

Implementation of the Institutional Repository System in IIUM : Issues and Challenges

Sarifah Abdullah

Senior Deputy Chief Librarian
International Islamic University Malaysia
sarifah@iium.edu.my

Abstract

Purpose - The purpose of this paper is to share with others on the experience of IIUM Library in the implementation of the institutional repository system namely IREP by using the open source system ePrints.

Design/methodology/approach – The paper will discuss the issues involved in the implementation of the institutional repository including the choice of software, customization of system, collection, scope and policies, organization and staffing and process of depositing. It also discuss on how this system is used to collect data for research university exercises.

Findings – Institutional repository and self- archiving facilitates the university in compiling data for research university exercise. Therefore top management commitment is very essential. Also, it helps highlight the important role libraries play in the organization.

Keywords:

Institutional repository, IIUM, Research university, ePrints, IREP

1.0 Introduction

Malaysia has to be prepared to embark on the new economic model through the high value, creativity and sustainable innovation. Therefore the birth of the National Higher Education Strategic Plan is able to transform and integrate innovation-based university that can contribute to the development of the new economic model.

We are in the 2nd phase (2011-2015) of National Higher Educational Strategic Plan where one of the strategy is to have the 6th research university. IIUM is strategizing itself to become the 6th research university in Malaysia. One of the criteria is to have excellent research output through publications of research papers in high impact journals and conferences. Below are the details of the Section C1 Publication for RU requirements (UTM 2010).

C1 (a)	Citation-Indexed Journal Papers	NO CAPPING
	MINIMUM 2 x Bil. Staf X 75%	
C1 (b)	Cumulative Impact Factor 500 per year for 100% marks, i.e. 10.5	NO CAPPING
	MINIMUM 500 x 75% = 375	
C1 (c)	Cumulative No. of Citations 10,000 citation/year for 100% marks, i.e. 10.5	NO CAPPING
	MINIMUM 10,000 x 0.75 = 7,500 citations per year	
C1 (d)	Non-Indexed Journal Papers 2 papers/staff/year for full marks, i.e. 2.25 marks	CAPPED
	MINIMUM 2 x Bil. Staf x 75%	
C1 (e)	Book Chapters 1 chapter/staff/year for full marks, i.e. 1.5 marks	NO CAPPING
	MINIMUM 1 x Bil. Staf x 75%	
C1 (f)	Others – 1 paper/staff/year for full marks, i.e. 0.75 marks	CAPPED
	MINIMUM 1 x Bil. Staf 75%	

Table 1 : Section C1 Publication

Library plays an important role in to provide data and evidences for the Section C1 i.e. publications. This is a very tedious and difficult task. To facilitate this task, the institutional repository was established by self-archiving enforced on academicians. This paper describes the implementation of the IR in IIUM.

2.0 Institutional Repository (IR)

2.1 Definition

Wikipedia defined an **Institutional repository** as an online locus for collecting, preserving, and disseminating in digital form the intellectual output of an institution, particularly a research institution. For a university, this would include materials such as research journal articles, before (preprints) and after (postprints) undergoing peer review, and digital versions of theses and dissertations, but it might also include other digital assets generated by normal academic life, such as administrative documents, course notes, or learning objects.

Institutional repository may also be defined as information system capable of capturing, preserving and providing access to the intellectual output produced by the members of an institutions (Ferreira et.al., 2008).

While Clifford Lynch (Lynch, 2003) has defined an IR as “A a set of services that a university offers to the members of its community for the management and dissemination of digital materials created by the institution and its community members. It is most essentially an organizational commitment to the stewardship of these digital materials, including long-term preservation where appropriate, as well as organization and access or distribution.”

2.2 Benefits of IR

Based on the literature review, an IR benefits can be grouped into three categories as follows (Jain, 2010).

a. Benefits to the Academic Institution

An IR can be considered as:

- a means of increasing visibility and prestige; it may be used to support marketing activities to attract high-quality staff, students and funding;

- a venue of the centralization, storage and long-term curation of all types of institutional output, including unpublished literature;
- a supporting tool for learning, teaching and research to attract a global audience;
- an instrument to standardise institutional records; it is possible to compile an institutional curriculum vitae (CV) and have individual online CVs linked to the full text of articles;
- a mechanism to keep track of and analyse research performance;
- a way to break down publishers' costs and permissions barriers, as they can be useful in housing online access publishing, principally by sharing web storage and other technical infrastructure;
- an alleviation of the requirement to trust publishers to maintain information in the long term; with a peer review system in place, the repository could also lend its academic credibility to new start up journals; and
- a way of maximizing availability, accessibility, discoverability and functionality of scholarly research outputs at no cost to the user (Johnson, 2002; Pickton and Barwick, 2006; Lyte *et al.*, 2009).

b. Benefits to Individual Authors

An IR can offer the following benefits:

- increased dissemination and impact of scholarship;
- enhanced professional visibility due to broader dissemination and increased use of publications;
- storage and access to a wide range of material;
- greater security and longer term accessibility of material compared to a personal web site;
- feedback and commentary. Authors are able to assert priority and receive commentary on pre-publication "pre-prints"
- added value services such as hit counts on papers, personalised publication lists, citation analyses and linked CVs;
- a central archive of a researcher's work;
- improved decision making and knowledge transfer and creation through flow of information;
- a service to scholarship, to the university and to the research community through self-archiving;
- a more effective and personalized search and discovery facility, addressing the problem of information oversight; and
- possibility of large-scale collaborations

c. Benefits to Libraries

IRs are helping libraries reinvent themselves. They are no longer passive receivers of information but active disseminators of intellectual output for entire universities. The benefits to these libraries and universities are great because they are positioning themselves as major digital publishers in the scholarly world (Walters, 2007). An IR can be beneficial in the following ways:

- IRs provide libraries with opportunities for increased visibility and institutional presence. The chance to increase visibility among senior administration and the on-campus research community and the opportunity to work hand in hand with academia is an attractive option for academic libraries (Daly and Organ, 2009). This would definitely improve the stereotype image of libraries.
- By virtue of being subject specialists, librarians are ideal to work more closely with faculty to promote the repository (Bankier *et al.*, 2009). Thus, IRs offer librarians opportunities to work hand-in-hand with academia.
- Libraries can benefit by leading the way and providing the skills required, to develop and run an effective IR. For example, they can lead in copyright checking, metadata creation, authority control, etc. if not championing the entire project. Libraries must use every human and technical resource available to lead the design of a new technical infrastructure for modern scholarly communications and research. Only then will they become the hub for scholarly communications and attain in leading position in the world of web-based information dissemination (Walters, 2007).

2.3 IR Softwares

Institutional repositories have emerged along with the open access initiative to scientific literature movement. As a result of this movement and the advent of Internet, there are a number of open source software available for building open access repositories and journals. Most of open access repositories are free. An open source software directory is available at <http://www.opensourcesoftwaredirectory.com>.

There are a number of open-source software packages for running a repository. Among popular softwares used by many institutions are DSpace, ePrints and Fedora.

- a. DSpace (<http://www.dspace.org/>)

DSpace is developed by MIT as a digital repository to capture the intellectual output of multidisciplinary research organizations. MIT designed the system in collaboration with the Hewlett Packard Company in 2002. The system is running as a production service at MIT, and a

federation comprising large research institutions is in development for adopters worldwide.

Platform : Any webserver, Java, PostgreSQL/Oracle

b. EPrints.org (<http://www.eprints.org/>)

The ePrints software is the largest and most broadly distributed, and installed. It is developed by the University of Southampton. The first version was publicly released in late 2000.

Platform : Apache, PHP, MySQL

c. Fedora (<http://www.fedora.info/>)

The Fedora digital object repository management system is based on the Flexible Extensible Digital Object and Repository Architecture (Fedora). The system is jointly developed by the University of Virginia and Cornell University.

Platform : Apache, Java, MySQL/Oracle 8i

Each system has its own strengths and weaknesses. CatalystIT (CatalystIT 2006) reported that ePrints is a good candidate for many institutions as it is the least complex of the three systems, and hence has the lowest skill level barrier of the three to implement and maintain. Therefore ePrints is the most widely adopted IR software worldwide.

3.0 IR in Malaysia

In Malaysia, the development of IR started since 2007. Malaysia has 22 institutional repositories listed in OpenDOAR. Thirteen (13) of them are deployed by academic libraries. The libraries which have implemented IR as they are listed in OpenDOAR (<http://www.opendoar.org>) are as below;

No.	Academic Library	Institutional Repository	Software	Birth Date	Record
1.	UKM	UKM Journal Articles repository	ePrints	2 Sept., 2010	2579
2.	UniMAP	iRepository	DSpace	21 May, 2007	13,509
3.	UPM	PSASIR	ePrints	23 April, 2008	11,726

4.	USM	ePrints@USM	ePrints	17 April, 2008	22,742
5.	UTM	UTM-IR	ePrints	26 Jan., 2007	5,355
6.	UUM	UUM iRepository	ePrints	20 June, 2007	2,824
7.	UM	UM Digital Repository	ePrints	25 Feb., 2008	1891
8.	UNITEN	Digital Repository at UNITEN		29 Jan., 2010	Not available
9.	IIUM	IREP	ePrints	12 August, 2011	4525
10.	UiTM	UiTM Digital Repository	ePrints	11 March, 2009	Not available
11.	MMU	SHDL@MMU Digital Repository	ePrints	30 May, 2011	Not available
13.	UTHM	UTHM IR	ePrints	10 March, 2010	1299

Table 2 – List of Malaysian Academic Libraries Listed in OpenDOAR

EPrints and DSpace are the popular software use in Malaysia. Only two universities i.e. University Malaysia Perlis (UniMAP) and University Malaya use DSpace as their IR software. Most institutions use ePrints as it is easier to implement and technically less difficulty and easier to get support.

Malaysian librarians implement IR to increase the visibility and preserve the institutions' research output are the two highest motivation reasons whereas response to request from faculties . Most of the materials are collected by staff members or librarians independent of the authors or researchers. (Kamraninia & Abrizah 2010)

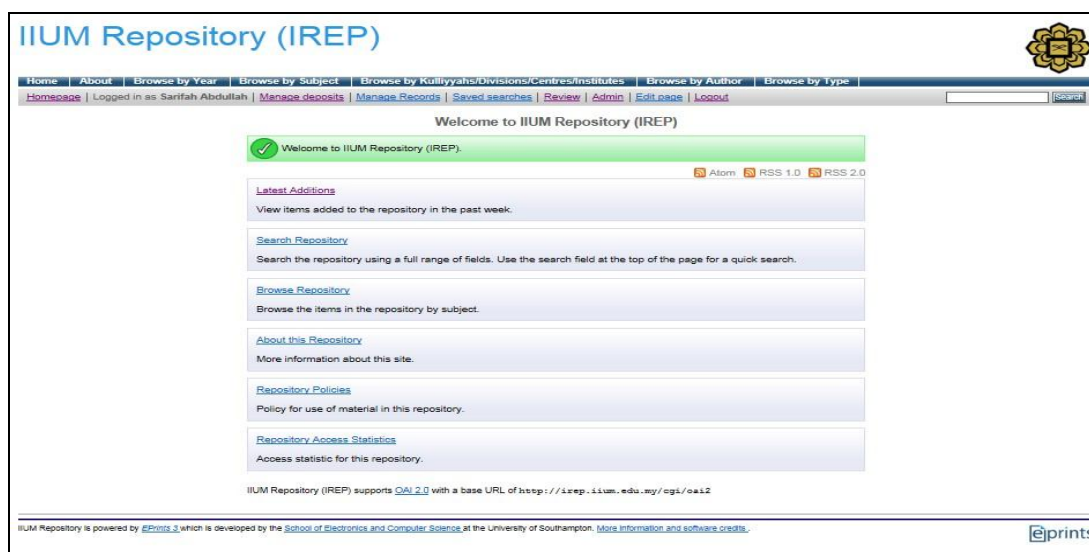
4.0 IR in IIUM

IIUM started the institutional repository initiative since 2004 by developing our own system namely e-Publication. The system is developed by the Information Technology Division (ITD) and maintained by the Research Management Center (RMC). The system is used to store and compile all publications by the academic

staff. Each staff was instructed to deposit their publications in this system. However, the system did not support full text and was not user friendly. Thus, staff hesitated to input their publications in the system.

As such the university has to find an alternative means to get staff publications as this is one of the major requirement in the research university exercise. The library has proposed the implementation of ePrints system as the university institutional repository to support the research university exercise. The proposal was presented in University Technical Information and Communication Technology Committee (UTICTEC), Deans' Council and the Senate. After undergoing testing and several evaluations, the university finally agreed the ePrints system to be adopted as university institutional repository known as IREP.

The system was installed and configured in June, 2011 and went live on 18 July, 2011. It can be accessed at <http://irep.iium.edu.my/>



Screen 1 : IIUM Repository (IREP)

4.1 Software Platform

The system runs on the following software and database.

Category	Software Name	Remarks
Operating System	Centos	Community Enterprise Operating System is a Linux variant that is binary compatible to Red Hat Enterprise Linux
Web Server	Apache	Built-in webserver package with Linux

Database	MySQL	Enterprise grade open source RDBMS
Programming Language	Perl	A feature rich programming language with strong text manipulation capabilities

4.2 Hardware Requirement

Currently the system is running on Windows server with 72Gb hard disk and 2GB RAM. For the future development, we need the following equipment

Item	Description
Server	2 x CPU s(quad core), 16 GB RAM, 146 GB HD, Rack Mount, 1 Gbps Ethernet, DVD-ROM
Storage	NAS/SAN configurable, NFS, iSCSI support , 12 TB

4.3 Project Structure and Team Members

The implementation team which is headed by Deputy Rector of Research and Innovation was formed to ensure the project runs smoothly and efficiently. The members are from Library, Research Management Center and representatives from the faculties/kulliyahs.

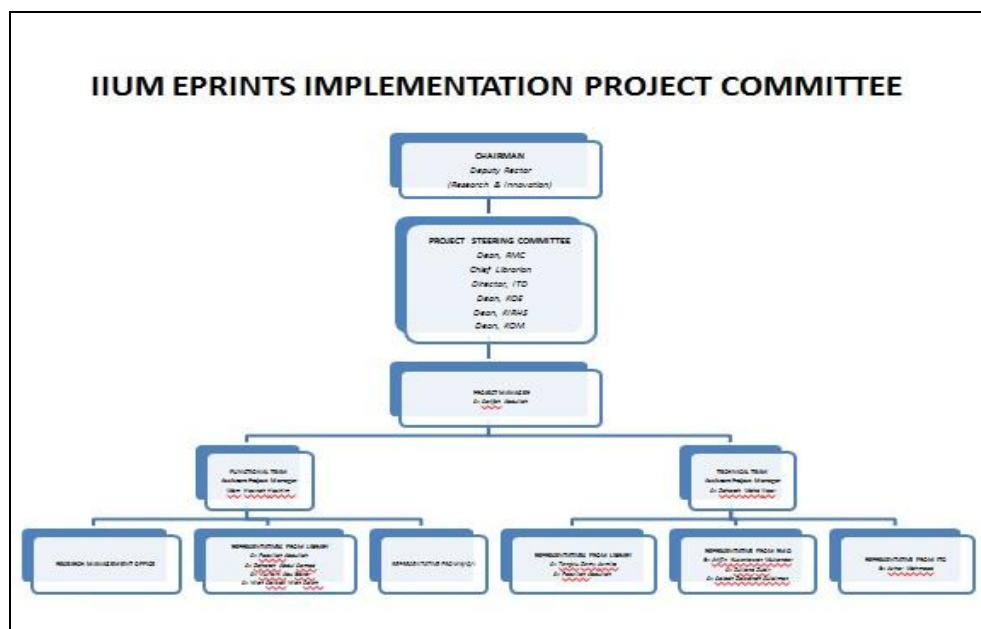


Chart 1 : EPrints Implementation Project Committee

4.4 IR policy

To ensure IIUM IR is an authoritative system, the policy has been established and approved by the University's Senate on 25 September, 2011. The policy is available at <http://irep.iium.edu.my/policy>

4.5 Item Type

Since the system is being used to support data for research university exercise, only the following type of publications are set up. Due to copyright restrictions, it is recommended that the minimum digital content is uploaded for evidence is stated in column "public access".

No	Type	Public access	Restricted access
1	Article	Abstract	Author's right/permission
2	Book Section	First page of article	Author's right/permission
3	Monograph	Abstract	Author's right/permission
4	Conference or workshop	Abstract	Author's right/permission
5	Book	Table of content	Author's right/permission
6	Patent	Abstract	Author's right/permission

4.6 Customization

The IREP database was customized according to the research university requirements. Among the fields which have been added are :

1. Article type (Journal, magazine, newspaper, book review and other)
2. Citation Details (UNSPECIFIED; ISI; SCOPUS; ISI & SCOPUS and SCOPUS Equivalent)

Sarifah Abdullah
 – Implementation of the Institutional Repository System in IIUM :
 Issues and Challenges

Abstract

In this study, we examined the likelihood of a TAME (extended technology acceptance model), in which the interrelationships among computer self-efficacy, perceived usefulness, intention to use and self-reported use of computer-mediated technology were tested. In addition, the gender- and age- invariant of its causal structure were evaluated. The data were collected from a self-reported questionnaire administered to 477 administrative staff of a public university in Malaysia. The results of structural equation modeling supported the adequacy of TAME. Although

Article Type

Journal
 Magazine
 Newspaper
 Book Review
 other

Creator/Author

	Family Name	Given Name / Initials	Email	
1.	Tunku Ahmad	Tunku Badariah	tbadariah@iium.edu.my	▼
2.	Madarsha	Kamal Basha	kamalbasha@iium.edu.m	▼
3.	Zainuddin	Ahmad Marzuki	marzuki@iium.edu.my	▼
4.	Ismail	Nik Ahmad Hisham	nikahmad@iium.edu.my	▼
5.	Khairani	Ahmad Zamri	emel_zamri@yahoo.com	▼
6.	Nordin	Mohamad Sahari	msahari@iium.edu.my	▼
7.				▼
8.				▼

Screen 2 – Article type

Date Type:

UNSPECIFIED
 Publication
 Submission
 Completion

Identification Number: doi:10.1109/ICCTD.2009.120

Related URLs: URL: _____ URL Type: UNSPECIFIED

Citation Details

Citation Index:

UNSPECIFIED
 ISI
 SCOPUS
 ISI and SCOPUS
 SCOPUS Equivalent Index

SCOPUS Equivalent Index Name: _____

Funders

1. _____

Screen 3 – Citation Details

To encourage academicians to deposit their publications in IREP, several workshops have been conducted in all kulliyahs. However, only 16% attended the workshops.

Until 1st November 2011, about 4408 publications have been deposited in IREP. Below is the statistic of records by faculties/kulliyah.

No.	Kulliyah	Publication
1.	Ahmad Ibrahim Kulliyah of Laws	298
2.	Centre for Foundation Studies	2
3.	Centre for Languages and Pre-University Academic Development (CELPAD)	109
4.	Institute of Education (INSTED)	87

5.	Institute of Islamic Banking & Finance (IiBF)	49
6.	International Institute of Islamic Thought and Civilization (ISTAC)	46
7.	Kulliyyah of Allied Health Sciences	87
8.	Kulliyyah of Architecture and Environmental Design	203
9.	Kulliyyah of Dentistry	21
10.	Kulliyyah of Economics and Management Sciences	518
11.	Kulliyyah of Engineering	1566
12.	Kulliyyah of Information and Communication Technology	283
13.	Kulliyyah of Islamic Revealed Knowledge and Human Sciences	756
14.	Kulliyyah of Medicine	236
15.	Kulliyyah of Nursing	26
16.	Kulliyyah of Pharmacy	91
17.	Kulliyyah of Science	233
	Total	4552

Number of publications by type are as below :

No.	Item type	No. of Pub.
1.	Article	2959
2.	Book	407
3.	Book Section	352
4.	Conference or Workshop Item	1601
5.	Monograph	51
6.	Patent	7

4.7 Report for Research University

From time to time the progress statistics and lists for RU exercise are prepared. The reports are generated by using SQLyog and MySQL Workbench. Example is as below :

Sarifah Abdullah
**- Implementation of the Institutional Repository System in IIUM :
 Issues and Challenges**

B26 C1 and C2 vertebrae osteomyelitis: a misleading presentation leading to a fatal outcome							
#	A	B	C	D	E	F	G
1	eprintid	title	article_type	eprint_status	citation_index	date_year	
2	1254	Clinical assessment of watermarked medical images	journal	archive	isi+scopus	2009	
3	5064	Optimization of decolorization of methylene blue by lignin peroxidase enzyme produced fr	journal	buffer	isi+scopus	2009	
4	77	Tool wear and surface finish investigation in high speed	journal	archive	scopus	2009	
5	119	Performance analysis of an optimal circular 16-QAM for Wavelet Based OFDM Systems	journal	archive	Null	2009	
6	1348	Dynamic model for price of wheat in Bangladesh	journal	archive	Null	2009	
7	1534	An artificial-intelligence-based approach for audio steganography	journal	archive	Null	2009	
8	307	The role of lid in protein-solvent interaction of the simulated solvent stable thermostable li	journal	archive	scopus	2009	
9	335	The impact of direct nucleation control on crystal size distribution in pharmaceutical crystall	journal	archive	isi	2009	
10	374	Seeded batch cooling crystallization with temperature cycling for the control of size uniform	journal	archive	isi	2009	
11	390	Artificial neural network chip serration frequency model in end milling of medium carbon st	journal	archive	scopus	2009	
12	402	Quality of pharmaceutical advertisements in medical journals: a systematic review	journal	archive	scopus	2009	
13	406	Characterization of indoor power lines as data communication channels experimental detail	journal	archive	scopus	2009	
14	407	Partnership between librarians and faculty at a Malaysian university library: a focus group su	journal	archive	Null	2009	
15	408	Classic lattice corneal dystrophy associated with monoclonal gammopathy following exclusi	journal	archive	Null	2009	
16	409	Customers' perceptions on the objectives, characteristics and selection criteria of Islamic ba	journal	archive	Null	2009	
17	410	Bilateral trade balance, exchange rates, and income: evidence from Malaysia	journal	archive	scopus	2009	
18	412	Characterisation of dynamic behaviour of vertical machining centre components: experimer	journal	archive	Null	2009	
19	414	Challenges for the nursing profession in Malaysia: evolving legal and Ethical Standards	journal	archive	Null	2009	
20	415	Epithelial debridement and Bowman's layer polishing for visually significant epithelial irregi	journal	archive	scopus	2009	
21	416	Parents' attitudes towards inclusion of sexuality education in Malaysian schools	journal	archive	Null	2009	
22	417	Novel framework for hidden data in the image page within	journal	archive	Null	2009	

Screen 4 : IREP Report

4.8 Integration

In the case of IIUM, the system is integrated with CV online system. The integration was done by the CV Online System vendor. This policy will encourage the staff to deposit their publications in IREP.

4.9 Value Added Service

a. MePrints

MePrints is a plugin for ePrints created by University of Southampton. It enables a user to create a flexible profile and homepage system for the EPrints repository. Each user gets their own customisable homepage where they can set personal data such as fields of expertise and a mini bio. The aim is that every repository user will have a page which promotes their work and identity within the repository and beyond. Beside that, a user will know the popularity of their publications through number of views.

IIUM Repository (IREP)

Home About Browse by Year Browse by Subject Browse by Kulliyahs/Divisions/Centres/Institutes Browse by Author Browse by Type


Login Create Account

User Profile

Sarifah Abdulrah
Librarian
LIBRARY

Expertise:
Library automation Digital library Cataloguing

Qualifications:
MUS(IUM); Post Graduate Diploma Library Science (UTM);
BSO(Chemistry)(UKM)



Latest Additions

1. Invariance of an extended technology acceptance model across gender and age group
2. Confirmatory factor analysis: the validation of mathematical values innovation among secondary school mathematic teachers in north-eastern Nigeria
3. Engineering materials and manufacturing processes from Qur'anic perspective
4. Comparison of biometrics industry between Malaysia and India: an overview
5. Construction contract administration: proposal for a framework for training
6. Artificial neural network chip separation frequency model in and milling of medium carbon steel
7. Potential impact of a pilot training program on smoking cessation intervention for tuberculosis DOTs providers in Malaysia
8. Building an Arabic digital collection: the IIUM Library's experience
9. An investigation into clustering routing protocols for wireless sensor networks
10. Ibn Khaldun on the role of knowledge, skills and values in the rise and fall of civilizations: implications for muslim educators in the 21st century.

Embed

Most Viewed Items

Item title	Views
1. Digitization of Arabic materials in IIUM Library - challenges and problems	146
2. Ibn Khaldun on the role of knowledge, skills and values in the rise and fall of civilizations: implications for muslim educators in the 21st century.	81
3. Building an Arabic digital collection: the IIUM Library's experience	66
4. Potential impact of a pilot training program on smoking cessation intervention for tuberculosis DOTs providers in Malaysia	59
5. Comparison of biometrics industry between Malaysia and India: an overview	56
6. Construction contract administration: proposal for a framework for training	55
7. An investigation into clustering routing protocols for wireless sensor networks	49
8. Frequency model in and milling of medium carbon steel	47
9. Engineering materials and manufacturing processes from Qur'anic perspective	31
10. Invariance of an extended technology acceptance model across gender and age group	29

Screen 4 : MePrints

b. Access Statistics

We use Advanced Web Statistics 7.0 to generate various access and downloading reports. The statistics provide usage (access/downloads), content and administrative statistics.

Statistics for: rep.iiu.edu.my

Last Update: 09 Nov 2011 - 23:50 [Update now](#)

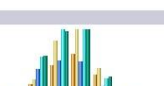
Reported period: Nov 2011 [OK](#)

Summary

Reported period	Month Nov 2011
First visit	01 Nov 2011 - 00:00
Last visit	09 Nov 2011 - 23:44
	Unique visitors
Viewed traffic *	3,009 (1.37 visits/visitor)
Not viewed traffic *	212,427
	Pages
	113,472 (37.71 Pages/visit)
	Hits
	229,530 (76.28 Hits/visit)
	Bandwidth
	4.41 GB (1538.13 MB/visit)

* Not viewed traffic includes traffic generated by robots, worms, or replies with special HTTP status codes.

Monthly history



Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2011	0	0	0	0	0
Feb 2011	0	0	0	0	0
Mar 2011	0	0	0	0	0
Apr 2011	0	0	0	0	0
May 2011	0	0	0	0	0
Jun 2011	0	0	0	0	0
Jul 2011	11	11	22	211	5.64 MB
Aug 2011	1,058	1,474	293,174	591,308	9.80 GB
Sep 2011	3,365	6,284	508,001	1,004,737	15.46 GB
Oct 2011	4,695	7,587	499,584	1,015,699	16.85 GB
Nov 2011	2,182	3,009	113,472	229,530	4.41 GB
Dec 2011	0	0	0	0	0
Total	11,311	18,965	1,534,263	2,831,485	47.52 GB

Screen 5 : Statistic

5.0 Issues and Challenges

5.1 Content Depositor

After careful reading of research literature, we realized that most institutional repositories were suffering from the same problems that we were experiencing in IIUM. The generalization and adoption of self-archiving habits by academics had been reported as a complex and slow process due inertia on the part of faculty as well as other obstacles that self-archiving would mean more work for faculty and frittering away their time; doubts and difficulties related to copyright issues; and faculty lack of knowledge regarding the advantages of Open Access were all obstacles found among Repositories users around the world (Ferreira, 2008)

Due to the above matter, we devised a strategy to further stimulate the adoption of IREP. This strategy composed of four essential components.

- a. Develop a promotional plan i.e. trainings, workshops to faculty members.
- b. Develop value-added services to authors i.e MePrints
- c. Become further engage in the local and international community
- d. Define Institutional Repository policy.

5.2 Technical challenge

Although the software is an open source software. It needs proper customization and maintenance. It needs technical staff who are familiar with open source operating system and database namely Linux and MySQL.

5.3 Top management commitment

We are fortunate because from the early stage we get top management commitment. This make our job e easier in the implementation of the system.

5.4 Copyright management issues

The management of rights for digital materials is very essential. The whole point of institutional repositories is to facilitate access, reuse and stewardship (which may itself involve reformation) of content and this feature is incorporated in most IR software especially ePrints. We notice that, lecturers or researchers are apprehensive about infringing publisher copyright and lack adequate awareness about their own intellectual property rights. The librarians have a tough time in approving the deposited publications to ensure they abide the copyright law.

5.5 Roles of academic library and its librarians

There are many reasons to indicate that the library can take up the responsibility for setting up and implementing the institutional repository. First, traditionally everyone knows the library as preserver of scholarly literatures. Secondly, librarians are professionals, trained to create metadata and content organization. They are conscious of the preservation of digital materials and self archiving techniques. The characteristic of the library as a technology hub in universities is the third reason to confirm why the library should be in charge of institutional repository.

Due to the above reasons, the IIUM library took the challenge to implement the university IR by doing the following activities :

- a. Collection management and stewardship of collection;
- b. Understanding of software and giving training to authors;
- c. Establishing a standard metadata and comprehensive catalogue system;
- d. Review submission for quality content;
- e. Persuading authors to contribute with self archiving;
- f. Training users search technique in institutional repository;
- g. Promoting and marketing through liaison librarians

6.0 Conclusion

The implementation of an institutional repositories and populating them with contents requires hard effort. It is not so much due to technical difficulties or unsustainable funding requirements, but mainly because institutional repositories interfere with the traditional practices of scholars and researchers. Nevertheless, once an institutional repository is set up, all academy research output is expected to be placed in the repository in order to collect and compile publications for research university exercise, to increase academy's visibility, usage and impact.

The task of convincing lecturers to deposits their publications in institutional repositories is a most demanding task. Since the introducing of IREP in July, 2011, more than four thousands publications have been deposited. A great number of initiatives have been implemented with the sole purpose of increasing the repository's adoption. From the start, we have done promotional activities such as IREP workshops in each faculty, briefing and announcement in the kulliyahs/faculties board meetings. Top management support is very crucial to ensure the successful implementation of IREP.

7.0 References

- CatalystIT Limited 2006. Technical evaluation of selected open source repository solutions. Available at <http://www.catalyst.net.nz>
- Ferreira et al.. 2008. Carrots and sticks : some ideas on how to create a successful institutional repository. D-Lib Magazine, Vol. 14, no ½: available at ???
- Jain, Priti 2011. New trends and future applications/directions of institutional repositories in academic institutions. *Library Review*, Vol. 60, no 2 : 125-141
- Kamraninia, Katayoon and Abrizah, A. 2010. Librarians role as change agents for institutional repositories : a case of Malaysian academic libraries. *Malaysian Journal of Library & Information Science*, vol.15, no. 3 : 121-133.
- Lynch, Clifford A. 2003. Institutional repositories : essential infrastructure for scholarship in the digital age. Digital Age ARL, no. 226 : 1-7.
<http://www.arl.org/resources/pubs/br/br226/br226ir.shtml>
- University of Nottingham 2011. The Directory of Open Access Repositories – OpenDOAR. Available at <http://www.opendoar.org>
- Universiti Teknologi Malaysia 2010. Guidelines for RU marking scheme.
- Wikipedia available at
http://en.wikipedia.org/wiki/Institutional_repository#Repository_Software
- Zainab, A. N. 2010. Open source repositories : implications for libraries. In *National Seminar On Information Technology in the Library*. 3-5 August 2010, Bayview Hotel, Penang, Malaysia