

Digital Preservation Projects for Manuscripts and Rare Materials of Dhaka University library

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Abstract

Dhaka University (DU) library has a collection of more than 30,000 old 'puthis' and manuscripts, dating back to the medieval period, written on palm and banana leaves, barks, stone slabs and handmade papers in Sanskrit, Bangla, Arabic, Pali, Urdu, Persian, Maithili, Uriya, Hindi and a few other dialects. An initiative will have been taken to digitize of these old manuscripts, rare and brittle books of Dhaka university library in order to set up a Digital library using Green Stone Digital Library (GSDL) Open Source Software. The short term objective of this project is to enable Dhaka University Library to digitize and preserve the old manuscript, scholarly publication and to make them accessible to the users. The Long term objectives of this programme will be the development of a national research archive, the *Bangladesh Digital Library*. This project will enhance the DU information environment and create a system to communicate and preserve the intellectual output of the scholars and old manuscripts of this university. The sustainability of the project will largely depends on researchers and information professionals who must play an active role in managing the Library and optimizing the use of its resources. The successfulness of this Project will increase the usefulness of these manuscripts.

1. Introduction

Bangladesh emerged as an independent sovereign nation in 1971 after the war of independence with Pakistan. Bangladesh is 147,570 sq. km. and is bordered by India on the east, west and north, and on the southeast by Burma (Myanmar), and on the south by the Bay of Bengal. Population 156.3 million, Male-Female ratio 100.3 and density per sq km 1015, Life expectancy is 67.2 years, population growth rate 1.37. Per Capita national income is US\$ 923. Per Capita Gross Domestic Product (GDP) is US\$ 838 (Bangladesh, Economic Review, 2013).

At present, there are 75 private, 35 public and 2 international universities functioning in Bangladesh (www.ugc.gov.bd). The University of Dhaka (DU) is one of the oldest and largest public university in Bangladesh, established in 1921 and the library started functioning on 1st July 1921. It has more than 32,000 students and 1,600 teachers. DU Library has a collection of more than 617,000 volumes of books and bound journals. It subscribes to over 300 printed foreign journals, and has access to over 5,000 journals online (Ahmad & Shoeb, 2009). DU library also has 30,000 old 'puthis' and manuscripts dating back to the fourteenth and fifteenth centuries, written on palm and banana leaves, barks, stone slabs and handmade papers in Sanskrit, Bangla, Arabic, Pali, Urdu, Persian, Maithili, Uriya, Hindi and a few other dialects (Rahman, 1983). These manuscripts have value for both research and study. In order to ensure its continued existence and proper maintenance for study and research an initiative will have been taken to digitize of these old manuscripts as well as rare and brittle books of Dhaka university library in order to set up a Digital library using Green Stone Digital Library (GSDL) Open Source Software.

2. *Project Design*

This project consists of three phases which have short, medium and long term objectives.

PHASE I

Short term objectives: To digitize old manuscripts, rare and brittle books and scholarly publications of Dhaka university library in order to set up a Digital library using Green Stone Digital Library (GSDL) Open Source Software;

PHASE II

Medium term objectives: To create an open-access online portal where all journals published in Bangladesh are made available for worldwide access electronically.

PHASE III

Long term objectives: to develop a national research archive for Bangladesh *Digital Library*.

3. *PHASE I: Short term objectives*

There are many rare manuscripts in Dhaka University library, which are not only a matter of pride for Dhaka University but also for the whole nation. In addition there are many rare and

brittle books and scholarly publications in Dhaka university library. These old manuscripts, rare and brittle books and scholarly publications are in need of preservation with the help of modern technology. Phase-I of this project is planned to set up a Digital library using Green Stone Digital Library Software.

Objectives of the project

The short term objective of Dhaka University Digital Library (DUDL) project is to enable the Dhaka University Library to digitize and preserve old manuscripts, scholarly publications and to make them accessible to users. However, the specific objectives of the proposed Dhaka University Digital Library are:

1. To protect manuscripts from damage and preserve them in digital form;
2. To collect and preserve various teaching and learning materials, research outputs, etc. generated by DU teachers, researchers in order to make them accessible to the interested parties;
3. To make the library capable of providing e-library services with the e-resources of the library and ensure access to these e-resources for teachers, students, and researchers of DU library;
4. To build a bridge between users and electronic resources through the web based technology;
5. To help other universities and research libraries in digitization work and also establish digital library by sharing the experience and expertise.

4. Expected benefits of the projects

The specific expected benefits/outputs of the projects are as follows:

1. The benefit of this project is to initiate and support the safeguarding of old manuscripts and scholarly works not only for this generation but also for future ones.
2. Increase the collaboration between people involved in studying of and teaching about old manuscripts; Increase access to and use of the collection which is otherwise unknown and underused.
3. The library will preserve scholarly documents, manuscripts and provide long-term access to scholars' research output.
4. Provide space required for the documents.
5. Providing assistance to libraries of other universities and research organizations through sharing the experience of this project.

5. Implementation of Plan and Project Time line

Phase-I of this Project will be implemented within twelve months. The work plan is broken down into 3 closely interrelated steps. The first step will be the planning and setup; second and third steps will be the implementation and evaluation respectively. The following table depicts management of time during the twelve month project:

SCHEDULE OF COMPLETION			
Key to Project activities	Phase-1 Time period 2015 (Months)		
	4 month (Jan-Apr)	4 month (May-Aug)	4 month (Sep-Dec)
Planning and set up			
• Acquire the necessary supplies and other peripherals;			
• Hire Consultants (expert on GSDL installation and customization),			
• Recruitment of staff			
Implementation			
• Installation of Hardware and Software;			
• Customization of GSDL as per requirement;			
• Formulation of policy guidelines; digitisation strategies;			
• Establishment of Strategies regarding collection building;			
• Digitization of the manuscripts, editing and data input into GSDL			
• Scan the documents according to specification			
• Provide Library end user training			
• Prepare and publish promotional materials- Brochures, Posters etc.			
Evaluation			
• Output Analysis/Functional Analysis			
• User perceptions			
• Writing reports (quarterly, half yearly, and final report)			

6. Elements of Implementation of the Project

Elements	Description	
Duration	12 months	
Digital formats	The project will accept a variety of digital formats, like: PDF, Image, Word Documents, sound, etc.	
Hardware (Computer and Accessories)	<ul style="list-style-type: none"> • Repository Server--1 • Backup Server--1 • Personal Computer-- 4 (1 for circulation desk, 3 for data entry purpose as well as browsing purposes of DU Library users). • Laptop--1 • Barcode readers--2 • Printer--1 • Scanner —1 • <u>Other related equipments</u> • Vacuum cleaner--1 • Server rack—2 • UPS--4 	
Software	Operating System: Linux Database: Oracle/PostgreSQL Web Server: Apache Software: Java, GSDL (Open Source Software)	
Staffing	Project Director--1	(i) Implementing and managing overall project works; (ii) Monitoring and supervising project staff to ensure work is being done according to timeline; (iii) Ensuring that the project is planned and executed according to established project management principles and that the appropriate resources are provided to support the project requirements; (iv) Developing policy guidelines; (v) Preparing financial statements; (vi) Monitoring and project evaluation; and (vii) Preparing reports at different stages of the project including the final report.
	Project Support Staff --1	(i) Represent the evolving e-Strategy IT architecture including web services; (ii) Identify and access services, portal services, database; storage and security services as they impact the functional and technical requirements of the Digital Library.
	Data Entry Operator Staff--4	Digitize materials, prepare data sheet for entry and data entry in GSDL.
Content	The project may accept: Old manuscripts, rare and brittle books, preprints.	
Contributors	All faculty and staff will be welcome to contribute (departments, research centers, programs)	

7. Why Green Stone Digital Library (GSDL) Software

Greenstone Digital Library Software (GSDL) is a top of the line and internationally renowned Open Source Software system for developing digital libraries developed by the

New Zealand Digital Library group project (<http://nzdl.org>). It provides a new way of organizing information and publishing it on the Internet or on CD-ROM. GSDL is free, multi-platform, multi-lingual (including Bengali), metadata-driven, and extensible and has flexible searching and browsing features.

Main features of Greenstone software are:

- The GSDL is an internationally Open Source Software (OSS) system for developing digital libraries
- Greenstone runs on all versions of Windows, and Unix/Linux, and Mac OS-X. It is very easy to install.
- Greenstone is highly interoperable using contemporary standards, it incorporates a server that can serve any collection over the Open Archives Protocol for Metadata Harvesting (OAI-PMH), and Greenstone can harvest documents over OAI-PMH and include them in a collection.
- Greenstone has two separate interactive interfaces, the user interface and the Librarian interface. End users access the digital library through the user interface, which operates within a web browser. The Librarian interface is a Java-based graphical user interface
- Plug-ins are also used to ingest documents.
 - For textual documents, there are plug-ins for: PDF, PostScript, Word, RTF, HTML, Plain text, Latex, ZIP archives, Excel, PPT, Email (various formats), source code.
 - For multimedia documents, there are plug-ins for: Images (any format, including GIF, JIF, JPEG, TIFF), MP3 audio, and a generic plug-in that can be configured for audio formats, MPEG, MIDI, etc.

8. Standards

Metadata:

- Can use any metadata set, Dublin core supplied
- Plugins for

XML	Refer
MARC	OAI
CDS/ISIS	METS (subset)
ProCite	DSpace
BibTex	
- METS can be used as Greenston's internal representation

Serving:

- Web
- Can publish Greenstone collections on CD-ROM
- Can publish Greenstone collections on OAI
- Export collections to METS
- Export collections to DSpace

Documents:

- Plugins for

PDF	ZIP	Images (GIF, JPEG, TIFF ...)
PostScript	Excel	MP3
Word, RTF	PPT	Ogg Vorbis
HTML	Email	MediaWiki
Plain text	Source code	UnknownPlug (e.g. for audio, MPEG, Midi)
Latex	RealMedia	

9. Project Budget

The total budget (proposed) of the project is US\$ 30,200. The breakdown of the budget is given below:

SI #.	Item and descriptions	Qty	Estimated Unit Cost (US\$)	Estimated Total Cost (US\$)
1	Repository server	1	2000	2000
2	Backup server	1	2000	2000
3	Personal Computer	4	750	3000
4	Laptop	1	1000	1000
5	Barcode readers	2	250	500
6	Printer	1	600	600
7	Scanner (Kodak i1320)	1	1500	1500
8	Vacuum cleaner	1	500	500
9	Server rack	2	500	1000
10	UPS	4	250	1000
11	Other related equipment: Blank CD (for storing data); Network and cabling			500

SI #.	Item and descriptions	Qty	Estimated Unit Cost (US\$)	Estimated Total Cost (US\$)
12	Recruitment of Staff for the project <i>Project Support Staff</i>	1	250 (1x 250 USD x12)	3000
13	<i>Data Processing & Entry Operator</i> (Appoint technically sound manpower for input the digitized/soft copy of manuscripts and DU publications)	4	(4x200 USD x 12x)	9600
14	Orientation and Training of library personnel Hire local/overseas consultant (IT expert to be hired for installing the Server Operating System and other software and installation and customization expert on GSDL); Orientation and training of library personnel along with an IT related library staff for getting a clear idea about GSDL.			2000
15	Formulation of policy and guidelines, formative and summative evaluation of the project. Quarterly, half-yearly and final report writing.			1000
16	Miscellaneous			1000
			Total US \$	30,200

10. Project Evaluation

Project monitoring and evaluation will be done on the basis of the activities in different phases stated in the above mentioned Implementation and Time Frame Subheadings. The committee will monitor the development of this project time to time. The progress of the work will be recorded as per the time frame. Users' perceptions will be received after functioning of the Integrated Library Management Software and Development Studies Digital Repository.

11. Sustainability

The project will ultimately be a permanent asset of Dhaka University Library and will act as a forerunner of the digital library services in Bangladesh. After the completion of the *PHASE-I* of this project, DU Library will maintain DU Digital Library (DUDL) and carry out the uploading files and data entry works along with the server maintaining, keeping backup of running server, etc. as routine works of the library. So, the DUDL project will provide

uninterrupted services to fulfil its goals and objectives to serve its local and wide ranged patrons. Moreover, the sustainability of the project will be largely depends on researchers and professionals who must play an active role in managing the Library and optimizing the use of its resources. After successful completion of the **Phase-I** the project director will look for finance to implement the medium term and long term objectives under phase II and III of this project.

PHASE II: Medium Term Objectives

The medium term objective is creation of an open-access online portal where all journals published in Bangladesh are made available for worldwide electronic access. This measure will allow international exposure of research conducted within Bangladesh, and will assist in the international peer-review process of indigenous publications.

PHASE III: Long Term Objectives

The Long term objectives of this programme will be the development of a national research archive, the *Bangladesh Digital Library*. This national-level repository has the potential to bring significant benefits to educational and research institutions in Bangladesh by improving the visibility and impact of indigenous research. Where allowed by publishers, this repository will contain the full-text of research articles of Bangladeshi authors published in both international and local journals and, where full-text hosting is not allowed, article metadata (with abstracts) with links to the full text on the publisher's site will be available.

This national-level repository serves as a mechanism for the long-term preservation and archiving of PhD theses published in universities in Bangladesh. Guided by the principle that they are public information, all PhD theses are being systematically collected from institutions and entered into the repository. The repository provides a search mechanism to browse theses and dissertations by subject and source institution, and allows public viewing of any document through the hosting of PDF files of the full text.

The future of Bangladesh Digital Library holds great promise as the programme is being appreciated by users nationwide. The years to come will determine how effectively e-resources are integrated in the research process.

12. Conclusion

This project will enhance the use and access of digital information and create a system to communicate and preserve the intellectual output of the scholars and old manuscripts of this university.

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