1. INTRODUCTION

Advances in Information & Communication Technology has given new dimensions to traditional libraries, changing their way of functioning and being known as different names such as Electronic Library, Virtual Library, Hybrid Library, Gateway Library, Library of the Future, Digital Library, Library without Walls or Bionic Library.

Each and every library is slowly getting digitized. A digital library comprises digital collections, services and infrastructures to support lifelong learning, research, scholarly communication as well as preservation and conservation of recorded knowledge. It is also a process of democratization of information.

Due to IT, world becomes a global village. The revolution in the IT sector influencing the information industry too. Libraries are also changing to meet user need. New NetGen demand information on their finger tips by one click. The information is for use and for all, so libraries become universal & open for all those who seek for information. By considering this view a number of large organizations have already more or less switched over to digital mode worldwide.

Recently, libraries of research and higher learning institutes are increasingly being digitized. These libraries are not fully digital, but hybrid libraries: having both digital and print collections. These libraries have good collection of digital content/institutional repository or digital archive. Institutional repository could contain any work product generated by the
institution's students, faculty, researchers, and staff. This material might include student electronic portfolios, classroom teaching materials, the institution's annual reports, video recordings, computer programs, data sets, photographs, and art works, pre-prints and other works-in-progress, peer-reviewed articles, monographs, conference papers, electronic thesis and dissertations, and gray literature —virtually any digital material that the institution insists to preserve.

1.1 Digital Library

1.1.1 Emergence of Digital Library:

According to Harter (1997) the beginning of digital libraries started in 1991, the year in which the National Science Foundation (NSF) in the US sponsored a series of workshops on how to make digital libraries a reality, not just a dream. At the same time, digital libraries are an outcome of the revolution in computing, telecommunications and information systems that began almost 50 years ago, around 1965.

The term "digital library" is simply the most recent in a long series of names for a concept that was written about long before the development of the first computer. The idea of a "computerized library" that would supplement, add functionality, and even replace traditional libraries was invented first by H.G. Wells and other authors, who caught the imagination of millions with speculative writings about "world brains" and similar fanciful devices.

The application of computers to information retrieval was stimulated by Vannevar Bush (1945), who wrote about the "memex," a mechanical device based on microfilm technology that anticipated the ideas of both hypertext and personal
information retrieval systems. The first real-world applications of computers to libraries began in the early 1950s with IBM and punched card applications to library technical services operations, and with the development of the MARC (Machine Readable Cataloging) standard for digitizing and communicating library catalog information. In 1965, Licklider coined the phrase "library of the future" to refer to his vision of a fully computer-based library, and ten years later, Lancaster wrote of the soon-to-come "paperless library." About the same time Ted Nelson invented and named hypertext and hyperspace. Many other terms have been coined to refer to the concept of a digitized library, including "electronic library," "virtual library," "library without walls," "bionic library," and others.

The relatively recent use of the term "digital library" can be traced to the Digital Libraries Initiative funded by the National Science Foundation (NSF), the Advanced Research Projects Agency (ARPA), and the National Aeronautics and Space Administration (NASA) in the United States. In 1994 these agencies granted 24.4 million dollars to six U.S. universities for digital library research, impelled by the sudden explosive growth of the Internet and the development of graphical Web browsers. The term was quickly adopted by computer scientists, librarians and others.

**Digital Library Projects:**

Early digital library projects UK, US and multinational programs had notable influence on digital library development and they produced significant outcomes that defined the way forward as digital libraries continued to evolve.

The key projects included:
UK eLib Programme (eLib):

Managed by the Joint Information Systems Committee (JISC), eLib ran for seven years (1995–2001) and involved 70 projects.

Digital Library Initiative -1:

The first large-scale funding for digital libraries in the US began in 1994 with an initial four-year Digital Library Initiative (DLI-1) sponsored by NSF, the NASA and DARPA (Arms, 2000). The projects emphasized mainly technical aspects of digital libraries and were led for the most part by computer scientists. Behavioral, social and economic issues got little attention during the first round of NSF funding.

Digital Library Initiative -2:

In 1998 NSF issued a second call for proposals. DLI-2 began with more concern for the social, behavioral and economic aspects of digital libraries and attracted funding from multiple agencies, including national libraries and the Institute of Museum and Library Services (IMLS).

Other US national programs:

American Memory Digital Library (1995)

National Digital Library Project (NDLP) at the Library of Congress.


Joint NSF/JISC international projects:

In 1998 NSF called for proposals for multi-country, multi-team projects. Six projects were funded jointly by NSF and JISC to explore cross-domain resource
discovery, digital archiving, search and retrieval for musical information, reference linking, subject gateways, and metadata for multimedia digital objects.

European Commission (EC):

Even before the first decade of digital library research and practice, the European Commission devoted substantial attention and funding to library related programs.

Projects in China

CALIS (Chinese Academic Library Information System) 1998

CADLIS (Chinese Academic Digital Library) 2005

Major Digital Library Initiatives, Digitization Programmes and Institutional Repositories in India

Archives of Indian Labour  www.indialabourarchives.org

Centre for Education and Documentation  www.doccentre.net

CSCS Media and Culture Archive  www.cscsban.org/html/media_archive.htm

Digital Library of India  www.dli.ernet.in

Digital South Asia Library  www.dsal.uchicago.edu

Digitization, Electronic Archiving, Indexing and Retrieval system of the India Journal of Medical Research  www.icmr.nic.in

Digitization of Manuscripts  http://namami.nic.in

Digitization of Patents, Designs and Trademarks  www.patentoffice.nic.in

Down the Memory Lane  http://nlindia.org

Electronic Theses and Dissertation Project of INFLIBNET Centre  www.inflibnet.ac.in
Chapter 1

Introduction

IGNCA Digital Library (Kalasampada)  www.ignca.nic.in

Indian Institute of Astrophysics  www.iiap.res.in

Indian Institute of Management, Kozikode  www.iimk.ac.in

Indian Institute of Science, Bangalore  www.iisc.ernet.in

Indian Institute of Technology, Bombay  www.iitb.ac.in

Indian Institute of Technology, Kharagpur  www.iitkgp.ac.in

Indian Institute of Technology, New Delhi  www.iitd.ac.in

Indian Parliament Library  www.parliamentofindia.nic.in

Indira Gandhi Memorial Library, University of Hyderabad  www.igminet.uohyd.ernet.in

Khuda Bakhsh Oriental Public Library  http://kblibrary.bih.nic.in/

Librarian's Digital Library  www.drtc.isibang.ac.in

Mobile e-Library  http://mobilelibrary.cdacnoida.in

Muktabodha  www.muktabodhalib.org/digital_library.htm

Nalanda Digital Library  www.nalanda.nitc.ac.in

National Resource Centre for Women  http://nrcw.nic.in/

National Science Digital Library  www.niscair.res.in

National Tuberculosis Institute  http://ntiindia.kar.nic.in

National Institute of Technology, Calicut  www.nitc.ac.in

National Institute of Technology, Rourkela  www.nitrkl.ac.in

National Library of India  www.nationallibrary.gov.in

Raman Research Institute Digital Repository  www.rri.res.in
Technology Information, Forecasting & Assessment Council

www.indianpatents.org.in

TIFR Digital Library Initiative   www.tifr.res.in

Vidyanidhi Projects   www.vidyanidhi.org.in

**Other projects:**

A number of large-scale, ambitious projects were inspired by democratic ideals and attracted multiple sources of funding and voluntary support:

*Project Gutenberg* (1971) ([www.gutenberg.org](http://www.gutenberg.org)) is the first and oldest digital library.

*Internet Archive:* Brewster Kahle started the Internet Archive in 1995.

*The Million books project:* The Million Books project ([www.ulib.org](http://www.ulib.org); the first project of the Universal Digital Library) began with some preliminary test projects with financial help from NSF in 2000.

1.1.2 **Electronic, Digital, Virtual and Hybrid Libraries:**

An electronic library is a library consisting of electronic materials and services. Electronic materials can include all digital materials, as well as a variety of analog formats that require electricity to use. For example, video tapes are an analog format that requires electronic equipment to view. Thus the term "electronic library" encompasses all the material that can be held by a "digital library", and is therefore more inclusive. It is, however, out of style.

A digital library is a library consisting of digital materials and services. Digital materials are items that are stored, processed and transferred via digital (binary) devices and networks. Digital services are services (such as reference assistance) that are delivered digitally over computer networks. One of the best
examples of a digital library is the U.S. Library of Congress American Memory collection.

Digital library provides collection and services in digital form.

Both digital and electronic libraries can be virtual libraries if they exist only virtually - that is, the library does not exist "in real life." For example, a virtual library can consist of material from a variety of separate libraries that are organized in a virtual space using computers and computer networks. One of the best examples of a virtual library is the Internet Public Library.

In short, Virtual library does not physically exit, a library with distributed collections and services that appear and act as one. Typical example is a website with pointers and links to other sites.

Hybrid library is a combination of traditional and digital library, having both print as well as digital collection. Actually it is a transitional state between print and digital environment.

1.1.3 Types of collection:

There can be two types of collection in a digital library:

*Developed In -house by the library*

A large extent of the collection comes from parent institution in the form of research. The libraries may have data sets that are originally created in digital format. For example- in house journals, books, journal papers (post-prints), book chapters, conference papers, pre-prints, working papers, minutes, theses and dissertations, technical reports, annual reports, project reports, progress/ status reports, committee reports, presentations, multimedia material, articles, images,
speeches, email archive, news, policies & plan documents, drawings, software, 
press releases, lectures, course materials, question papers etc.

*External-Acquiring or licensing from third parties.*

Most of these collections are made available by commercial publishers 
scholarly societies, resources at other libraries, electronic journals sites etc. It 
includes Bibliographic Databases, E-journals, E-books, Full Text databases, 
Reference sources of Encyclopaedias, Dictionaries, Directories, and Atlases etc., 
published in both optical media and made accessible through web.

Provides links to various online open source resources such as useful 
websites, wikis, blogs, subject gateways & portals and others etc.

*Document formats:* HTML, Text, PDF, Audio-Video, Multimedia Presentations 
etc.

*Language:* Multilingual collection

**1.1.4 Characteristics of Digital Library:**

- Equal opportunities of access: Digital libraries provide remote access to 
  various types of information resources globally and equally to everyone 
  having internet access.

- Reduce physical space: Digital libraries largely reduce the need for the 
  physical space required for the building and maintaining as is the case with 
  traditional libraries.

- Overcome time, space and language barriers: Digital libraries break the 
  time space and language barriers. In digital library, several users can use
the same information at the same time that is not possible in traditional libraries.

- **Standard and quality:** Digital libraries are able to prevent the irrelevant information.

- **Multimedia approach:** Digital Library may contain a variety of information resources ranging from text to image, audio and video etc. So unlike traditional libraries users of digital libraries may build their own personal collection(s) by using the facilities provided by digital libraries.

- **Independence:** Users of digital libraries may be distributed anywhere in the globe but often several different levels of services have to be designed to meet the requirements of ideal as well as remote users.

- **Advanced searching and retrieval facilities:** Digital libraries provide advanced searching and retrieval facilities.

- **Use of Resources:** Digital Information resources can be used and viewed by several users with reference to their individual requirements.

- **Accessibility:** It can be accessible from anywhere, home, school, libraries etc. with 24/7 accessibility.

- **Global infrastructure:** Digital Libraries handles multi-lingual information resources for building a truly global infrastructure.

- **User friendly interfaces**

- **Greater opportunity for publishing:** access national and international journals which are being published only in machine readable form
Preservation and Conservation: Digitization is not a long-term preservation solution for physical collections, but does succeed in providing access copies for materials that would otherwise fall to degradation from repeated use.

Usage of electronic information will be increased and usage of print material will decrease.

1.1.5 Importance of Digital Library:

- DL brings the library to the user
- Improved access: searching and browsing
- Information is always available – anytime, anywhere, any format
- Wider and simultaneous access
- Allow collaboration and exchange of ideas
- Improved preservation
- Better content management
- Helps in Resource sharing and library consortia
- Helps to reach users at faster rate through online
- Minimum time to access information.
- Provides bibliographical or full text, retrospective as well current information.
- Support both formal and informal learning
- Greater opportunity for publishing
- DLs may save money
1.1.6 Challenges - Digital Library:

- Rights management
- Data security issues
- Content complexity
- Content management
- Inter-operability
- Content delivery (network bandwidth)
- Social issues (attitudinal changes, digital divide)
- Lack in expertise

**Preservation**: Usability, Authenticity, Discoverability & Accessibility

Ensuring long-term access to digital information is a complex challenge that includes issues such as:

- Storage media instability and deterioration
- Technology obsolescence and incompatibility (at the level of: hardware, system software, application software, data and file formats, storage media readers and drivers)
- Lack of metadata which results in the failure to locate information, the inability to render and retrieve the information, or the inability to attribute meaning or value to the information due to the lack of contextual information
- Lack of clearly assigned responsibilities and resources for long-term preservation
Libraries are struggling with how to preserve digital content. A document printed 25 or even 50 years back can be still read. We cannot guarantee the same for the digital content created only recently. In digital era, preservation of information becomes more complex task. Digital content is fragile and faces many threats including technological obsolescence and deterioration of digital storage media.

According to Paul Conway (1996) “As our capacity to record information has increased exponentially over time, the longevity of the media used to store the information has decreased equivalently.” For example illuminated manuscripts have lasted for over 1000 years, but a CD will degrade in as little as 15 years.

Perhaps an even greater threat than the deterioration of storage media is technological obsolescence. In an article title, Digital Longevity: the life span of digital files, Julian Jackson states “the rate of change in computing technologies is such that information can be rendered inaccessible within a decade.”

In many cases software upgrades may not support legacy file formats, and without the intervention of digital preservation techniques the information will no longer be accessible.

1.2 Significance of the study:

Presently, every academic and research document is first created in digital form, even if it is eventually published and preserved on paper. Reason behind it, is to improve access and re-use of digital materials. Even though, the investment in the creation of digital materials is threatened by the rapid change in computer software and hardware technologies.
According to Wilson (2007), computer systems and software applications change so rapidly that there is no guarantee that the existing data sources will be accessible and usable on future computing platforms or software versions.

Backup goes beyond saving digital content on storage medium and maintaining them. Not single backup strategy is appropriate for all data types, situations or institutions. Every institution has its own requirements and problems, require different strategy to resolve it. Backing up and maintaining digital content on storage medium alone will not enable the stored digital content to remain usable over long-term. There must be ‘active intervention’ to make sure that the digital content stored in storage media can be located, accessed and used over long-term period. Rosenthal et.al (2005) and Gladney (2007) also observed that digital objects will cease to be accessible without active management and intervention.

The rate at which research and academic institutes continue to digitize their collections and create new digital objects, in some cases without print copies is alarming. This is of great concern particularly since there is no backup policy or any national or institutional framework for backup in digital library/institutional repository/digital archive. There is urgent need to work in this direction; otherwise these institutes will lose their invaluable digital asset.

Prevention is always better than cure and

By failing to prepare, we are preparing to fail. - Benjamin Franklin

These two valuable sayings suit this situation. Backup policy is essential in any institute. Considering its importance that it guards institute against any
potential risk or problem and suggests some solution to minimize the impact of that potential disaster, speedy recovery, helps the staff to take decision quickly, effectively and efficiently in case of any emergency. It definitely provides a chance of better recovery because if there is no planning we are not left with any option but to vanish.

In this context ‘proper backup practices’ plays vital role in preservation of digital collection. Some electronic resources are backup on institution managed server and networks; some are not. Indeed, some of the most valuable data is stored on local hard drives and is backed up irregularly by the individuals responsible for those computers.

If the digital content is to be preserved, libraries need to establish best practices for backing up. For that creators need to be more proactive about backing up their work.

Libraries should create such backup policy which is multipurpose mechanism. That will safeguard the digital material libraries holds, provide quick and easy access as well as ensure that human errors, disasters and technological advances do not undo the library efforts.

Considering importance of backup in digital preservation, researcher decided to work on backup practices in digital libraries. The study helps in knowing present backup practices, backup devices, backup methods, online backup services and issues in taking backup. It is important to understand and develop sound theoretical and operational knowledge about backup for digital preservation.
1.3 Statement of the problem:

“Backup practices in digital libraries of research and higher learning institutes in Gujarat”

Working definition of terms used:

Backup:

In data processing, to make a second copy of an important data file in case the original is lost, damaged, or destroyed. Also refers to computer files, equipment, and procedures created and maintained specifically for use in the event of loss or failure of normal systems. In a more general sense, any strategy designed to be implemented if a preferred method or system fails.

(ODLIS: Online Dictionary for Lib & Inf. Science, 2013)

A copy of information held on a computer that is stored separately from the computer.

(Cambridge Dictionary Online, 2013)

In information technology, a backup, or the process of backing up, refers to the copying and archiving of computer data so it may be used to restore the original after a data loss event. The verb form is to back up in two words, whereas the noun is backup.

(Wikipedia, 2013)

Digital library:

Digital refers to any resources which are in digitized or electronic form. Internet is gateway for digital information. Digital information can be stored in computers and accessed remotely via internet or intranet.

Digital library can be defined as computer based information systems for acquiring, processing, storing, organizing, searching and distributing knowledge.
Library consisting of digital materials and services.

According to William Arms (2000) “An informal definition of a digital library is a managed collection of information, with associated services, where the information is stored in digital formats and accessible over a network. A crucial part of this definition is that the information is managed. A stream of data sent to earth from a satellite is not a library. The same data, when organized systematically, becomes a digital library collection.”

The Digital Libraries Federation (DLF) defines “Digital libraries are organizations that provide the resources, including the specialized staff, to select, structure, offer intellectual access, to interpret, distribute, preserve the integrity of, and ensure the persistence over time of collections of digital works so that they are readily and economically available for use by a defined community or set of communities.”

Ian Witten et al. defines “A digital library (DL) is an organized and focused collection of digital objects, including text, images, video and audio, along with methods for access and retrieval, and for selection, creation, organization, and maintenance of the collection.”

The digital library is

- Organized collection of multimedia and other types of resources.
- Resources are available in computer processable form.
- The function of acquisition, storage, preservation, retrieval is carried out through the use of digital technology.
Access to the entire collection is globally available directly or indirectly across a network.

Support users in dealing with information objects.

Helps in the organization and preservation of the above objects via electronic/digital means etc.

Key components of Digital libraries are:

- Geographically distributed digital information collections;
- Geographically distributed users;
- Information represented by a variety of digital objects; and
- Seamless access

Institutional Repository and Digital Archive are also forms of digital library.

So concept of institutional repository and digital archive are explain here.

**Institutional Repository:**

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

The Institutional Repository, as a concept, is to capture and make available as much of the research output of an institution (i.e. a university) as possible. In the first instance this might include material such as research papers and electronic versions of documents such as theses, but may also include many of the
digital assets generated by normal campus life, such as administrative documents, course notes, or learning objects. (Wikipedia, 2013)

**Digital Archive:**

A digital archive is a repository that stores one or more collections of digital information objects with the intention of providing long-term access to the information.

Digital archiving includes all of the processes associated with selecting, acquiring, describing, managing, preserving and providing access to digital collections.

**Research and higher learning institutes:**

A research institute is an establishment endowed for doing research. Research institutes may specialize in basic research or may be oriented to applied research. Although the term often implies natural science research, there are also many research institutes in the social as well, especially for sociological and historical research purposes.

**Higher learning:**

Education or academic accomplishment at the college or university level.

**Institutes:**

Often they are research organizations (research institutions) created to do research on specific topics. An institute can also be a professional body.

In some countries institutes can be part of a university or other institutions of higher education, either as a group of departments or an autonomous
educational institution without a traditional university status such as a "university Institute".

An organization having a particular purpose, especially one that is involved with science, education, or a specific profession. e.g. "a research institute"

In short, Research and higher learning institutes are engaged in research or /and higher education.

**Gujarat:**

Gujarat is a state in the North-West coast of India. It is known locally as Jewel of the West. It has an area of 196,204 km (75,755 sq mi) with a coastline of 1,600 km (990 mi), most of which lies on the Kathiawar peninsula, and a population in excess of 60 million. The state is bordered by Rajasthan to the north, Maharashtra to the south, Madhya Pradesh to the east, and the Arabian Sea as well as the Pakistani province of Sindh on the west. Its capital city is Gandhinagar, whilst its largest city is Ahmedabad. Gujarat is home to the Gujarati-speaking people of India. (Wikipedia, 2013)

Gujarat – The Land of the Legends, stands bordered by Pakistan and Rajasthan in the north east, Madhya Pradesh in the east, and Maharashtra and the Union territories of Diu, Daman, Dadra and Nagar Haveli in the south. The Arabian Sea borders the state both to the west and the south west. (www.gujaratindia.com, 2013)
1.4 Objectives of the study:

The objectives of the present study are as follow:

1. To know backup practices in libraries.
2. To identify backup devices and services (or backup tools) used by libraries.
3. To find out obstacles in taking backup.
4. To suggest standard backup practices to libraries.
5. To design backup policy for libraries.

1.5 Hypotheses of the study:

The present study is based on following hypotheses

1. Majority of libraries have faced data loss experience.
2. All libraries have backup policy.
3. Multiple backup methods are practiced in almost all libraries.
4. In majority of libraries, multiple backup devices are being used.
5. In most of libraries, online backup services are used.
6. Almost all libraries face problems in taking backup.
7. All libraries provide training to concerned person about latest backup technology.

1.6 Scope and limitation of the study:

Scope:

The scope of the present study is to examine backup practices & to get information about backup devices, backup methods, and online backup services and to identify obstacles occurring to it.
Chapter 1

Introduction

The study is restricted only to the libraries of research and higher learning institutes in Gujarat.

For the study, selected those libraries of research and higher learning institutes which have good collection of digital resources and/or digital archive or institutional repository and taking backup for preservation of such digital resources. After preliminary survey, five research institutes and seven higher learning institutes were selected.

**Research and Higher Learning Institutes are:**

1. Electronic Multimedia Research Centre (EMRC), Ahmedabad
2. Indian Space Research Organisation (ISRO), Ahmedabad
3. Institute for Plasma Research (IPR), Gandhinagar
4. Physical Research Laboratory (PRL), Ahmedabad
5. Central Salt & Marine Chemicals Research Institute (CSMCR), Bhavnagar
6. Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT), Gandhinagar
7. Indian Institute of Management Ahmedabad (IIM-A)
8. Mudra Institute of Communications (MICA), Ahmedabad
9. Nirma University (NU), Ahmedabad
10. Pandit Deendayal Petroleum University (PDPU), Gandhinagar
11. DLISc., Sardar Patel University (SPU), Vallabh Vidyanagar
12. Sardar Vallabhbhai National Institute of Technology (SVNIT), Surat
Chapter 1

Introduction

Limitation:

There are large numbers of research and higher learning institutes in Gujarat. But libraries of these institutes are not developed. Fully digital library is not available in Gujarat. There are hybrid libraries; having both print and digital resources; vary in size & collection, status of digitization, ICT infrastructure etc. And also not fit in research criteria decided for the study. Therefore it was not possible to take up all the libraries of research and higher learning institutes in Gujarat. So depending upon selected criteria 12 libraries of those institutes comparable, well established and having good collection of digital resources as listed above are selected. These libraries are leading in adopting emerging technologies, and taking new initiatives & practices. Thus these libraries are in better state of affairs of backup of their important data and preserve them safe and secure place.

For the study 12 questionnaires were distributed but response given by only 10 libraries of research and higher learning institutes. [CSMCRI, Bhavnagar & SVNIT, Surat did not give response.] So researcher has analysed data of only 10 libraries.

1.7 Research Methodology:

The research method applied to carry out the study is descriptive survey method. Primary data required for the study was collected through questionnaire; however, gaps were filled through the use of other techniques such as interview, schedule and observation. Secondary data collected on the basis of survey of
literature regarding topic and from the documents available on backup policy and strategies at national and international level.

Researcher carried out a relevant literature survey to acquire an advances and trends pertaining to the area of the study.

Researcher discussed with library & information science professional, subject experts and computer professional to collect the basic information.

Researcher visited ERP Data centre, BSNL and HCP Design and Project Management Pvt. Ltd., Ahmedabad to get information about backup practices.

Based on that researcher prepared draft of questionnaire covering all essential aspects of backup.

Before the survey, Pilot study was conducted to ensure the respondent’s ability to understand the questions given in the questionnaire without any ambiguity of language, concepts & terms used in the questionnaire.

Based on pilot study, changes made wherever it was felt necessary. As per the suggestions made by the librarians, subject experts and computer professionals, the questionnaire was modified and distributed to libraries.

The collected data has compiled in suitable tabular form and analysed by using MSExcel 2007 for each facet on which the information was solicited and conclusions were drawn from them.

The references have been cited according to APA style using website ‘citationproducer.com’
1.8 Organisation of the study:

The present study has been organized into following six chapters:

1. **Introduction** deals with Digital library; its emergence, characteristics, importance & challenges of digital library, importance of the study, statement of the problem, working definition of terms used, objectives of the study, hypothesis of the study, scope of the study with limitations, research methodology and organisation of the study.

2. **Review of literature** includes an extensive review of available literature on different aspects related to digital preservation and backup. The different sections included in this Chapter are- Digital Preservation; need for digital preservation, definition & meaning of digital preservation, preservation strategies, preservation initiatives & Backup; backup devices & its issues, backup methods, backup process backup policy and Related Studies etc.

3. **Research methodology** deals with different method followed in the study. The study is based on survey method using questionnaire, and other techniques like schedule, interview and observation etc. for data collection. It includes literature survey, population of the study, criteria used for selection of libraries, data collection methods, pilot study, style used for bibliographical references etc.

4. **Backup practices for digital preservation** provides information about digital preservation including definition & meaning, threats to digital preservation, strategies for digital preservation, preservation system, Digital Preservation Initiatives etc. This chapter focus on Backup practices
covering definition of backup, importance of backup, types of backup, 
backup devices, backup software, online backup services, backup 
procedures, error checking procedures, evaluation of content, storage of 
backup and backup policy etc.

5. *Data analysis & interpretation* presents detailed analysis of data obtained 
through survey, which have been presented using tables & graphs with 
their interpretations.

6. *Findings and suggestions* Based on the data collected & its analysis,
Chapter provides findings, hypothesis testing, fulfilment of objectives and 
suggestions. Suggestions for further research have also been included in 
this chapter.
References:


