repositories. The questionnaire was developed which had number of items to gather information about the wide range of practices involved in developing and managing an institutional repository. The questions were aggregated into seven groups to obtain data according to the set of objectives as indicated below:

a) Timeline
b) Exploratory activities
c) Anticipated benefits
d) Management
e) Contributors
f) IR System / Software
g) Number, types and rate of growth of digital documents
h) Inhibiting factors

The sequence and grouping of the questions was as above.

A questionnaire of 30 questions was developed (Appendix III) as data gathering instrument. Depending on the requirements few of them were open ended and few were closed ended. Where feasible statements were graded on a Likert type scale.

4.4.1.2 Users of institutions having IR (Questionnaire No. 2)
A questionnaire of 13 questions was developed (Appendix IV) as data gathering instrument. It was divided in two parts. In the first part respondents were asked about their background such as subject, job title and institution name (Q. 1) and age group (Q. 2). The second part consisted of questions related to their experience, contribution, opinion about IR (Q. 3 – Q. 13).
4.4.2 Pilot Study

4.4.2.1 IR Development and Management
The draft questionnaire was first tested with a small group of respondents. Three institutional repositories were selected for the pilot study. These included one academic institutional repository namely IIM-Kozhikode and two research institutional repositories namely NCL-Pune and NIO-Goa. These institutional repositories between them covered the fields of pure sciences, applied sciences, economics and business management.

The web administrators of these institutional repositories were requested to point out if the questions and instructions were clear, and if any more questions needed to be included or to be reframed.

4.4.2.2 Users of institutions having IR
The draft questionnaire was first tested on a small group of respondents. The 20 users of four institutional repositories were selected for the pilot study. These included one academic institutional repository and three research institutional repositories. These institutional repositories between them covered the fields of pure sciences, applied sciences, economics and business management.

The users of institutional repositories were requested to point out if any of the questions and instructions were not clear, and if any more questions needed to be included or to be reframed.

4.4.3 Changes incorporated in questionnaire after pilot study

4.4.3.1 IR Development and Management
Out of the three web administrator to whom the URL of the questionnaire was sent by e-mail for the pilot study, two responses were obtained within two weeks. In case of third institutional repository, researcher had telephonic discussion with the head of the implementation programme regarding the questionnaire.

From the suggestions of respondents changes were incorporated in the questionnaire.
4.4.6.2 Users of institutions having IR
Out of 20 respondents whom this researcher had contacted via e-mail containing the URL of the web survey questionnaire for the pilot study, eleven responses were obtained within two weeks. Total 13 responses was received making response rate 65%. From the suggestions of respondents changes were incorporated in the questionnaire.

After this the questionnaires were finalized, a covering letter in form of e-mail (Appendix I & II) was prepared, and sent to all respondents with URL of web survey.

4.4.4 Data collection

4.4.4.1 IR Development and Management
In total 16 institutional repositories were identified for the study. Researcher sent e-mail mentioning URL of the web survey questionnaire no. 1 (Appendix III) to the web administrator of every institutional repository and requested the respondent to fill data in the web questionnaire.

Total 14 responses out of 16 were received making total response rate of 87.5% over the period of four months.

4.4.4.2 Users of institutions having IR
Researcher first located the e-mail ids of users from the institutions web sites. Then stratified sampling was carried out, the categories being of students (10), researcher scholars (10), teachers / scientists (10) and technical officers (5). Thus 35 users were selected from each institution making total of 490 users. In case of students category two e-mail ids from the alphabetical list of each department i.e. 10 users were sent the e-mails requesting to fill data in the web questionnaire. The same pattern was followed for research scholars, teachers / scientists and technical officer’s category users. In case of failure of e-mail delivery, e-mail was sent to the next e-mail id in the alphabetical list requesting to fill data in the web questionnaire.

Out of the 490 respondents to whom URL of the web questionnaire no. 2 (Appendix IV) were e-mailed only 192 respondents responded to the web questionnaire, making a total response rate of 39%. However, of these seven responses were invalid.
Therefore, only 185 responses could be used for analysis making total response rate of 38%.

4.4.5 Data Analysis

Similar data analysis techniques were used for both surveys.

The survey data was grouped according to different categories of questions representing the different issues of the institutional repository.

Descriptive statistical techniques were applied to the responses. The data collected in the survey was analysed using frequency distribution that included mainly percentages which were reported in form of tables and graphical charts. In few cases central tendency was measured by using mean commonly called as average.

Few questions were graded on a Likert type scale of VERY IMPORTANT / VERY ADEQUATE / VERY LIKELY 4 to DON’T KNOW / NON APPLICABLE 0.

(Very Important / Very Adequate / Very Likely = 4; Important / Adequate / Likely =3; Somewhat Important / Somewhat Adequate / Somewhat Likely = 2; Least Important / Least Adequate / Least Likely = 1; Don’t know / Non applicable= 0).

7.5 Findings

This section highlights the major findings with relating to the objectives of the study.

7.5.1 IR Development and Management

The main goal was to identify the wide range of practices involved in developing and managing an institutional repository. There were total eight broad objectives.

7.5.1.1 Timeline and Exploratory Activities

The first objective was:

- To identify the timeline involved right from planning, pilot testing, to system implementation as well as exploratory activities prior to implementation of an IR system
All institutions had done planning and pilot testing before implementation of IR. The time required for planning and pilot testing varied from 1 month to 15 months. Average time required for planning and pilot testing was 6.85 that means almost 7 months.

The IR of Indian Institute of Science, Bangalore was the first institutional repository available to the bonafied users for submission and searching. The institutional repository of Indian Institute of Technology, Mumbai was the last one available to the users for submission and searching among all institutional repositories under study. Maximum number of repositories that became operational was in 2005 (6), followed by 2006 (4). In 2002, 2003, 2004 and 2007 one institutional repository became available in each case.

‘Attending Institutional Repository software implementation training & workshops’ and ‘Demonstrating operational Institutional Repository to my institution's decision-makers’ were the most exercised exploratory activities that scored at top i.e. 42 securing first rank. ‘Learning from reports of other institutions Institutional Repository implementation activities to date’, was the least exercised exploratory activity that scored 28.

7.5.1.2 Management
The second objective was:

- To explore management issues such as staffing, funding, policies

The seventh objective was:

- To recognise various approaches used to evaluate the success of the IR after implementation

Head of IR Implementation Programme / Leadership
About 42.86% (6) of Institutional Repository Implementation Programme was headed by librarians. This was followed by assistant librarians 21.43% (3).
**Positions of the People’s Involved with IR Committee**

In two cases the IR implementation committee had people from diverse field of work. However in all other cases the committees were made up of people with library science background.

**Special Staff**

There was no special staff appointed by any institution for carrying out different activities involved in implementation of IR. The existing library staff of the institution was responsible for developing and managing of IR.

**Funding**

**a) Source of funding**

About 57.14% (8) of respondents agreed that the main source of funding for institutional repositories came from routine operating costs of institution's library. This was followed by 21.43% (3) and 14.29% (2) of respondents reporting that funding came from routine operating costs of their institution's central computer services and routine operating costs of their institution's central administration respectively.

There was no special grant provided by institution's central administration as well as by external source for development of IR. No respondent gave percentage wise allocation of budget.

**b) Allocation of Funds**

Nobody attempted the question but offered comments in next question i.e. question no. 10 which was a text box provided for respondents to write the comments about allocation of funds. About 64.28% (9) of the respondents offered comments in the text box. The comments suggested that there was no such allocation of budget done in case of any of the institution.

**Policies regarding the IR**

About 61% respondents mentioned implemented policies for (1) Determining who is authorised for submission to the Institutional Repository (79%), (2) Determining what is acceptable content (77%), (3) Identifying metadata formats and authorised metadata
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creators (71%), (4) Intellectual property rights (67%), (5) Restricting access to Institutional Repository content (64%), (6) Acceptable file formats (64%).

Promotion and advocacy activities regarding IR
Personal contact (92.90% i.e. 13 respondents) was highly exercised promotional activity among the respondents. That was followed by ‘Links from library website / institutional website’ that scored 78.60% (11). Less preference was given to ‘Presentations about the Institutional Repository at administrative meetings’ (21% i.e. 3 respondents) and ‘Promotional brochure’ (14.29% i.e. 2 respondents).

Also from the comments in ‘Others’ it was evident that respondents were trying to popularize repositories within their financial and manpower limitations.

Intellectual Property Rights
Equal number of respondents (64.28% i.e. 9 respondents) mentioned that Institutional Repository's intellectual property rights were managed by contributors and library staff. About 35.71% (4) respondents reported that Institutional Repository's intellectual property rights were managed by IR staff.

Contributors to IR
According to the IR administrators (71.43% i.e. 10 respondents) ‘Faculty members’ were the highest authorised contributors. Contribution of ‘Research scientists’ of all departments was second highest according to IR administrators (64.29% i.e. 9 respondents).

It was observed that respondents credited faculty (64.29% i.e. 9 respondents) as the major contributor to their institutional repositories. Equal number of respondents i.e. 50.00% (7) mentioned about research scientists and PhD students as contributors.

Assessment of IR
More than half of the respondents i.e. 57.14% (8) of respondents were assessing their institutional repositories by tracking number of views (Abstract + PDF/HTML). About half of the respondents i.e. 50% (7) were tracking the number of contributions to their Institutional Repository. The software used in development of IR has the inbuilt capacity to generate management reports.
Less used methods were tracking number of queries (7.14% i.e. 1 respondents), tracking number of views (Country wise) (14.29% i.e. 2 respondents) and tracking number of searches (28.57% i.e. 4 respondents).

All institutions were tracking content only. There was no effort to conduct personal interviews with IR users of the institutions.

7.5.1.3 IR System / Software

The third objective was:

- To know which software is being used as well as which interoperability standards and long-term preservation techniques are being applied

The fifth objective was:

- To know which types of file formats IR supports

Type of IR Software / System

It was observed that 79% institutions i.e. 11 institutions had implemented DSpace. Institutional Repository software package. Out of these 11 Institutional Repositories, 7 (64%) Institutional Repositories had first pilot tested DSpace and then implemented it. The GNU Eprints and Greenstone were used by two (14.28%) and one (7.14%) institutions respectively.

IR-system Features

Respondents assigned top-rank to IR-system feature - End-user interface (score 53). This was followed by browsing, searching, and retrieving digital content (score 49). Supported file formats (score 48) and Adherence to open access standards (score 48) had equal rank. Multilingual support (score 27) and Extensibility (Access to other campus systems and data) (score 26) scored the lowest.

Long-term Preservation Strategies

Half of the respondents (50% i.e. 7 respondents) marked bitstream copying as a long-term preservation strategy. About 21.40% (3) of the respondents marked: Durable, Persistent Media (where you preserve the physical media, or CD, on which object is
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stored). Standards as well as Preservation metadata also had the same score as above. Emulation as a preservation strategy was not exercised by any of the institutional repository.

Interoperability Standards
About 92.86 % (13) institutional repositories were OAI-PMH compliant. Only one (7.14%) institutional repository supported Metadata Encoding and Transmission Standard (METS) and two (14.28%) Institutional Repositories were OpenURL compliant.

Migration to New Institutional Repository Software / System
About 57.14% (8) of respondents mentioned that they did not have any plans to migrate to new IR software / system at present. Only one respondent (IITB (ETD) 7.14%) had mentioned that they have a plan to migrate to new IR software / system.

File Formats
It was observed that all Institutional Repositories supported Text (HTML, Postscript, PDF, Spreadsheet etc) file formats. About 78.6% (11) respondents supported Image (TIFF, GIF, JPEG etc) file formats. Equal number of respondents i.e. 57.14% (8) supported Audio (WAV, MP3 etc) and Video (MPEG, AVI etc) file formats.

7.5.1.4 Number, types and rate of growth of digital documents
The fourth objective was:

- To estimate the number and the rate of growth of digital documents of IR

Total Number of Digital Documents

The IISc repository which contained highest number of digital documents (6305) was the first institutional repository available to users for submission and searching from Sept 2002. IITB (ETD) contained more than 3500 digital documents and was available to users for submission and searching from 2003. On the other hand, young institutional repository namely ICFAI and IGIDR implemented in October 2006
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contained few hundreds of digital documents. IITB (GR) was available to users from Jan 2007 and contained very few digital documents (14).

**Types of Digital Documents**

It was observed that the total number of journal articles available in all 14 institutional repositories was 10467 which scored highest rank. Altogether 3921+ master’s thesis and doctoral thesis were available in these institutional repositories.

**Rate of Growth of Institutional Repositories**

It was observed during 2007 that average rate of growth per IR per month was 3.10%. Highest average rate of growth per month was of IIMK 7.61%, followed by RRI 7.78% and IITB 6.10%.

In 2008, average rate of growth per IR per month was 5.70%. With highest average rate of growth was of IITB 48.36%, followed by NIO 8.43% and IIAP 7.03%.

**7.5.1.5 Inhibitors of IR**

The sixth objective was:

- To identify factors that act as barrier to set up a successful IR

Contributor’s lack of knowledge was the most important inhibitor (score 40). In fact, the concern in this regard was user’s unawareness about benefits of IR; time consuming process and intellectual property rights issues also scored high.

Lack of on campus technical expertise in IR systems was another important inhibiting factor that scored second rank (score 36) which was mainly concerned with IR implementation team.

Less likely factors to inhibit their ability to set up a successful institutional repository were ‘Competing for resources with other priorities, projects, and initiatives’ (score 28), ‘Inability of contributors to formulate quality metadata’ (score 27) and ‘Supporting all ongoing costs of an operational IR’ (score 25).
7.5.1.6 Anticipated Benefits of IR

The eighth objective was:

- To understand the benefits of IR Development & future plans

All respondents agreed on the benefit to provide ‘Better service to contributors & institution's learning community’. About 92.86 % (13) respondents felt that implementation of IR enhances their institution's prestige / visibility. Another 85.71 % (12) respondents felt that implementation of IR encourages the open access movement.

Least important anticipated benefits were found to be ‘An increase in the accessibility to knowledge assets such as numeric, video, audio, and multimedia datasets’ (28.57% i.e.4 respondents) scored the least. Reducing user dependence on your library's print collection (35.71% i.e.5 respondents) did not score very high.

The future plans for migration to new IR system have been discussed under IR System / Software earlier.

7.5.2 Users of Institutions having IR

This study also investigated knowledge, practice and opinions about IR among the users of the institutions having institutional repositories. There were total six broad objectives.

7.5.2.1 Experience of Users

The first objective was:

- To investigate the knowledge about IR initiatives and use or non-use of IR within the users community

Experience of Institutional Repository

About 83.24% (154) respondents were aware of the IR facility / service and 14.05 % (26) were not aware of IR. However 2.70% (5) respondents were willing to see / check the IR service of their institution.
It was found that 12.43% (23) respondents reported that they had seen and searched their repository and 45.41% (84) of respondents had searched and downloaded material from Institutional repository. This gives an indication that repositories are already being actively used by some individuals in the institutions. Contribution to the repositories were by 25.95% (48) of the respondents.

_Cothing to know of IR service_

More than half of the respondents i.e. 52.43% (97) learned about the IR service through link provided on institutions website.

Even e-mails / e-forums of the institutions played important role for making users aware of institutional repository (34.59% i.e. 64 respondents). Respondents also came to know of the IR service through informal communication with colleagues (27.57% i.e. 51 respondents). The remaining respondents learned about IR service through seminars / workshops (8.11% i.e. 15 respondents) and brochure / leaflets (5.41% i.e. 10 respondents) distributed by IR staff regarding IR service.

7.5.2.2 Contribution to IR

The third objective was:

- To explore reasons for contributing or not contributing of documents to IR

The fourth objective was:

- To know which type of documents users would like to contribute to IR

_Contribution of users to IR_

About 36.21% (67) of the respondents had not contributed to any type of repository, while 25.94% (48) respondents had contributed to their institutional repository. It was clear that a small number of respondents had contributed outside their institution i.e. to the subject repository (8.64% i.e. 16 respondents), department website (8.64% i.e. 16 respondents) and cross-institutional repository (1.08 i.e. 2 respondents). It was noted that 10.81% (20) of the respondents had contributed to their personal web site. There was small number of respondents (6.48% i.e. 12 respondents) who had contributed to some repositories but did not remember where exactly they had contributed.
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Reasons for the contribution to IR
A higher percentage (16.76% i.e. 31 respondents) of respondents felt it was ‘Easy and fast way to communicate research results’. Nearly equal percentage of respondents (16.22% i.e. 30 respondents) gave reason ‘To get wider audience for the documents’. To make sure documents are preserved for the future (13.51% i.e. 25 respondents) was found to be third most reason for contribution to the IR.

It was interesting to note that contribution was compulsory in some institutions (3.78% i.e. 7 respondents) When analysed in detail it was found that these respondents were from six institutions namely IITB, IISc, NAL, NCL, NIO and RRI.

Reasons for not contribution to IR
The reason which scored high was ‘I do not know of my institutions IR’ (15.14% i.e. 28 respondents) and ‘Do not have documents to contribute to IR’ (12.43% i.e. 23 respondents). I do not know of any other repositories (departmental / subject / cross institutional etc.) was cited by 7.03% (13) of respondents. Equal percentage of respondents (6.49% i.e. 12 respondents) stated that they ‘I keep my materials on my own website’ and ‘I do not have time to contribute documents’.

Likely reasons to contribute to the IR in future
The most important reason was found to be preservation of documents for future that scored 559, followed by ‘Support is freely and easily available’ which scored 532. Financial award was found to be least important for contributing to IR.

Types of documents likely to contribute to IR
The majority of the respondents i.e. 113 (61.08%) were willing to deposit Symposium / Conference / Seminar papers. The least favoured documents were scholarly books (17.84% i.e. 33 respondents), Reading list (16.22% i.e. 30 respondents), Audio / Video materials such as speech (15.68% i.e. 29 respondents) and book chapters (15.14% i.e. 28 respondents).
7.5.2.3 Opinion of users about IR

The second objective was:

- To explore users attitudes towards copyright

The fifth objective was:

- To identify which kind of access users would like to provide to their documents after contributing to IR

The sixth objective was:

- To verify which organisational unit, in the user’s opinion, should manage an IR project

Copyright

Nearly half of the respondents (49.19% i.e. 91 respondents) wanted to hold the copyright of the material they would contribute to the IR. About 40.54% (75) respondents felt that the institution should own the copyright of their material that they deposit in the IR.

Types of Access

More than half of the respondents (57.84% i.e. 107 respondents) wanted to provide open access without any barrier for their ideal repository. About 22.16% (41) would like to give open access to the members of their institution only. Less popular options were restricted to the department only (1.08% i.e. 2 respondents) and ‘My students only’ (1.62% i.e. 3 respondents).

Quality control mechanisms

While most respondents were in favour of peer review one third felt it was required only for certain types of documents. However, nearly quarter of the teachers and one third of the scientists were not in favour of review.
Management of the IR

Highest percentage of respondents i.e. 40% (74) felt that management of IR was the joint responsibility of library, contributors and the computer service staff of the institution. This was followed by 31.89% (59) respondents who felt that management of IR was the responsibility of the library. This suggests that library is considered to be a strong contender for management of IR. Respondents did not want to take the sole responsibility of managing IR but were willing to help the library and computer service staff of the institution. Nearly 12.43% (23) respondents felt that special staff should be recruited for management of IR by the institution.

7.6 Suggestions for further research

- The study of role of libraries or librarians in each stage of IR development and management is a worthwhile area of study.
- The effect of IR on scholarly communication process / chain may be explored.
- Reasons of slow growth rate of IR need to be investigated.
- Content recruitment methods should be studied.
- Attitudes of users towards IR and measuring the use of IRs by IR users must be understood.
- Survey of the use of teaching and learning materials by students possessed by IRs will be helpful.
- The quality control mechanisms followed by IRs before digital documents submission requires to be examined.

7.7 Conclusion

The consolidation of the results of analysis carried out in this study leads to the following conclusion:

7.7.1 IR Development and Management

Timeline and Exploratory Activities

- All IRs were very well planned and pilot tested before implementation.
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- Before planning and pilot testing various exploratory activities were carried out by web administrators keeping the spirit of providing better service to the contributors & institution's learning community.

Management

- Majority of IR implementation programme was headed by library professionals.
- The funding source for IRs came from the library. IRs were not supported by special grants by the concerned institutions.
- Almost all IRs had a set of policies that were being implemented.
- All IRs employ variety of activities to publicise the repository and encourage the faculty to deposit their work.
- Majority of IRs exercised the different types of assessment methods to measure the success of institutional repository.
- Institutional Repository's intellectual property rights were managed by contributors and library staff in most cases.
- Faculty members, Research scientists of all departments, library staff and PhD students were the authorised contributors to the IRs whereas it was observed that respondents credited faculty as the major contributor to their institutional repositories.

IR System / Software

- DSpace software were found to be the most popular software for development of IR.
- All Institutional Repositories supported Text (HTML, Postscript, PDF, Spreadsheet etc) file formats.
- Majority of IRs follow bitstream copying as a long-term preservation strategy.
- Almost all institutional repositories were OAI-PMH compliant.
- Majority of IRs did not showed any interest in migration to new IR software / System.
Number, types and rate of growth of digital documents

- Total number of digital documents in all IRs found to be 18505 which included variety of digital document types.
- The average rate of growth per IR per month in 2007 was 3.10% which increased to 5.70% in 2008.

Inhibitors of IR

- Contributor’s lack of knowledge was the most important inhibitor for the setting up of successful Institutional Repository.

Anticipated Benefits of IR

- All respondents agreed on the benefit to provide ‘Better service to contributors & institution's learning community’.

7.7.2 Users of Institutions having IR

Experience of Users

- In case of users of IRs majority of respondents were aware of the IR facility / service which they learned through link provided on institutions website.

Contribution of users to IR

- Only quarter of users had contributed to their institutional repository.
- The reason for their contribution was easy and fast way to communicate research results.
- The lack of awareness about IR was the major reason for not contribution to the IR.
- To preserve documents for future was their likely reason of contribution to the IR in future.
- Majority of users would like to contribute Symposium / Conference / Seminar papers to the IR.
Opinion of users about IR

- Nearly half of the respondents want to hold the copyright of the material they would contribute to the IR.
- More than half of the users wanted the content of IR should be openly accessible to anyone.
- Majority of users wanted the review of subject content with selected group of peers.
- Users expected that library was the best place for the development and Library personnel were the suitable people for management of IR.

In India, there are more than 300 universities and institutions of higher learning and more than 200 research laboratories / institutions in the government sector. However there are only 178 open access journals (Sawant, 2008) and 22 registered archives (as per the ROAR as of December 2008). According to Professor S. Arunachalam (2005) the situation can turn dramatically, if national donor agencies such as the Department of Science and Technology and the Department of Biotechnology, and heads of major research councils such as the CSIR, UGC decide that the results of all publicly funded research should be made available through self archiving in repositories and encourage open access journal publishing initiatives.

Professor S. Arunachalam in one of the LIS Forum mail (August 14, 2006) suggested that funding agencies (and governments) in developing countries such as India should do well to mandate open, public access to the research supported by their grants. Vice chancellors of universities, directors of research centres, heads of funding institutions and science academies and professional societies should urge the government to enact appropriate legislation (similar to the FRPAA (Federal Research Public Access Act of 2006 ) in the USA). According to Federal Research Public Access Act of 2006, all publicly funded research results are made freely available on Internet.

National Knowledge Commission: Open Access and Open Educational Resources

The working group of National Knowledge Commission (NKC) on “Open Access and Open Educational Resources”, after taking into consideration the current status of
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Open Access in India and worldwide, had given the following recommendations in their ‘Report of the Working Group on Open Access and Open Educational Resources, 2007’. The report mainly emphasized on to increase Open Access content from India, increase the public awareness and utilization of OA material.

- On a policy level, all research articles published by Indian authors receiving any government or public funding must be made available under Open Access and should be archived in the standard OA format on his / her website. Further, as a national academic OA portal is developed, these same research articles should be made available through this portal.
- The government should allocate specific funding to increase the current digitization efforts of books and periodicals which are outside copyright protection.
- Separate funding should be allocated to develop a new higher quality OCR software package so that new and old fonts in many different Indian languages can be converted into ISCI/ASCI code.
- A training program needs to be developed to take the materials available under Open Access to remote towns and villages. One possible mechanism for this is to outfit a vehicle with mobile internet connectivity and a high speed printer and binder. With these resources, the “OA” vehicle could travel to rural locations, print and bind the book or material requisitioned by the users at the location, and charge the users only the cost necessary for printing and binding.
- On a systemic level, our nation’s universities and various academic institutions need high bandwidth connections and a national backbone which will provide advanced networking capabilities. There is an urgent need to develop Indian Research and Education Network / Knowledge Network where each connected institution will have at least 100 Mbps or 1 Gbps connectivity. This level of connectivity will not only advance the OA activities nationally, but provide global connectivity as well.

The working group suggested the following model to continue and expand the number of research papers being put in Open Access.
The publishers of any Open Access journal will recover the cost of publishing and maintaining the journal on the web from the individual authors. Thus, the authors have to pay for each research article that they publish in such journals. To make this possible, the authors’ parent institution should pay the publication cost. The institution should get a certain percentage as reimbursement through government grants depending upon the citation index of the journal. The institute will get more than 100% of the cost it has incurred if the paper is published in a journal with high impact factor. In this manner, the author will not have to pay from his / her personal funds or grant money and at the same time there will not be too high a financial burden on the authors’ parent institution. As such, the government will ensure that India’s research scientists publish high quality papers.

A second model could be that the government establishes a specific fund for Open Access research publications. At the end of each fiscal year, money should be transferred to each OA journal depending upon the number of papers published by Indian authors. With these two initiatives, the government would have provided incentives for authors to produce high quality papers and given journals a reason to publish within the OA universe (National Knowledge Commission, 2007).

**Current Scenario**

Google is in touch with NKC with a proposal to digitize all doctoral theses and bringing out OA versions of selected print journals and digitizing back runs of OA journals.

The Director of Indian Institute of Science, has decided to digitize all papers published from the Institute in the past more than 99 years and make them available to the world through the Institute’s EPrints archive, and the work has just begun.

The Director General of the Council of Scientific and Industrial Research has said that it should be possible for CSIR to adopt a mandate similar to the one adopted by the Irish Research Council. Hope it becomes a reality soon (Arunachlam, 2008).
With this it can be said that over the period of time importance and usefulness of open access literature have been realized by many people throughout India. India is not only leading open access movement of the developing countries, but also making developed countries aware of qualitative scholarly literature originated from developing countries.
REFERENCES


