

Institutional Repositories Initiated by Indian Institutes of Technology and Indian Institutes of Management: A Case Study

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ABSTRACT

The contribution of Indian Institutes of Technology (IITs) and Indian Institutes of Management (IIMs) has immensely helped flourish the Indian socio-economic and cultural sectors. The credit goes to the quality of teaching and research pursuits of faculty, curriculum, facilities, scope for research and publication activities, etc., at IITs and IIMs. The IITs and IIMs are active in producing scholarly literature in the form of research projects, research papers, in-house publications etc. But such intellectual literature/output is not fully available in public domain though they are public-funded establishments. Identifying this gap, institutional repositories (IRs), the online platform for archiving and sharing of institutional intellectual-content, initiated by the IITs and IIMs were explored. The findings of the study show that out of 16 IITs, 8 IITs have initiated IRs and of which 2 are accessible online and 7 on intranet. On the other hand, out of 13 IIMs, IRs of 3 IIMs are accessible online. The paper also highlights the number and type of documents archived, software platforms used for launching the IRs, accessibility and quality of links of the IRs.

Keywords: Institutional repositories, Indian institutes of technology, Indian institutes of management, open access, open source software

1. INTRODUCTION

The Indian Institutes of Technology and Indian Institutes of Management are the premier educational institutes of India. Their global acclaim is resounding in terms of producing the best human resources, highly competent for the developmental initiatives, in any sector across the globe. In Indian context, "...nearly half of the India Inc's professionals are in chief executive role who hail from the country's elite institutes— IIT and IIM".¹ Such is the distinction of these institutes. The striking point is that the knowledge generated in these establishments, in the form of research reports, publications, innovative lectures and teaching methods are worth referring to for further research and learning, for all those who do not belong to these institutes in any capacity.

These institutes are established and are being funded by public money, yet their intellectual output is not fully available in public domain. The 'openness' needs to percolate down from all such publicly-funded educational institutes wherein the research and publication activities are much valued and take place regularly.

In regard to institutional repositories (IRs), they are the best platform for sharing the institutional intellectual output accessible either to their stakeholders, who access on intranet, or to public that accesses remotely and openly. Being an incredible medium for

sharing scholarly literature, many IITs and IIMs have initiated to launch their IRs. However, IRs "...could become a useful and important tool (for the academic institutes) but not every institution has the means to create and maintain its own repository".² This is one of the fundamental questions that arises when one expects every institute to have its repository. The reasons for the same are varied. Thus the moot point of this paper is that, the IRs ought to be in open access domain. With this concern, the study has identified the IITs and IIMs' initiatives and allied issues of their IRs.

2. LITERATURE REVIEW

The literature review was undertaken to find out the conceptual framework of IR, trends in IR initiatives (both at national and international levels), issues related to technological platforms, challenges and opportunities to IR initiatives especially in IITs and IIMs.

Jandoo & Vedamurthy³ discussed the utilities of the open access to scholarly literature but do not discuss about some IR initiatives though title of the paper states to review some initiatives. Surinder Kumar⁴ discussed IRs but more emphasis is given on National Digital Repository System (NDRS). However, no initiatives from IIMs and IITs are specifically stated in the paper. Jotwani's⁵ in his paper gave an idea about how the IITs are

marketing their e-resources.

MIRE⁶ states that in countries where government bodies, or consortia collaborations of institutions, embarked on IR projects, directly affecting a number of institutions, there is a high uptake of IR platforms today". The statement is true but in the case of IITs and IIMs, the IR initiatives are not that impressive.

Highlighting more on content and preservation techniques of IRs, Jones⁷ says, building technological infrastructure is not hard but "deciding on what content and preservation approaches are the matter of concern". Many other sources are referred specially to check the technological know-hows for launching IRs and they revealed the fact that technological unawareness are leading to poor IR initiatives.

A list of IR initiatives by IITs was prepared by IIT Hyderabad⁹ was helpful to some extent. Considering the non-availability of exclusive study on IR initiatives by IITs and IIMs, the following objectives were framed and the study was executed.

3. OBJECTIVES

The knowledge generated in the IITs and IIMs are invaluable and if those are accessible openly, then that shall indirectly support further research and publication activities in other academic institutes and also the allied and non-allied sectors. With this understanding, the study was aimed to find out the IR initiatives of IITs and IIMs including the different types and number of IR collection, their availability in open access domain, quality of IR links (URLs) and ease of accessibility.

4. METHODOLOGY

There are 16 IITs and 13 IIMs⁹ imparting technical and management education in India. These 29 institutes constitute as universe for this study. All these institutes were selected as samples. The scope of the study was limited to the status and allied issues of IR initiatives of IITs and IIMs. The name of the open source software (OSS) used to launch the IRs was checked.

Websites of each sample were accessed individually and the status of IRs availability, type and number of collection they hold, ease of accessibility, and quality of the links of IR sites were recorded. All the websites were accessed individually during 12 Sept. 2014- 28 Oct. 2014.

To ensure the correctness of the documented-facts: (a) E-mails were sent to all the IR managers/Librarians of the institutes to provide the actual status of their IR initiatives. This helped to form three categories, viz., the launched-projects, projects-in-progress and projects that are accessible on intranet. (b) During this process the links that were not working were checked on different web browsers viz. Internet Explorer, Google Chrome and Mozilla

Firefox for possible compatibility with any of these web browsers. (c) The data was then analysed and the findings with suggestions were proposed. (d) Draft of this paper was mailed to all the IR managers of IITs and IIMs to verify the facts (at their end) enumerated in the draft copy. (e) Later, the facts and suggestions given by the IR managers were incorporated appropriately in the draft .

5. RESULTS AND DISCUSSIONS

5.1 Availability of IRs

The availability of the IR initiatives by IITs and IIMs were checked on their respective websites. Three forms of availability status of IRs, viz.,(a) availability of IRs on internet, and (b) intranet are discussed under the following heads.

(a) IITs: Out of 16 IITs, 2 IITs have hosted their IRs online, 7 are accessible on intranet and the remaining IITs have not initiated IR projects (Table 1). (b) IIMs: There are only 3 IIMs that have hosted their IRs online. Table 2 and 3 gives the availability status of those institutes.

5.2 Details of IR Initiatives

5.2.1 Initiatives by IITs

Table 4 states the names, URLs and number of records the IRs of IIT-B and IIT-D hold. Apart from the above details, the following information was gathered from the IIT websites.

(a) IIT-B's DSpace@IIT-Bombay gives full-text access to the selected documents. It has listed out the

Table 1. IITs' IR initiatives and their availability

S. No.	Name	Short name	Availability of IRs
1	IIT Bombay	IIT-B	Internet
2	IIT Bhubaneswar	IIT-BBS	-
3	IIT Delhi	IIT-D	Internet
4	IIT Gandhi Nagar	IIT-GN	Intranet
5	IIT Guwahati	IIT-G	Intranet
6	IIT Hyderabad	IIT-H	Intranet
7	IIT Indore	IIT-I	-
8	IIT Jodhpur	IIT-J	Intranet
9	IIT Kanpur	IIT-K	-
10	IIT Kharagpur	IIT-KGP	Intranet
11	IIT Madras	IIT-M	-
12	IIT Mandi	IIT-Mandi	Intranet
13	IIT Patna	IIT-P	-
14	IIT Roorkee	IIT-R	Intranet
15	IIT Ropar	IIT-RPR	-
16	IIT Varanasi	IIT-BHU	-

Table 2. IIMs' IR initiatives and their availability

S. No.	Name	Short names	Availability of IRs
1	IIM Ahmedabad	IIM-A	Internet
2	IIM Bangalore	IIM-B	Internet
3	IIM Calcutta	IIM-C	-
4	IIM Indore	IIM-I	-
5	IIM Kashipur	IIM-Kas	-
6	IIM Kozhikode	IIM-K	Internet
7	IIM Lucknow	IIM-L	-
8	IIM Ranchi	IIM-Ranchi	-
9	IIM Raipur	IIM-Raipur	-
10	IIM Rohtak	IIM-R	-
11	IIM Shillong	RGIIM-S	-
12	IIM Tiruchirapur	IIM-T	-
13	IIM Udaipur	IIM-U	-

Table 3. Overall accessibility status of IRs of IITs and IIMs

Name of Institute	Total	IRs on inter-net	IRs only on inter-net	Open access IRs	Partially open
IITs	16	2	7	-	2
IIMs	13	3	1	-	3

Table 4. Names, URLs and number of records of IRs of IITs

IITs	IR name	URLs	Total no. of records
IIT-B	Dspace@IIT Bombay	http://dspace.library.iitb.ac.in/jspui/	15912
IIT-D	Eprint@IITDelhi	http://eprint.iitd.ac.in/	3035

open access resources separately that helps the readers tap the scholarly databases and OERs (open educational resources). Though there is a separate 'ETD' web page, they are not included in the IR. This page neither comprises the guidelines for submission of ETDs (electronic theses and dissertations) nor full-text or bibliographic list of ETDs. The webpage states that it has archived working papers,¹⁰ but such sub-community is not listed on its IR.

(b) IIT-D's Eprint@IITDelhi has given search interface to its ETDs under 'Search' webpage. Around four thousand ETDs are accessible at bibliographic level. The search interface is user-friendly and can be searched by title, scholar, supervisor, year and accession number. The readers get well-formatted results comprising all access points of the ETDs. The library's website also includes the list of latest

faculty publications provided by Scopus. It has also listed open access resources that are useful for its readers. Apart from MOOC (Massive Open Online Course) and Open Courseware, it gives an exclusive list of around 1800 CD-ROMs available in the library¹¹.

(c) Others: The IIT Ropar's library webpage states that their IR is yet to be implemented¹² where as IIT-BBS has given the list of bibliographic records that are listed under 'Research' web page. IIT-GN has initiated IR and is accessible on intranet. The IR would be made online in couple of months. (inputs given by the IIM-GN Librarian on 2 Sept. 2014) IIT-Mandi's IR is built on DSpace and available on intranet. The faculty publications are added on to the same (inputs given by the Deputy Librarian, IIT-M on 3 Sept. 2014).

5.2.2 Initiatives by IIMs

Three IIMs have initiated IRs. The details are stated in Table 5. Apart from the above details, the following facts and information were gathered from the IIMs' official websites.

(a) IIM-A's Institutional Repository¹³ has the highest number of records (11709) in its IR. The records are well arranged. It has listed 299 ETDs on its IR but access to the full-text theses is restricted. A reader can request for the full-text ETD from the 'responsible person' using the 'request a copy of the document' option. Most of the other type of documents including (2027) working papers is accessible at full-text level. Furthermore, IIM-A has given bibliographic list of their faculty publications under 'Faculty and Publications' web page, those are well formatted and listed meticulously.

(b) IIM-B's Research@IIMB is accessible on intranet and internet. The IIM-B does not have a mandated open access policy (as yet) for its faculty publications, except working papers. ETDs are accessible at abstract level. The self-submissions by students and faculty is yet to be enabled (inputs given by the IIM-B Librarian on 15th Oct. 2014 via e-mail). The communities are created on the name of their subjects and the collections of different types of documents are listed systematically under each community.

Table 5. URLs and number of records of IRs of IIMs

IIMs	IRs name	URL	Total records
IIM-A	IIMA Institutional Repository	http://vsilir.iimahd.ernet.in:8080/xmlui/	11709*
IIM-B	Research@IIMB	http://research.iimb.ernet.in:8080/xmlui/	439
IIM-K	DSpace@IIMK	http://dspace.iimk.ac.in/	538

*also includes 8254 bibliographic records of the faculty

(c) IIM-K's DSpace@IIMK¹⁴ has given full-text access to its collection. However, ETDs are not listed under its IR. The IR's arrangement and listing of the communities, sub-communities and collections need to be improved. The IR has given bibliographic list of their faculty publications under 'Faculty and Research' web page that are well presented. The abstracts of the working papers or case studies can be downloaded. For full-text access of the same, user/public needs to contact the Research, Conference and Publication Office of IIM-K.

(d) Others: IIM-I does not have IR but has archived the abstracts (also comprising the table of contents) of the selected doctoral theses. Majority of the abstracts are of the recent past. Same way, IIM-Ranchi does not have IR but has added a list of faculty publications. IIM-U has given access to the list of research papers, working papers and ongoing research projects. Some of the research papers are accessible at full-text level too. Many of the working papers are accessible through SSRN¹⁵ (Social Science Research Network) eLibrary portal and is a good initiative. It has also listed out the journal articles, book chapters, book reviews, case studies, books, conference proceedings and working papers under 'Publications' web page. IIM Raipur has also listed faculty publications under 'Faculty and Research' webpage.

5.3 Types of IR Collection

Total 28 type of documents excluding 'others' category were prepared initially and the IRs were searched to trace the type of documents. Overall, it is found that the IRs have 18 types of documents. Among them, working papers, conference proceedings, and ETDs lead the list of collections. But it is also observed that IRs do not have archived books, book chapters, course materials, newspaper clippings and newsletters (Table 6).

5.4 Application of OSS

It was important to note the technological platforms used by the samples in implementing the IRs. The IRs of the following institutes are built on DSpace OSS except IIT-Delhi that has initiated IR on E-prints platform.

Attempts were made to find out the OSS of those IRs that are accessible on intranet. It is found that all these IITs have also initiated IRs on DSpace platform. This means DSpace is the most preferred OSS in initiating IR projects at IITs and IIMs (Table 7).

6. FINDINGS AND SUGGESTIONS

(a) The IR initiatives at IITs and IIMs are in developmental stage though IRs became popular in the past decade. The findings reveal that out of 16 IITs, 8 have taken initiatives to launch their IRs.

Table 6. Types of collection of IRs of IITs and IIMs

Type of Collection	IITs			IIMs	
	IIT-B	IIT-D	IIM-A	IIM-B	IIM-K
Annual Reports	-	-	√	-	√
Book Reviews	√	-	-	-	-
Bibliography	√	-	√	-	-
Editorials	√				
Invited Lectures	√	-	-	-	-
Cases	√	-	-	-	-
Convocation Addresses	-	√	-	-	-
Conference Proceedings	√	-	√	-	√
ETDs	-	√	√	√	-
Letters	√		-	-	-
Meeting Abstracts	√		-	-	-
Multi-media	-	-	√	-	-
News Reports	-	-	√	-	-
Newsletters	-	-	-	-	√
Project Reports	-	-	√	√	-
Reports	√	-	-	-	-
Research	√	√	-	-	-
Papers/Articles					
Working Papers	-	√	√	√	√
Reprints	√	-	-	-	-

Table 7. OSS used by IITs and IIMs

IITs	OSS	IIMs	OSS
IIT-B	DSpace	IIM-A	DSpace
IIT-D	E-prints	IIM-B	DSpace
		IIM-K	DSpace

However, IR portals of only two IITs (IIT-B and IIT-D) are accessible online and seven are accessible on intranet. On the other hand, out of thirteen IIMs, only three IIMs i (IIM-A, IIM-B, IIM-K) have got active IRs. This is a matter of concern as the total number of IR initiatives is not impressive. In such a status, the Government of India's National Digital Library (NDL) initiative (to be launched through IIT Kharagpur) could be a possible solution. The NDL aims to bring all the digital contents of educational institutes on one platform. This initiative would prove positive only when open access to all public-funded research and publication works (of Indian academic institutions) are made available on NDL, with no more delay. The IITs and IIMs need to speed-up launching their IRs individually, instead of waiting for NDL's official launch, as NDL has a limitation of taking only 50 institutes in its first phase¹⁶.

(b) Among all the type of documents/records archived

on IRs, working papers, conference proceedings, ETDs lead the list of collections. However, the type of documents like journals, e-books, book chapters, course materials and newspaper clippings were hardly found. Moreover, the IITs and IIMs need to give access to their institutional journals too.

(c) The significant finding of the study is about open access to the IRs. The IRs are partially accessible at full-text level. This means none of the IR is in fully open access mode. This is where the IITs and IIMs need to focus as full-text access to their collection enhances research and publication activities by anyone who accesses them. Considering the demand for making public-funded institutions' intellectual work open, the IITs and IIMs need to be the front runner. The Government's NDL initiative is possibly a good sign to address this issue.

(d) It is found that DSpace OSS is the first choice of IITs (including the IITs whose IRs are accessible on intranet) and IIMs that have initiated IRs, except IIT-Delhi that has used E-prints platform.

(e) All the IRs have been listed under library web pages of the respective institutes. It is a good move by the library and information professionals/centres that they are taking key initiatives in planning, installing, designing and implementing the IR on the websites of IITs and IIMs.

(f) The faculty and students' research and publications are well represented on almost all the websites of IITs and IIMs. Many IITs and IIMs (including those don't have their IRs) have added the bibliographic list of faculty publications and student projects under the separate web-pages like 'Research' or 'Publications' or 'Faculty Publications'. Such lists are not put under library's webpages, except IIT-Delhi, but the usage of the lists would be more when they are put under the library webpages.

7. CONCLUSIONS

The IRs are the useful sources of scholarly communication. Institutes that initiate repositories, are valued in view of sharing the research oriented and public-funded literature. The IRs are popular among the Indian educational institutes, especially, higher educational institutes. But the implementation of the IR needs to be boomed. In the context of this, the number of IR initiatives of IITs and IIMs is not that impressive. This can be attributed to many reasons as "repositories are expensive and time consuming, and they demand specific knowledge of programming, content management, metadata applications, publicity, and internal marketing to researchers".² The research institutes especially libraries are also facing scarcity of funds. As it is rightly said, "the ability to judge a nation's scientific standing is vital for the governments, businesses and trusts that must decide scientific priorities and funding"¹⁷. This is what echoed, in the recent past,

by Dr. C N R Rao¹⁸, the recipient of Bharata Ratna award. So, funding needs to be given importance for such activities. IITs and IIMs should not be an exception to this. Their initiatives need to be supported with infrastructural, technical and financial support.

The IITs and IIMs are working hard to build their own IR, if not on internet, but on intranet. However, the centralised initiative of all these institutes is direly needed. Government of India's NDL initiative could be a possible solution. But this proves positive only when open access to all public-funded institutions put their digital contents on this master portal. Till the NDL officially emerges, the higher educational institutes need to strive hard to launch their IRs and then share the same on the NDL platform or any other centralised platform.

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