Abstract

Introduction

Institutional Digital Repositories (IDRs) have become a hot topic and have been an emerging research field in Library and Information Science because of rising costs, flat budgets, and restricted access to information, as well as rapid changes in technology, scholarly practice, and patron expectations etc. There is increasing awareness that universities and research institutions lose valuable digital and print material due to difficulties in accessing them and lack of good preservation practices. As a remedy to the situation, the Open Access (OA) and Open Archives Movement (OAM) have been advocating the establishment of IDRs to provide free access to public funded research. Many influential groups, funding agencies at national and international levels have made statements and are beginning to recommend or to mandate self-archiving of work paid for by their research funds. But there is no such mechanism for holding intellectual output of the institutions in one unique place in order to provide global access to local research outputs. The significance of the IDRs for social and economic life is well-accepted phenomenon and also its influence on higher education is no exception.

The main objective of the study is to develop a standard IDR model and formulate a policy on the basis of international standards and to design and develop FLOSS (Free/Libre Open Source Software) based Web-enabled IDR system on the basis of national and global recommendations. The study suggests best practices and recommendations for future developers and will become a guiding tool for policy makers and administrators.

Effective implementation of IDRs has proved problematic. This thesis has been structured around two core sections: a theoretical framework based on existing literature, and an empirical study e.g. implementation of theoretical model into a software framework using open standards and open source software. The overall research questions are: (a) What is the status of the Indian IDRs? (b) How to design a theoretical model for University-specific IDR? (c) How to convert the theoretical model into a software framework? (d) How to apply open source software and open standards in designing the IDR software framework? What are the procedures for making the IDR software framework a Unicode-compliant entity? (e) How to design and apply multilingual user interfaces at different levels and different points of utilization?

Scope

This work takes into account the relevant English-spoken literature produced in last decade mainly in journals available in DOAJ (Directory of Open Access Journals) directory, conferences, seminars etc. This work doesn’t take into account specific applications, software or project, since their analysis and comparing would have been too ambitious for the economy of this work. Significant projects were considered where they provided relevant contribution to development and establishing broader and applicable
models. The study covers all the self archiving policies registered in ROARMAP (Registry of Open Access Repository Material Archiving Policies) database. The study also consulted all IDRs registered in OpenDOAR (Directory of Open Access Repositories) and ROAR (Registry of Open Access Repositories) databases. More specifically, the study put emphasis mainly on IDRs. It does not cover others databases.

**Methods**

The Burdwan University Research Archive (BURA) software framework has been developed following several open standards and open source software (OSS). A policy model for the software framework has been formulated in the line of global recommendations and best practice guidelines. A series of software and related standards have been selected against pre-defined parameters for different clusters of the framework in order to convert this theoretical model into the proposed software framework. The software framework incorporates all the necessary customizations to make it Unicode-compliant Bengali script based user interface for browsing and searching Indic script based documents. This research work has incorporated an ontology driven Web-enabled knowledge organization system (KOS) (DDC 22nd edition – up to 3rd summary) in BURA software framework in Bengali script. The BURA software framework incorporates a federated searching mechanism for harvesting metadata from Open Archives Initiative-Protocol for Metadata Harvesting (OAI-PMH) compliant repositories with additional utilities like interactive communication tools for its seamless integration with IDR cluster of the framework. Finally, a ready to use off-the-shelf product has been developed so that other universities/institutes can apply this product without reconfiguring the system.

**Results**

Furthermore, the dissertation includes a chapter that presents and discusses the research findings in a theoretical framework and translated the theoretical framework into a software service framework. Initially the chapter presents and discusses terminology needed for analyzing OA and scholarly communication. The results show that only a few elite institutes have established IDRs in India. But most of the IDRs are not based on research data and are not up to the global standard. The problems are mainly three fold: technical (hardware and software), non-technical (administrative, policy issue) and cultural (social acceptance, advocacy etc). In practice the ranges of resources are limited and are mainly text based. There is no provision for multilingual information processing, searching and retrieval. There is no initiative to setting up Registry of Indian IDRs and no such mandate on OA publishing at national level. Blogs, RSS, academic pages and discussion forums are important web services that link to items within repositories. Apart from these features, this IDR framework explored the path to handle Unicode-compliant Indic-script based interfaces and subject access systems. This framework also provides some additional services to scholars like alerting services, federated searching and interactive interpersonal communication through blog and discussion forum.

**Keywords:** Digital library, digital repositories, digital archive, institutional digital repositories, open access, OAI-PMH, Open source software, self archiving.