Theme
Information resources and research & Integration of Islamic digital resources for e-learning

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Topic
Issues Affecting ETD Initiatives In Pakistan: A Developing Country Perspective
ISSUES AFFECTING ETD INITIATIVES IN PAKISTAN: A DEVELOPING COUNTRY PERSPECTIVE

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Objective: To identify key issues affecting Electronic Theses & Dissertations (ETD) initiatives in Pakistan.

Methodology: Literature review and author’s first hand experience of managing ETD initiative in Central Library of International Islamic University Islamabad.

Results: Electronic theses & Dissertation (ETD) initiatives have been taken place mainly in developed countries. In recent years, higher education sector of Pakistan has witnessed a major restructuring and expansion. Higher Education commission (HEC) has taken a number of initiatives to accelerate research programs in academic institutions. The boom of research activities resultant a high demand for indigenous research access. Academic libraries are feeling a dire need to initiate ETD projects to promote international visibility to institutional research and meet future needs. International Islamic University Islamabad initiated ETD project in 2007. A number of issues were experienced that differ
significantly from the perspective of developed countries. The major identified issues affecting ETD initiatives in Pakistan are: social (cultural), financial, technical/technological, digital divide, and human development.

**Conclusion:** The identified issues may be addressed with: active programming of seminars, lectures, workshops, etc.; institutional collaboration; provision of funding/training opportunities; building up a common framework and standards; and resource sharing and networking.

**Conference Subtheme:**

1. Innovation and development of information networking and database related to Islam

2. Networking and information and communication technology (ICT) in the Islamic world
1. INTRODUCTION

Recent developments in information and communication technologies offered challenges and opportunities to the higher education institutions and libraries worldwide. The ever changing information needs of users are putting pressure on libraries to offer services through World Wide Web and facilitate remote access to their information resources. Theses and dissertations (TDs) are the product of intellectual labor over several years of university students. The development of networking and digital library technologies is the reason for ETDs (Electronic Theses and Dissertations) gaining momentum in university campuses worldwide. Universities in developed countries are eagerly initiating ETDs from last two decades. However the concept is also getting momentum in developing countries.

Several indicators reveal that Pakistan is witnessing digital transformation. A most recent study by Shafique and Mahmood (2008) revealed that “An information society is emerging at a very fast pace in Pakistan” (p. 76). The information society applications such as e-learning, computer supported political participation, e-government initiatives, telemedicine, information and communication technologies (ICTs), cellular phones, satellite dishes, the Internet, etc. indicate a prominent growth in the country. The use of broadband services is growing in homes and offices located in major cities. This trend is expected to accelerate. Efforts to network the country continue, and so far over 1,898 towns and cities have been plugged into the Internet backbone (Shafique and Mahmood, 2008). The demand for digitized contents is ever
increasing worldwide and the same phenomenon is emerging in Pakistan.

In recent years, higher education sector of Pakistan has witnessed a gigantic changes of initiatives by the Higher Education Commission (HEC) that have fundamentally altered the whole higher education landscape. A number of research programs have been initiated in universities along with provision of significant funding. The boom of research activities resultant a high demand for information access. HEC National Digital Library Program provides country wide access to higher education institutions and non-profit research organizations. It provides full text access to the information resources of world renowned publishers including Springerlink, Blackwell Synergy, Ebscohost, JSTOR, Science Direct, IEEE Xplore, American Chemical Society, American Mathematical Society, ACM, Palgrave Macmillan, Ebrary, OUP Books, etc. (HEC National Digital Library Program, 2008). However it is commonly felt by the researchers that indigenous research produced in the higher education institutions of the country is still inaccessible. ETDs provide the solution of this problem. However, there are, so far, only two initiatives have been set off in context of ETDs in the country. Successful ETD program/initiative required ICT infrastructure, ICT literate human resources both in terms of staff and user community including teachers and students. The objective of this paper is to identify key issues affecting Electronic Theses & Dissertations (ETD) initiatives in Pakistan.
2. ETDs: WHAT AND WHY?

The term ETD refers to an electronic version of a printed thesis/dissertation where the old document (paper format) has been scanned and converted into electronic copy (mainly PDF format) or a piece of work (thesis/dissertation) produced (usually in Word or LaTeX and shaped in PDF format) and archived in electronic format (usually in digital library) to make accessible through WWW.

There are, mainly, two types of ETDs (UNESCO, 2001). One type (Type – I) is author-created and submitted works. In other words, these are documents that are prepared by the author (as is typical in almost all cases) using some electronic tools (e.g., Microsoft Word, LaTeX, etc.), and then are submitted in their approved and final electronic form. That form is submitted, typically over a network connection, usually with related metadata (i.e. often cataloging information as one might find in a library catalog, including title, year, author, abstract, and descriptors).

The second type (Type – II) of ETD is typically an electronic file that is created (usually by university, library or service company staff) by scanning the pages of a paper thesis or dissertation. The second type is commonplace in projects where a retrospective capture of old works is desired, or where a university wishes to share its research, and is not very concerned with educating or empowering students in electronic publishing methods.

IIUI’s ETD project, Phase – I, relates to second type of ETDs. Major benefits of ETDs are as follows (UNESCO, 2001):
1. The first benefit is that new, better types of TDs may emerge as ETDs develop as a genre. The students may be freed to include color diagrams and images, dynamic constructs like spreadsheets, interactive forms, animations, multimedia resources including audio and video.

2. ETD project offer strategic benefits to the institution. ETDs enhance the institutional profile as intellectual output of the institution is available to review.

3. ETDs improve visibility to the research output of the institution.

4. ETDs may overcome the scarcity of indigenous information resources especially in developing countries.

5. TDs hold information that helps to avoid duplication of efforts.


7. Access to information enhances the quality of TDs.

8. An ETD program introduces digital libraries in the universities allowing other projects to bloom.

9. ETDs are way of sharing intellectual production.

10. Wide knowledge of good quality TDs strengthens the faculty, the graduate programs and the university.
3. METHODOLOGY

The major ETD initiatives belong to developed countries and few ETD initiatives from developing countries have been discussed in scholarly communication. This study is mainly based on literature review and author’s first hand experience of managing ETD initiative in Central Library of International Islamic University Islamabad (IIUI).

4. LITERATURE REVIEW

The review of literature established that ETDs are in early stages in developing countries and few initiatives have been taken place in the developing countries. Vijayakumar, Murthy & Khan (2005) revealed that a small number of Indian Universities have already started ETD projects, and majority of them will be starting the projects soon. The study established the need for an experienced national level agency for coordinating the work, national level policies from agencies like University Grants Commission (UGC), necessary financial and technical guidance etc. for effective ETD initiatives in India. Satyanarayana & Babu (2007) conceded that quality of theses, lack of policy changes at university level, poor infrastructure, inadequate technical skills of library staff, and limited understanding of using metadata schemes and copyright issues are challenges associated with ETD initiatives in India.

Bakelli, Y., & Benrahmoun, S. (2003) mentioned that CERIST Research Centre, in August 2000, has been declared the official ETD depository by the Ministry of Higher Education and Scientific
Research Algeria to submit electronic copy of every Master’s and PhD thesis defended in all academic institutions of Algeria. CERIST is then entrusted with the mission to build a database of Algerian theses and to update the national inventory of current theses and research.

Zhao & Jiang (2004) mentioned 30 universities, in China, have established their own ETD submission and retrieval system. The study also discussed CALIS-ETD, a digital library project to share ETDs among the universities in China. CALIS-ETD includes fifty member universities.

Ubogu (2002) discussed ETD initiatives in South Africa and noted that only four universities (out of 37) request students to submit digital copies of their theses and dissertations. The author also discussed issues and constraints of ETD projects i.e. ETD submission software, submission guidelines and training, Intellectual property rights, quality assurance, archiving, personal issues, hardware requirements, and membership of the NDLTD.

5. ETDs IN PAKISTAN

Higher Education Institutions are experiencing a high demand from the researchers to digitize TDs and provide desktop access. Academic libraries are feeling a dire need to initiate ETD projects to promote international visibility to institutional research and meet the information needs of students, teachers, and researchers. However the ETD concept is still in primitive stage in the country. So far two initiatives made the first move in this regard:

The Higher Education Commission (HEC) of Pakistan initiated a project *Pakistan Research Repository* ([http://www.eprints.hec.gov.pk/](http://www.eprints.hec.gov.pk/)) in 2006. The project can be designated a showcase of intellectual output of Pakistani higher education institutions. The initial drive for development of content in the repository has been an initiative to digitize and make freely available online every PhD and M.Phil/ MS thesis published in Pakistani universities. The basic objective of the project is to promote the international visibility of research originating out of institutes of higher education in Pakistan.

The repository has already made the full-text of 1800 Ph.D. theses available in high-quality digitized format, whilst a further 100 theses have been digitized and are in the process of being uploaded. An additional 300 Ph.D. theses are in the process of digitization. HEC has introduced a systematic mechanism for the collection and digitization of the remaining theses. At the end of 2008, the repository will hold approximately 3000 Ph.D. theses produced by the institutions in Pakistan (Pakistan Research Repository, 2008).

Pakistan Research Repository offers various methods of searching and browsing by institution, department, subject area, author and full-text of documents. Arrangements in this manner ultimately allow users of the repository to view the aggregated research output of whole institutions, departments within institutions, or of individual
scientists themselves. This repository is running on GNU EPrints 3, an open source software, to manage and make accessible its ETDs on the web.

PRR is an excellent research aid for researchers as well as libraries. This project opened up new academic avenues by providing electronic access to indigenous academic research. Academic Libraries of Pakistan may consider PRR a benchmark to initiate ETDs in their parent organizations.

6.2. ETD Initiative at International Islamic University Islamabad (IIUI)

International Islamic University, Islamabad (IIUI) is an international seat of Islamic learning, in Pakistan. The foundation of the university was laid on the first day of the 15th Hijra Century, Muharram 1, 1401 (November 11, 1980). The university starts as “Islamic University” with only nine students in its LLM degree Program. The university was upgraded, restructured and reconstituted as “International Islamic University” in March 1985. With eight faculties and five autonomous academies, institutes and centers the university is conducting around 58 academic programs. The university has an enrollment of over 12000 students including 1500 Doctoral and Postgraduate students from 57 countries. The graduates of IIUI contribute a significant number of research products in form of theses and dissertations, in print format. Central Library is the official house of the research output.
At IIUI, a common problem expressed by the research students is the lack of electronic access to indigenous resources. Although HEC National Digital Library Program provides full text access to major databases (EBSCOHost, JSTOR, ScienceDirect, Ebrary, Emerald, etc.) yet the scarcity of local information resources is established. It also hinders to excel the academic research projects to address local problems. ETDs provide electronic access to indigenous academic research. In this context, Central Library of IIUI initiated ETD project in last quarter of 2007. Initially, two phases were planned.

Phase - I

1. Digitization of the available (in print format) theses and dissertations (TDs)

2. Provision of online access to digitized copies of TDs, initially through university intranet and later on internet

Phase - II

1. Advocacy campaign for ETDs policies implementation on university level

2. Implement ETD Program (of first type) with the formal approval of academic bodies

Currently, IIUI's ETD project is in phase-I that relates to the Type - II of above said ETD types. Electronic Resources and Services Division (Central Library) chalked out a plan and formulate policies and procedures to carry out Phase- I of the project. However Phase
II was planned to start after the completion of Phase-I by reviewing the prerequisites for ETD initiative of Type I. A dedicated team of library professionals, computer professionals and para-professionals were constituted for the said purpose.

The naming convention of 16 characters (first six characters for library accession no. followed by one character for language, four characters for year, two characters for department name and three characters for degree name) was finalized with a metadata of seven elements metadata (i.e. Title, Authors, Department Name, Degree Program, Year of Submission, Subject and Keywords, Language).

Greenstone Digital Library Software (GSDL) was chosen to harvest the digitized TDs and build a digital library. The digitization (OCR scanning for English TDs and image scanning of Arabic TDs) is in process and so far 587 TDs have been digitized in pdf format on 300 dpi. Greenstone Digital Library Software (GSDL), Version 2.80 was installed, customized and made accessible through university LAN. The digitized TDs have been harvested in GSDL with seven element metadata.

7. MAJOR ISSUES ENCOUNTERED IN ETD INITIATIVE AT IIUI

7.1. Concept/ Perception

ETD concept lacks in the scholarly community of the country that is the major hindrance in initiating ETD projects. Moreover library community also lacks the concept and benefits of ETDs. It is necessary to introduce the ETD concept by active programming of
seminars, lectures, workshops, etc. University libraries should advocate the ETD benefits to the university administration, teachers, and students to get social and financial support from concerned quarters.

7.2. Financial Support

Funding is a major problem in Pakistani libraries. There is a high level of dissatisfaction of libraries with their present state of funding (Mahmood, Hameed, & Haider, 2005). Ramzan (2004a) also conceded the scarcity of financial resources to initiate technological applications in libraries. Sixty percent respondents of his survey mentioned budget (finance) as a number one problem to implement technology in Pakistani libraries. Nevertheless, developing an ETD program requires substantial financial resourcing. Lack of financial resources is, of course, a major issue with ETD initiatives. However, the researcher believes that financial resources may be available if libraries work properly to convey ETD concept and benefits to the concerned quarters. Moreover, in recent years Higher Education Commission (HEC) is, generously, financing university libraries for their pursuance of technology applications. University Libraries may get required funds for ETDs from HEC.

7.3. Human Resources

The lack of computer literacy among library professionals is a major hindrance in the promotion of ETDs. Ramzan (2004b) stated, “majority of the librarians in Pakistan still lack necessary skills to plan, use, and implement IT in libraries”. Library staff lacks the skills
required for installing and maintaining ETD software. It is necessary that library staff should improve their managerial and ICT skills to successfully plan, lead and implement ETD projects. Another viable approach may be the induction of technology managers in libraries. University libraries may introduce new designations like System librarian, Computer Programmer, Technology Managers etc. for this purpose. Library schools can also play an important role by offering continuing education programs to the library community.

7.4. Technological infrastructure

The application of ICTs has become certain in libraries. However library scenario in Pakistan manifests gloomy picture in this regard. Information technology was introduced in 1968 to produce the country’s first union catalogue of scientific periodicals (Ramzan, 2004a) and remained a major focus of Pakistani Librarianship during 1990s (Haider, 2004). However, majority of libraries still lack the integrated library management systems and automation done primarily for a few selected operations only (Haider, 2004). Ramzan (2004a) indicated the extent of hardware, software, their utilisation levels, and degree of changes that have occurred in the use of IT in Pakistan’s academic libraries. The study revealed that 21% libraries have digital scanners and 5% respondents had OCR software for Digitization, while 68% of the respondents had no network server.

ETD program demands the availability of ample technological infrastructure to create, preserve and make available the ETDs to the users. The author believes that the poor technological infrastructure at university libraries is a major hindrance to initiate
ETD projects in university libraries. However by the support of HEC funding and planning the technological infrastructure may be enhanced to initiate ETDs.

7.5. Digital Divide

Despite the ICT friendly policies of the government and a gigantic growth of telecom sector in Pakistan, there still exists wide digital divide within Pakistan--- between the big and the small cities, between the rich and the poor and between the ICT literate and IT stressed users. Therefore, the ICT is not fully used by various segments of the community including students and teachers. The students especially from rural areas lack ICT skills that is a major hindrance to initiate ETD projects of Type - I. This is also true with senior teachers that are not much abreast with computer technology. Successful ETD initiatives demand to work in a collaborative manner for the elimination of digital divide among the students and teachers. University libraries may introduce short computer courses and training programs for the students and teachers to enable them to use computers and electronic resources effectively and efficiently.

8. RECOMMENDATIONS

Programming: Active programming of lectures, seminars, workshops, etc. may be influential to introduce ETD concept in library community and academia. The wider introduction of the ETD concept will ultimately help the libraries that concerned quarters will be ready to accept the arguments of libraries to initiate ETD project.
Libraries should plan a comprehensive program of seminars and workshops to introduce ETDs concept and benefits to academia.

**Collaboration:** There is a need to collaborate at the national level in Pakistan, and to involve various interest groups including academic libraries, information technology departments, Higher Education commission, etc. It is easier to convince for funds at the national level, especially in a consortium. Pakistani institutions should also pursue for international collaboration. The Networked Digital Library of Theses and Dissertations (NDLTD) is an international organization dedicated to promoting the adoption, creation, use, dissemination and preservation of electronic analogues to the traditional paper-based theses and dissertations. It will be beneficial for Pakistani libraries and higher education institutions to collaborate with NDLTD.

**Resource Sharing:** Resource sharing and networking among libraries of higher education institutions will enable the libraries to meet ETDs basic requirements as well as proceed further with common standards. Lessons learned from current ETD initiatives should also be shared among the professional community to enable others to avoid making wrong decisions in the pursuance of right path.

**Common Framework:** ETDs are in beginning stage and it will be better if higher education institutions follow a common framework. It is better to have a common policy accepted by all Universities and higher education institutions, in terms of format, workflow, software,
accessing and archiving policies. The common framework will ensure quality and interoperability.

9. CONCLUSION

The concept of ETDs is in early stages in Pakistan. However benefits of ETDs offer immense opportunities to higher education institutions. ETDs enhance visibility of institutional research outcome as well as offer strategic benefits. HEC may formulate and implement a policy in all Pakistani Universities, as mandatory to collect and host Theses and Dissertations in e-formats. This step will ultimately help higher education institutions to share their valuable resource (TDs) through a national level platform like Pakistan Research Repository. It is further necessary to develop the human resources, bridge digital divide, and provide financial support to enable the higher education institutions to initiate ETD projects. No doubt it is the matter of paradigm shift as ETDs are transforming the institutions from merely information consumers to information publisher. It required thought provoking planning to reap the fruits of ETD initiatives.
10. REFERENCES


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