

The Role of Digital Library in University Education

by

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[Abstract: *Books, Newspapers, Magazines, Essays / Composition of different natures, sound films, videos etc which can be now available for digital collection evaluation, processing, preservation and make them understand by all types of readers in electronic form. Internet or CD ROM (can be read only) are in disk form. By the help of Digital Library (DL) one can learn and understand everything about history and knowledge of different culture- traditional & scientific knowledge of different languages and people of all the countries of the globe starting from the beginning of ancient people till today, all the people of the world (educated, uneducated, ignorant, deaf and dumb) in their houses or office while sitting or moving by a transport by the help of Laptop or mobile phones in their own language they can read, listen and visualize above all things to enrich their regarding knowledge.]*

Introduction: From the dawn of civilisation, human being has been keeping in touch with education and for that purpose library has come up to play a vital role almost in each and every institution, thus it has been enriched accordingly by various books, journals, magazines and periodicals including newspaper. But it cannot help providing with adequate support to the common mass due to various reason that is with why it is a dire need of the day to have a digital library. So that everybody of world can have an easy access to quench their thirst of knowledge through internet where ever they are whether they are at office or home or on journey so as to have an effective and easy access of the common mass ‘Digital Library (DL)’ is the talk of the time to fulfill their demand of acquiring knowledge through internet in every corner of the global village thus to have a close contact with each other with a radical out look where ever one lives or whatever language one speaks even if one is deaf or dumb.

History of Digital Library: Digital Library has neither been created in a single day nor it is the credit of a single person. Rather it is the outcome of combined efforts put up by different organizations and people since long. In a definition of mentioning of DL is ‘The first use of the term DL in the printing form may have been in a report in 1988 to the Corporation for National Research Initiating. The form DL was first popularized by the NSF / DARPA / NSA Digital Library initiative in 1994. These drew heavily on, as we may think by Vannever Bush in 1945, which set out a vision not in terms of technology, but user experience. The term virtual library was initially used interchangeably with digital library, but it is now primarily used for libraries that are virtual in other sense, such as libraries which aggregate distributed content.

Review of Literature: An electronic library (colloquially referred to as a digital library) is a focused collection of digital objects that can include text, visual material, audio material, video material, stored as electronic media formats (as opposed to print, microform, or other media), along with means for organizing, storing, and retrieving the files and media contained in the library collection. Digital libraries can vary immensely in size and scope, and can be maintained by individuals, organizations, or affiliated with established physical library buildings or institutions, or with academic institutions.^[1]

Definition: Collection of digitized (see digitization) documents, images, and sounds that can be accessed and read by the use of computers, and see examples: i. collection: 1. General: Process of recovering amounts owed to a firm by its customers. ii. Banking: (1) presentment of a check or draft for payment and, subsequently, receipt of its amount in cash or as a credit entry. (2) Transfer of delinquent or past-due accounts to a collection agency (or a special department set up for the purpose) for full or partial recovery of the amount. iii. Foreign trade: Process through which the global banking system acts on behalf of an exporter (or seller) to collect cash payment or a time draft from the importer (or buyer) in return for documents required for taking delivery of the ordered goods^[2]. ii. Digitization: Conversion of analog information in any form (text, photographs, voice, etc.) to digital form with suitable electronic devices (such as a scanner or specialized computer chips) so that the information can be processed, stored, and transmitted through digital circuits, equipment, and networks. See also digitalization^[3]. iii. Documents: Collective term for air waybills, bills of lading, certificates of origin, commercial invoices,

drafts, packing lists, and other such records required under documentary credit or collection. See also document ^[4]. iv. Image: the general idea that the public has of a product, brand, or company ^[5] and v. Computer: General purpose machine, commonly consisting of digital circuitry, that accepts (inputs), stores, manipulates, and generates (outputs) data as numbers, text, graphics, voice, video files, or electrical signals, in accordance with instructions called a program ^[6].

Objective: The main objective of this research work of Digital Library (DL) are-

1. to furnish a clear picture of the present condition of university libraries in our country;
2. to find out their limitations and
3. finally how to develop a modern digital library model (MDLM) for universal use by the common mass.

Methodology: To reach a radical goal of universal DL this research work has followed the following methodology-

a. Data collection: *i. Primary source-* by the help of questionnaire by providing with information from 13 libraries of different universities and training institutes; *ii. Secondary source-* a. On Line collection from different world famous libraries of the world to have a comparative study so as to provide with solid data for the need DL, b. Taking information from diary of different universities & documents for history of invention of DL and their preservation system, c. Different types of present Internet system and d. Newspaper cutting in respective DL;

b. Presentation: A comparative study chart has been furnished taking information of an appropriate statistics percentage, figure & table etc. following the scrutinizing and analysis process.

c. Limitations: This research work had a lot of limitations like-

1. Inadequate data and insufficient knowledge on digital system (DS);
2. Sufficient books, documents and articles etc. on the same subject matter not available;
3. Before this, there was no such research work on the same subject; as such comparative study could not be conducted and
4. the research fellow has to depend mostly on Internet information.

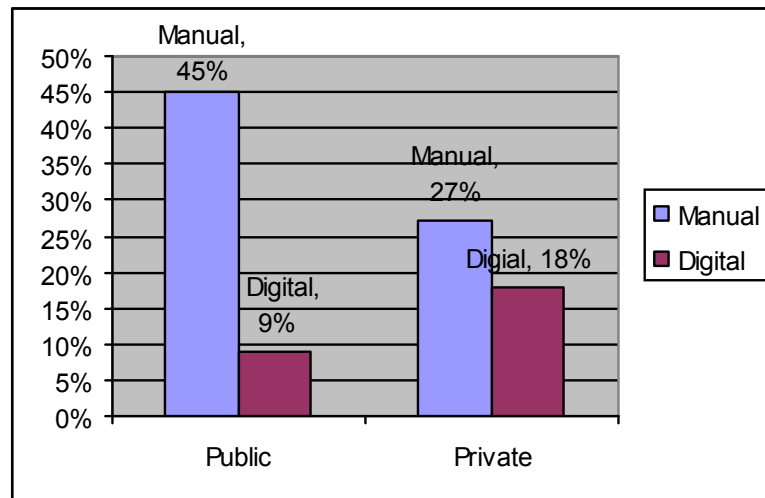


chart- A: Matter Processing by Manual and Digital systems.

Outcome of the Research Work

In our country, public, self- finance and private university libraries accomplish their activities by the help of following digital system (DS). In last 2008- 2010 i.e. one year and six months time, six public, five private universities along with two training institutes / academy have completed their library job on ten subject matters, such as: i. Collection, ii. Scrutinizing, iii. Processing, iv. Preservation / Storing, v. Issuing and returning syllabus & matters to and from readers, vi. ICT tools & devices used, vii. On duty IT staffs & officers, 8. Digital and manual systems used for training etc. Based on above, questionnaire has been prepared & supplied to collect data & information for this research work which are-

1. Matters preparation: By the help chart A, it is clearly stated that text preparation by manual and digital systems. So it is revealed that 9% (1) public and 18% (2) private university libraries are using digital format rest 45% (5) public and 27% (3) private university libraries are using manual systems which mentioned below in chart- A.

2. Digital text preparation: By the help of chart- B, it is showing respectively 10% public and 30% private universities' matters are composing by PC. On the other hand, 90% public and 70% private university libraries are using scanner to make digital matters which shown below in chart-B.

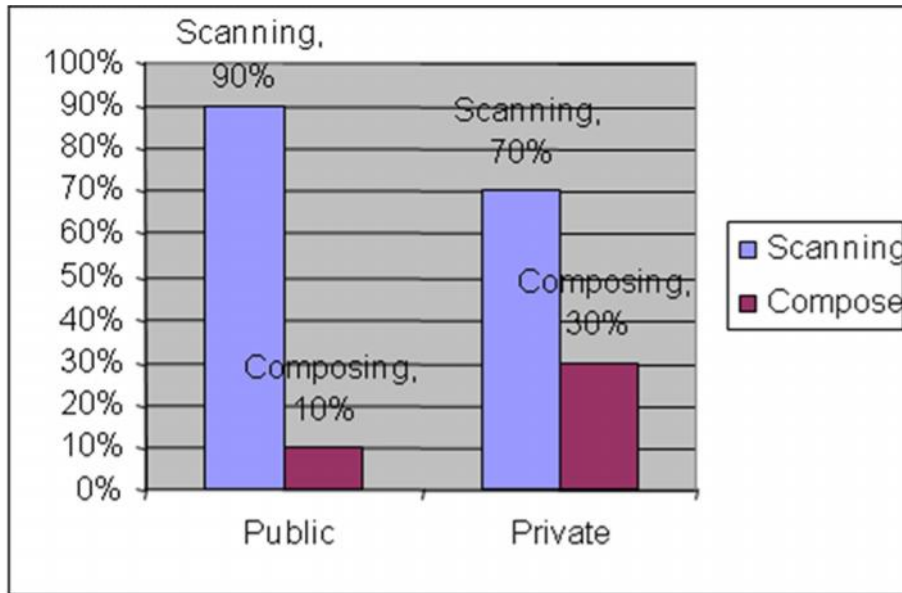


chart- B, Digital Matter Processing by Scanning and Composing systems.

3. Preservation / Storing of Digital Processed Text: The libraries which are using IT tools for collecting matters in digital format. They are using different digital devices for storing those activities in Bangladesh 100% (11) public and private universities libraries use PC. In that case 9% (1) uses Mini Computer in public university library and total 90% (10) in which respectively 54% (6) public and 36% (4) private university libraries use server as a medium to store all sorts of library information (appendix- 1).

4. Digital Text Accessing: In IT management by the help of 2 media matter are being accessed, those are- 1. accessing with Wire and 2. accessing with Wireless.

4.1. Accessing with Wire- Those are, a. LAN and WAN or Internet are used. There three (3) types of Internet-

a. Internet- Which are widely used by any organisation & institute etc. accessing matters by the help of any person / organisation. In these cases universities of Bangladesh 91% (10) libraries are enjoying this facility,

b. Intranet- Which are used by some fixed person and organisation for exchanging their only personal information and

c. Extranet- Which are used by private and independent personal for their exchange of information. These Intranet & Extranet are not used in university libraries.

4.2. Accessing Wireless- The university libraries in Bangladesh having digital system are accessing their matters by the help of Wireless procedure are- i. Antenna 27% (3), ii. Dish 45% (5), iii. Mobile phone 63% (7), iv. Satellite none, v. Optical Fiber- 9% (1) and 6. Very Small Aspartic Terminal (VSAT) 9 % (1) shown in appendix- 2.

This research work would be able to remove all kinds of limitations from university libraries and its proposed 'modern digital library model (MDLM) can really help to guide and develop so that able to learn knowledge in every field for mass in the world.

Modern Digital Library Model (MDLM)

Introduction: As per experienced learned people six inevitable criteria of university libraries in this age are- 1. Ensuring Quality Matters- viz Manuscripts, books, newspapers, magazines, periodicals including maps, charts and photos etc. should be ensured to supply with and preservation. 2. Cost of gaining knowledge should be within the limit of common mass. 3. Accountability & Transparency of both readers and librarians should be ensured. 4. Library should have huge and ample space to accommodate all the IT materials including digital matters, recording, films and videos etc. starting from the dawn of civilization till today. 5. It should be self run- independent and universal, from here people from any corner of the world would be able to read, collect and preserve information by gaining & distributing knowledge and remain open for twenty four (24) hours and 6. It should be like a world mirror of store of knowledge of all ages having no disparity. Such type of digital library having all these special criteria may exist somewhere in the present world, really there is doubt. Through in light of these and considering some basic criteria for establishing digital library some advanced countries are running their libraries in different universities by enduring a lot of hardships and earnest endeavor but still no definite path or guide lines could be evolved yet. So this research work is providing with some definite guide lines for "Modern Digital Library Model (MDLM)". And this model would be able to provide with every universities for establishing a modern DL and running it smoothly by extending the facilities of all sorts of library services. So that it can play a vital role for maintain a status of higher education and provide with definite guidance in every university libraries / DL throughout the world. By this there would be no parity of rich and poor, developed, undeveloped & under developing countries of the world in respect of gaining knowledge and acquiring higher education and will be able to bring in a single line irrespective of science, technology, education, knowledge. All human beings will have a sweet bond of brotherhoods, friendship by forgetting about all difference, parity, subjugation, oppression and that can be possible by the help of DL which is the urgent need of the time. In light of above mentioned all criteria and keeping in view of bringing all the people of the world together by dint of DL for the purpose

of distribution of modern education with same standard throughout the world, the total activities of this system has been divided into three steps which are discussed below in a nutshell-

1. International Digital Library (IDL): In this world, there should have only one library and its member will be every independent country that is every country will have one National Digital Library (NDL).

Work Area: 1.1. IDL have its only and main duty is to have close contact with all national digital library (NDL) through ICT network and 1.2. Exchange of digital matter (DM): and monitoring those concerning all university academic affairs.

2. National Digital Library (NDL): Every nation of the world should have only one NDL.

Work Area: 2.1. converting all the syllabus and curricula matter of the university into digital form; 2.2. By having close connection with IDL all the time, the total academic matters collection and preservation in an appropriate manner and 2.3. Through ICT procedure, the entire member DL in respective countries should be reached.

3. Member Digital Library (MDL): All the universities of respective countries must compulsorily become the member of NDL.

Work Area: 3.1. Collecting NDL, university academic concerning all digital matters collecting & preservation and 3.2. Arranging to reach all the ICT matters to the readers promptly & easily within minimum cost.

International Digital Library (IDL): With the consent of / by voting of all the NDL this library head quarter of IDL can be set up in any member country of the world. But country, which may be favorable for availability of all these criteria of library i.e. Software, Hardware, Internet etc. ICT expert manpower easily available, having accountability & transparency may be preferred to set up. Duties and Responsibilities of this library should have as follows:-

1.1. Digital Matter (Introduction, Collection & Distribution)

All the universities in different countries of the world from their own NDL by collecting all the matters including DM by the help of own super computer server three (3) having independent & separate backups and sent to all other countries can be the main responsibility. In this respect whatever steps have been taken as challenge and to implement all the activities by ICT are as- follows:

1.1.1. Establishment of Relay Stations

Considering the geographic locations, in every continent of the seven have to establish a relay station, and keeping contact with them all the universities matters including preservation by the help of every individual NDL of the world having all time connectivity by using ICT and for this whatever materials are required must be supplied and that is to be ensured.

1.1.2. Fees and Contribution

For the purpose of introduction of higher education by the help of digital system (DS) throughout the world, every member countries will have to pay a definite amount of fees or contribution money to every NDL either monthly / yearly basis. Other than that any country, organization either government or private may provide with any amount of grant or aid in cash or in kind of materials required its development and running it smoothly even they may provide with advisory help or expertise assistance for its development.

1.1.3. Introduction Universal Digital Books (UDB)

In many countries of the world are having their creative and research based books in their own respective languages, these are there in the syllabus of different universities which are limited in the definite countries and geographic boundaries, those are required to be made universal and international by providing helping hands to the NDL.

- a. International ICT (IICT) can play a vital role for its legal aid and formal recognition as its chief coordinator;
- b. Actual author or the real inheritor should get the royalty and that is to be ascertained and paid;
- c. International Standard Digital Book Number (ISDBN) is to be introduced
- d. Copy Right Law (CRL) is to be introduced, amended & implemented accordingly accepted by the International Standard Universally.

1.2. International of DL and its Development Worldwide

All the underdeveloped and developing countries of the world should introduce and develop DL by co-operation with NDL & MDL for the purpose of accurate functioning of IDL and for that

- a. ICT Ingredients- Software, Hardware & Internet all these ingredients should be provided smoothly for the purpose of developing manpower for ICT and provide training for acquiring knowledge to run and use regularly, and
- b. Infrastructure Construction and Preservation (ICP)- For accurate functioning of DL appropriate Buildings, Towers & Satellite stations etc. should be constructed and for these purposes all the ingredients should be also supplied, established and maintained by providing helping hands in different ways.

In this respect, better advice from advanced countries for DL, expert technology from developed countries in respect of DL of underdeveloped countries, everything including advice, technology and infrastructure completely with DL establishment and implementation whatever it is required should be provided with free of cost or minimum possible price.

1.3. Helpful Supporting Organization

Whatever organizations / institutions can be involved to get their help and support for developing and make utmost active of IDL are-

1.3.1. World Famous Libraries (WFL): There are 19 world famous libraries all these libraries can play a vital role by providing helping hands for development of DL with accurate management. These libraries are- 1. United States Library of Congress- Washington, the USA; 2. Lanin State Library- Moscow, Russia; 3. Public Library- Leningrad, Russia; 4. Academy of Science- New York, the USA; 5. New York Public Library, the USA; 6. The British Museum Library- London, the UK; 7. Bibliotheca National- Paris, France; 8. National Dean Library- Tokyo, Japan; 9. Bibliothic Nageonal Centre- Florence, Italy; 10. State Library Munich, Germany; 11. Dedushe Bookery – Lipzig, Germany; 12. Bibliothic Nageonal- Rome, Italy; 13. The National Bibliotheca- Vienna, Austria; 14. Bibliotheca Royal- Brussels, Belgium; 15. University Library- Amsterdam, the Netherland; 16. Odoblew Bibliotheca- Barlic, Germany; 17. Bibliotheca National- Madrid, Spain; 18. Bibliotheca, Nagional- Nepalese, Nepalese, Italy and 19. Royal Library- Stockholm, Sweden.

1.3.2. *The United Nations Organization (UNO)*: From this organization for development and extension of digital library throughout the world: a. special role can be played and helping hands and operation can be extended- i. United Nations Educational Scientific and Cultural Organization (UNESCO); ii. World Bank (WB); iii. International Monetary Fund (IMF); iv. International Telecommunication Union (ITU) and v. Other organizations of the UNO which can play a vital role in respect of research and education are:

a. United Nations Institute for Training and Research (UNITAR); b. United Nations University (UNU); c. United Nations Research for Social Development (UNRSD) and d. International Research and Training Institute for the Advancement of Women (INSTRAW).

1.3.3. *Others*: Whatever other International Organizations and Institutes are there in the world, such as: Commonwealth, NATO, SEARC, RCD & WARSHAW etc can also play a vital role for establishment & development of digital library world- wide (DLWW).

Limitations: This research work recommends strongly for not to have any co- operation with MDL. Only the IDL will play a vital role throughout the world for higher education by means of digital system and to maintain its universal standard and widespread utility.

2. National Digital Library (IDL)

In every country of the world for the purpose of introducing modern higher education there should have one central / national library equivalent to the standard of all libraries throughout the world. And this national digital library can work as a superior leader inside the country in every field including universities. In this respect NDL can collect, prepare, preserve, supply and control & manage in the national level for all sorts of readers. The following branches of NDL can play a vital role to introduce higher education in the country.

2.1. Public Relation Branch (PRB)

By the help of this branch of NDL all the universities of country, all the teachers, students, officers & staffs etc. engaged in teaching and learning, including scientists, research fellows, politicians, economists, doctors, agriculturists along with every class of people can have their thirst of knowledge fulfilled by mentioning their work schedule, steps taken and other facilities provided can be displayed in the notice board of the universities to inform every individual, organization about all the services which can also be informed to all sorts of media also. Within its range all the activities of services given to the readers can be of three types-

2.1.1. Reception branch (RB): This branch will cordially receive all the information and messages concerning any matters coming from outside any libraries. The main duty of this branch can be of supplying with exact, prompt & true information which may be verbal & written through post office, phone or fax etc.

2.1.2. Introducing with Notice Board: NDL should have a well displayed notice board at the location of its main entrance. Full picture of NDL should be displayed with total activities according to every branches and divisions chronologically always with updated messages and information.

2.1.3. All types of Information Supplying by It: Each and every staffs of NDL (appointment, transfer & promotion etc.), manuscripts and books (books, magazines, news papers & periodicals etc.) and other digital matters concerning everything to inform the people by the help of advertisement either nationally

or internationally through news paper, radio, television, Internet and including satellite so that every digital media can use them.

2. 2. Collection / Procurement Branch

This branch of NDL will procure / collect / accept all sorts of texts- a. manuscripts, b. printed books and c. any texts in digital format and these are:

2.2.1. Manuscripts. A. *Accepts*- All sorts of manuscripts written in respect of introduction and implementation of higher education in every field and stages of universities will accept this branch at first and B. *Evolution*- All the collected and accepted manuscripts will be evaluated and for its acceptance by the help of expert, experienced, competent and honest people forming an Evaluation Committee (EC) of odd numbers (3, 5 etc). Only the standard manuscript examined and scrutinized by this evaluation committee will be finally accepted for the library. IDL also should have a committee of this nature having their member as worldwide acclaimed experts.

2.2.2. Books, Periodical Etc.: Central libraries of all universities of the country in seminar rooms of all faculties having books, periodicals etc. for all required matters should be brought under ICT for that DBMS arrangement should be made.

2.2.3. Digital Texts: All the media accommodating computerized text including Internet as for example- CD, Hard Disk & Pen drive etc. received matter from all these for preservation in an accurate manner in a sequential order should be brought under super computer with in database management system (DBMS).

2.3. Sorting out Branch

By the help of NDL all the collected manuscripts, books and digital text in all subjects, areas, branches and stages before finally storing and preservation those be sorted and preserved having independent identity and headings in a scientific method. In these respects following steps should be taken-

2.3.1. Source

All the matters received for digital library should be sorted out as per source, i.e. original country-district of the manuscript writers should be clearly mentioned; 2.3.1.1. *Local Matters*- Whatever matters have been received locally from districts, divisions should be arranged such mentioning those accordingly, e.g. Kushtia, Bangladesh; 2.3.1.2. *Foreign Matters*- In this respect all the matters printed in different countries should be taken into consideration and for that all matters should be arranged mentioning the name of countries and 2.3.1.3. *Mixed Matters*- In this respect if the writer stayed in different countries while writing the matter or jointly written by more than writers of different countries should be tagged separately.

In the above mentioned all three types of matters should be taken into consideration, then the full address of the writer, i.e. name, date of birth (DOB), village / lane, P/S / area, district, country and the profession of the writer while composing should be clearly mentioned.

2.3.2. Preparation of Matters for the Readers

In view of gaining knowledge by the readers easily from the digital library, all the matters should be arranged and supplied as per following four media:-

2.3.2.1. Matters in Digital Form- If all the matters are composed in digital format in 41 main languages of the world more than 95% of the people will be able to read and get benefit directly in their respective mother languages;

2.3.2.2. Cassette- Illiterate or the people those cannot see due to problem in their eyes, all the above mentioned matters should be recorded in cassette. So that they can gain knowledge by listening;

2.3.2.3. Video Cassette- All the matters should be recorded in video film and supplied to the readers so that they can understand all the critical and important matters quite easily to gain their knowledge.

2.3.2.4. Video Conference- Keeping in view of understanding with the most critical and important matters and simplify those, as per pre schedule programming video conference should be arranged having co-ordination with the writers throughout the world, so that readers, writers, presenters and experts all together can have direct discussion, enquiries and provide reply for solution simultaneously for an appropriate and greater understanding.

2.3.3. Divisions

The main subject of matters as per area i.e. medicine, ICT, economics, education, literature, sports and security etc. of course they should be taken into consideration and should be arranged separately in different headings. Also it is to be mentioned that every subjects according to its criteria and nature, number of sub- divisions should be maintained if required by sorting them out. In this regard, in section 2.4.2.2 of this research work it has been mentioned in details.

2.3.4. Separate, Independent and different Serial Number: Accepted all the matters should be given with a separate, independent & different serial number. In this respect, in the model from 2.3.1 to 2.3.3 other than discussed / mentioned items, DBMS of these subjects have been discussed below-

2.3.4.1. ASPIC:

i. Name of **Author (A)**; ii. Name of title of the **Subject (S)**; iii. Name of **Publisher (P)**; iv. Published **Year (Y/I)** and v. Name of **Country (C)**,

Considering, all these matters into consideration for permanent preservation in the library all matters should be arranged under separately DBFS (database file server) / DBMS which can be used by all the world famous library of the world. These matters have been mentioned in chronological order and in detail in section 2.4.

2.3.4.2. Following ICT System: For finding out anything quickly and easily from all the preserved matters, the following ICT system can be ahead to- a. Bar Code (BC); b. Magnetic Ink Recognition Character (MIRC); c. Optical Mark Readers (OMR); d. Optical Character Recognition (OCR) and e. Computerized Numeric Control (CNC) etc.

2.3.5. Final Selection: By this time, all the collected matters in NDL i.e. manuscripts, books (text) & digital etc. system in light of newly selected matters should be scrutinized & justified for every one separately & independently. In this respect cancelling all the received duplicate matters only the newly received matters. Converting into digital form and DBMS necessary steps should be taken for storing and preserving those accurately.

2.3.6. Translation: Only the utmost important matters from selected matters should be translated as per demand in other languages. English, German, French, Chinese, Urdu, Hindi and Arabic etc. can be translated into digital format. In this respect, expert, experienced and competent local and foreign

translator may be deployed, and their honorarium and royalty should be settled up before hand which has also been recommended in section 1.1.3. in this research work.

2.3.7. Preparing Matters in the Best Manner: For the purpose of digital library all the manual matters should be converted into final format. For that purpose along with expert, efficient computer operators & proof readers, concerned ICT materials like sufficient number of PC, Printers, Scanner & UPS etc. should be arranged on priority basis and that is to be ahead accordingly and it has been mentioned in section- 2.3.4.2.

2.4. Storing and Preservation

In digital library all the stored and preserved matters in digital texts, for their prompt identification and their regaining purpose all the time the updated information and other problems including total accountability like- duplicative and wrong information & data to overcome all these, everything should be in DBMS preservation system quite perfectly. In this respect, all the texts, preselected ICT base ofcourse, serial number must be maintained as mentioned in section 2.3 of this model. Whatever other rules and regulations should be followed for preservation in DBMS as follows in order of ASPIC.

2.4.1. Author (A)

Only the original composer / author of the matter, in this respect there may be more than one author with the same name at home or in abroad. So to distinguish those in databases following points should be taken into consideration-

2.4.1.1. Identity Number (ID): Every author / composer of the matter should have a separate, independent and unique *Identity Number* (IDN), which will help to identity each every author exactly. For these two types of IDN can be used –

2.4.1.1.1. National Author ID Number (NAIDN): All the author of the matters of different text with in his / her country of definite geographical boundaries- curricula included in the universities which effective and running only these types of authors will have separate & independent NAIDN and

2.4.1.1.2. International Author ID Number (IAIDN): In many countries of the world, or the author is not the citizen of the country where the texts have been included the university authors of such matters should be in this category of IAIDN. All these author may be further categorized in three groups, such as: i. Basic, ii. Translator & iii. Reviewer.

2.4.2. Subject (S)

For the purpose of preparation of database in respect of subjects (S) the following points can be taken into consideration-

2.4.2.1. Title (T): Whatever title given by the composer / author for the texts, only that title should be officially used, like – Mid Summer Nights Dream- by William Shakespeare.

2.4.2.2. Discipline (D): The book which has been composed on certain subject of discipline and that is to be mentioned as accordingly. In different countries of the world there are various subjects like Economics, Political Science, Social Science, Religion, Geography etc. other than those, there are many sub- subject / classes of the main subjects which can be categorized as- 1. Finance, 2. Banking, 3. Business, 4. Establishment, 5. Administration, 6. Agriculture, 7. Religion, 8. Defense, 9. Law, 10. Judiciary, 11. Parliament, 12. Food, 13. Natural Disaster, 14. Relief. 15. Information, 16. Posts & Telegraphy, 17. Shipping, 18. Foreign Affairs, 19. Planning, 20. Forests, 21. Environment, 22. Jutes, 23.

Textiles, 24. Housing & Public Works, 25. Commerce, 26. Electricity, 27. Oils & Minerals, 28. Tourism & Civil Aviation, 29. Land, 30. Women & Children Affairs, 31. Fisheries & Livestock, 32. Youth & Sports, 33. Communication, 34. Industry, 35. Science & Information Technology, 36. Labour & Employment, 37. Social Welfare, 38. Cultural Affairs, 39. Water Resource, 40. International Affairs, 41. Health & Family Planning, 42. Freedom Fighter Affairs etc. division and subjects can be divided.

Above mentioned subjects can be divided into different sub- subjects, like- Education can be divided into three subdivisions, viz- i. General Education, ii. Technical Education and iii. Madrasa / Religion Education. Again all these sub- sub- division can be further divided from administrative point of view, viz- General Education- (higher stages), such as- a. Arts, b. Science & c. Commerce etc. Again this commerce branch can be divided into eight, such as- i. Management, ii. Accounting & Information Systems, iii. Marketing, iv. Finance, v. MIS, vi. International Business, vii. Hospitality & Tourism and viii. Banking.

2.4.2.3. Language (L)

All the books of different matters are written in different languages and accordingly, those can be divided into two categories, like- 2.4.2.3.1. *Single Language (SL)*; Any matter has been listed in a single language (SL) should be kept in the heading of this category and 2.4.2.3.2. *Multiple Language (ML)*: If any book of any matter is translated & converted into more than one language should kept in this category.

2.4.3. Publisher (P)

Any original, translated or converted matters all these three have been published in digital format should be brought under DBMS for providing with all information including its number, origin and development. In this case database should be taken into consideration. 2.4.3. 1. *Text Name (TN)*: By the publishers- a. Original, b. Translation & c. Converted matters should separate and independent list; 2.4.3.2. *Author Name (AN)*: As per role played for publishing any books of matters- original, translations & converted as entered in DBMS separately and independently their names & address should be mentioned accordingly; 2.4.3.3. *Multiple Author (MA)*: For this category a separate list should be maintained and 2.4.3.4. *Year (Y)*: Mentioning the day, month & year total number of books of different matters included in database should be arranged in chronological order.

2.4.4. Year (I/Y)

Year also can be mentioned along with author, subject and published syllabus viz-

2.4.4.1. Author (A)- Mentioning the author, translators & reviewers names all information of their date of birth, date of death the definite time span mentioning the day, month & year should be entered in database;

2.4.4.2. Subjects (S)- Starting and finishing date of any subject matters would be mentioned clearly;

2.4.4.3. Translation (T) & Revise (R)- How many languages of the world have translated / revised the original text matters should be mentioned with year and date;

2.4.4.4. Published (P)- Publishers' name and address along with year and date of publication of original, translation & revised should be mentioned accordingly and

2.4.4.5. Include in Syllabus- What are the universities of the world have included the matters in their syllabus should be mentioned with year & date, along with course code and number.

2.4.5. Country (C)

The utility of matter should be included in database as per its contribution / performance in the following manners-

2.4.5.1. Country Code Number (CCN): In this respect all the independent countries of the world should be allocated with a separate & independent code number (CCN) and should be included in database for its clear & prompt identification by following two methods- *2.4.5.1.1. Divide as per Continent-* Seven different lists may be mentioned putting all the countries names separately in seven continents of the world and *2.4.5.1.2. Developed, Developing & Poor Countries (DDPC)-* All the countries names in three categories should be mentioned as per financial index like- developed, developing & poor countries in the database, so that required details information from any matter can be gained promptly, accurately & simply.

2.5. Preservations

All the matters should be preserved accordingly with utmost care and safety so that any information can be reached to readers promptly with minimum cost and in this respect following steps should be taken-

2.5.1. Digital Matters (DM): All the matters stored in super computer should be used in digital library by appropriate IT all the time automatically with a number of back- up. For accomplishing this job accurately, whatever ICT materials, media & system are required should be in the own address, server, web- pages, hard disk, pen drive & CD etc. of respective digital library.

2.5.2. Manual Manuscript and Text: The utmost important and necessary matters, to preserve as memory is quite costly, risky and more troublesome. So those are to be preserved in a box or in a packet of special chemical.

2.6. Exchange of Digital Matters (EDM)

For safe exchange of digital matters with NDL and MDL following mentioned rules and regulations & safety measure should be followed-

2.6.1. Extent of Matter Circulation: Every NDL can supply the matters to the own member countries MDL and in any way NDL will not supply any matters to any individual reader, this is the special recommendation of this research work.

2.6.2. Medium of Use: In respect of prompt & swift transaction of all DM among the members of NDL, through ICT by the help of super highway, satellite, Online & Offline (Internet, Extranet & Intranet) & Wireless, dish antenna and mobile phone, modern techniques should be used.

2.6.3. Auto Circulation System of Information: As and when any matter is stored in the server of the digital library those should be immediately transferred automatically to all MDL i.e, member library servers, that is to be arranged accordingly and should be implemented by following those.

2.6.4. Strict Controlling: Any matters from NDL should be translated under strict security system abiding by all the rules and regulations and that must be implemented accordingly. In any case, other than member of MDL, no other organization or library can enter, receive or preserve / store any information violating this rule.

3. Member Digital Library (MDL)

All the matters received from NDL should be circulated, presented and distributed only through MDL to the readers. Other than the university libraries, any other organization, person, business centers, offices

& hospital etc. in the country can become the member of NDL by paying a prescribed fees and following all the rules & regulations, terms & conditions. The main job of digital library is to receive, preserve / store & distribute among the readers all the information matters from NDL. Other than that the MDL will have to abide by the following responsibilities-

3.1. Digital Readers

By paying a definite fee as prescribed by the authority and abiding by set rules and regulations, any person / organization from anywhere of the country can become a member of digital library and can get its benefit continuously all the time. While awarding the membership its nature i.e. fulltime, par time, seasonal, for a short term or lifelong- all these terms should be taken into consideration. Whatever service and readers can get from digital library are-

3.1.1. Readers' Services: The digital library should be kept operating for 24 hours round the clock, so that every category reader- i.e. students, teachers, research workers and others can get service without any interruption and quite easily & promptly. Services can be provided to readers' are- *3.1.1.1. Reading & Writing-* Every reader should have access of reading any material at any time for any duration by the help of MDL from own server local area network (LAN) connected with an ample number of personal computers (PC) along with reading rooms furnished with digital boards. It is further mentioned that for the purpose of continuous & uninterrupted services for the readers, digital library should provide with ICT catalogue with DBMS along with sufficient guides and guide books. So that readers can easily and promptly find out their required matters for their usage and *3.1.1.2. Collections-* Every reader / member can collect their required matters for their usage there should be availability of printers and scanners having hard copy and CD, pen drive & hard disk etc. to provide with soft copies.

3.1.2. Presentation of Matters to the Readers: Busy and working readers who cannot spare their time to sit in the reading room of the library and they do not have much time to get lesson or copy of lesson presenting themselves in the library but they have got much thrust of knowledge, digital library can reach them with appropriate services by Online, Offline & wireless etc. by means of ICT tools & devices along with laptop and mobile phone at their place of duties, or in residence or while in journey by any transport, like this everyone can get benefit of digital library by means of individual ICT technology and thus complete utilization of digital library can be achieved.

3.2. Manual Texts & Manuscripts

All the matters stored / preserved in digital library for reaching those to the readers through ICT system, every items should have separate '**auto electric box (AEB)**' for the purpose of storing & preservation and to communicate those to the readers, computerized control system should be utilized.

4. Recognition

Special prizes, honoriums along with recognition of contribution should be arranged for those who are contributing their services & knowledge as special experts in these digital libraries considering the following criteria-

4.1. Duration / Tenure: This recognition ceremony may be held regularly once in a year for the appropriate contributors for digital library development.

4.2. Areas: In every stages, there are manuscripts, text authors, correction makers, ICT experts and member of the library considering these a number of contribution alongwith their subject matter irrespective of home and abroad.

4.3. Naming of the Prizes: Persons / organizations which have contributed nationally and internationally may be named as an expert and by their name, it may be introduced with prizes by their names.

4.4. Types of Prizes / Recognitions: As a matter of recognitions, certificate, medals, title of honours or money may be given as prizes / recognition to their contributions.

5. ICT Infrastructure, Training and Development

For the purpose of providing with best possible services to the readers, these type of digital library must have an appropriate ICT infrastructure storing with preservation facilities all the time repairing and replacement of matters accordingly and deployed experts and staffs should be imparted with up to date training to provide them with appropriate & sufficient knowledge in modern system. Other than that whatever services and assistant should be provided are-

5.1. Electricity: For the purpose of extending uninterrupted services for all the time continuous electricity supply should be maintained to its utmost level. In this respect auto start electric generator should be made available along with electric supply facilities in the digital library.

5.2. Financial Assistance: The research work recommend for total financial support from the government fund with special allocation for the purpose of establishing a complete NDL along with all infrastructure of MDL including building etc. by providing with all sorts of equipment and accessories so that digital library never faces any financial crisis at all to run it continuously.

5.3. Ingredients

All sorts of required ingredients / constituents parts and accessories for all MDL along with NDL should be provided with on time. In this respect ICT materials are-

5.3.1. Hardware- All sorts of ICT concerned Hardware for digital libraries should be provided with, in every centre / sub- centre for its storing / preservation and supplying to the readers accurately and on time, for this purpose considering their lifespan a better stock of hardware should be kept as stand by for regular replacement and maintenance;

5.3.2. Software- In every MDL of digital libraries, to maintain its standard and software concerning security system should utilized and for its information accessing all the time its absorbing , integrating, accessing and uniformity should be maintained to its utmost level and if required at anytime considering the situation it should be updated as far as possible timely & promptly;

5.3.3. Staffs: Two types of ICT staffs are recommended for deployment in digital libraries those are respectively- *5.3.3.1. Regular Staffs-* In digital libraries in every units / sub- units required number of regular, expert & permanent staffs must be deployed to provide with appropriate services and *5.3.3.2. Inspectors-* For all the MDLs under the NDL a definite number of inspectors with sufficient ICT expertise knowledge should be deployed. These inspectors should be capable enough to provide with training to the regular ICT staffs on different matters alongwith inspecting the infrastructure and suggest for updating of all DL for its development to the higher authorities.

5.4. Training Academy

Modern ICT training academy should be established permanently at all the regional centre along with divisional or district centre to provide with up to date training for the staffs inspectors and other workers of digital library so that latest knowledge and information are imparted to all concerned staffs for accurate functioning of digital library to provide with appropriate service for all the time continuously.

5.5. ICT Rules and Regulations

Keeping co-ordination with the DL of all other modern countries of the world, for establishing digital library organization a set of rules and regulations should be introduced and implemented. If required, those are to be amended and updated in accordance with the advancement and development of technology during the course of time.

Appendix-1, Preservation / Storing of Digital Processed Text in University Libraries

| IT Devices | Public | Private | Total |
|---------------------|---------|---------|-----------|
| Super Computer | none | none | none |
| Main Frame Computer | 9% (1) | none | 9% (1) |
| Mini Computer | 54% (6) | 45% (5) | 100% (11) |
| Server / PC | 54% (6) | 36% (4) | 91% (1) |

Appendix-2, Digital Text Accessing / Corresponding in University Libraries

| IT Devices | Public | Private | Total |
|--------------------------|---------|---------|----------|
| Internet (with wire) | 54% (6) | 36% (4) | 91% (10) |
| Antenna (wireless) | 9% (1) | 18% (2) | 27% (3) |
| Dish (wireless) | 18% (2) | 27% (3) | 45% (5) |
| Mobile Phone (wireless) | 45% (5) | 18% (2) | 63% (7) |
| Satellite (wireless) | None | None | None |
| Optical Fiber (wireless) | 9% (1) | None | 9% (1) |
| VSAT (wireless) | 9% (1) | None | 9% (1) |

1. Jump up ^ Witten, Ian H., Bainbridge, David Nichols. How to Build a Digital Library. Morgan Kaufmann Publishers (2010) ISBN 978-0123748577. Accessed January 31,2014.
2. 2. Read more: <http://www.businessdictionary.com/definition/collection.html#ixzz2vdNL8zyW>
3. 3. Read more: <http://www.businessdictionary.com/definition/digitization.html#ixzz2vdNWmWJL>
4. 4. Read more: <http://www.businessdictionary.com/definition/documents.html#ixzz2vdNjAUCm>
5. 5. Read more: <http://www.businessdictionary.com/definition/image.html#ixzz2vdNqyqja>
6. 6. Read more: <http://www.businessdictionary.com/definition/computer.html#ixzz2vdO2Y6Qv>