Information Sources and Services

Unit-1: Reference Service:

Definition, need, scope. Reference service in public libraries, special libraries and academic libraries. Types of reference service – Orientation of a freshman, Ready Reference Service and Long Range Reference Service. Reference Process. Information Kiosks

Unit-2: Information Services:

Definition, need, scope. Reference service vis-à-vis Information Service. Methods of dissemination of information – Current Awareness Service. SDI. Referral. Kinds Of Reference And Information Sources; Information Sources – Documentary & Non-Documentary, Primary, Secondary and Tertiary Sources. Evaluation of reference sources. Searching Information from different Reference Tools / Sources -- Strategies.

Unit-3: Reference Sources:

Dictionaries, Encyclopedias, Almanacs, Year Books, Directories, Handbooks, Manuals, News- Summaries, Concordances, Biographical, Geographical Information Sources, Electronic Resources

Unit-4: Bibliography:

Meaning, scope, functions. Kinds: Enumerative / Systematic, Analytical, Historical, Textual, and Descriptive. Types: Retrospective and Current. General, Special, National (INB and BNB), Trade, subject. Preparation of bibliographies. Documentation list. Bibliographic Control -- Meaning, purpose, UBC and UAP.

Unit-5: Abstracting Services:

Abstract : Meaning, use. Types: Indicative and informative. Parts of an Abstract. Abstracting Services / Products. – Examples from different subjects. Indexing Services Index : Meaning, use. Indexing Services / Products – Examples from Different Subjects – Citation Indexes. Citation of Documents – Purpose.

References:

Osborne, Larry N. and Nakamura, Margaret. System analysis for librarians and information professionals. 2nd ed. Engewook: Libraries unlimited, 2014.

Satyanarayana, N R (2012) Ranganathanism and Knowledge Society: Relevance of Dr. S.R. Ranganathan in the Present Day Knowledge Society

Course material prepared by

Dr. P. Balasubramanian,

M.A.,M.B.A.,M.C.A.,M.L.I.Sc.,M.phil., PGDPR,Ph.D.

University Librarian & Head

Department of Library and Information Science,

Manonmaniam Sundaranar University, Tirunelveli-627 012,

UNIT- 1

TYPES OF INFORMATION SOURCES

Introduction:

In unit one, we have learnt about different types of information sources, their development and how they are organized based on their information contents and form. In this lesson, you will learn in detail about each of these sources, their actual information content, utility and examples. You will also learn how to use them effectively to provide services to the users. The Lesson will also deal with the advantages and limitations of information sources in print and electronic form.

Objectives:

After studying this lesson, you will be able to: -

→ List various types of information sources;
→ Explain the difference between periodicals and serials; journals and magazines; and newspapers;
→ Discuss reports, standards and patents as sources of information;
→ Explain the role of secondary periodicals and bibliography in accessing primary sources of information;
→ Distinguish between a book and a manuscript;
→ Explain the difference between a pamphlet and a book;
→ Describe a typical book and its parts;

1.3 Information sources: concept and need of information

Information is processed, organized and structured data. It provides context for data and enables the decision-making process. For example, a single customer's sale at a restaurant is data – this becomes information when the business can identify the most popular or least popular dish.

More technically, information can be thought of as the resolution of uncertainty; it answers the question of "What an entity is" and thus defines both its essence and the nature of its characteristics. The concept of information has different meanings in different contexts. Thus the idea becomes synonymous with notions of constraint, communication, control, data, form, education, knowledge, meaning, understanding, mental stimuli, pattern, perception, proposition, representation, and entropy.

Information is associated with data. The difference is that information resolves uncertainty. Data can represent redundant symbols but approaches information through optimal data compression.

Information can be transmitted in time via data storage, and space, communication and telecommunication

An information source is a person, thing, or place from which information comes, arises, or is obtained. Information sources can be known as primary or secondary. The source might then inform a person about something or provide knowledge. Information sources are divided into distinct categories: primary, secondary, tertiary, etc.

I**nformation need** is often understood as an individual or group's desire to locate and obtain information to satisfy a conscious or unconscious need. It is rarely mentioned in general literature about markets, and it is a common term in information science. Information needs are related to but distinct from information requirements. They are studied for:

1. The explanation of observed phenomena of information use or expressed need;
2. The prediction of instances of information uses;
3. The control and improvement of the utilization of information manipulation of essential conditions.

The concept of information needs was coined by an American information journalist Robert S. Taylor in his 1962 article "The Process of Asking Questions," published in *American Documentation* (renamed *Journal of the American Society for Information Science and Technology*).

In this paper, Taylor attempted to describe how an inquirer obtains an answer from an information system by performing the process consciously or unconsciously; also, he studied the reciprocal influence between the inquirer and a given scenario.

According to Taylor, information need has four levels:

1. The conscious and unconscious need for information does not exist in the remembered experience of the investigator. In terms of the query range, this level might be called the "ideal question" — the question which would bring from the ideal

system precisely what the inquirer, if he could state his need. It is the actual, but unexpressed, need for information

2. The conscious mental description of an ill-defined question. At this level, the inquirer has a conscious information need in mind and might talk to someone else in the field to get an answer.
3. A researcher forms a rational statement of his question. This statement is a sensible and unambiguous description of the inquirer's doubts.
4. The question is presented to the information system.

There are variables within a system that influence the question and its formation. Taylor divided them into five groups: general aspects (physical and geographical factors); system input (What type of material is put into the system, and what is the unit item?); internal organization (classification, indexing, subject heading, and similar access schemes); question input (what part do human operators play in the total system?); output (interim feedback).

Herbert Menzel preferred demand studies to preference studies. Requests for information or documents that were made by scientists in the course of their activities form the data for demand studies. Data may be in the form of records of orders placed for bibliographies, calls for books from an interlibrary loan system, or inquires addressed to an information centre or service. Menzel also investigated user study and defined information-seeking behaviour from three angles:

1. When approached from the point of view of the scientist or technologists, these are studies of scientists' communication behaviour;
2. When approached from the point of view of any communication medium, they are use studies;
3. When approached from the science communication system, they are studies in the flow of information among scientists and technologists.

William J. Paisley moved from information needs/uses toward solid guidelines for the information system. He studied the theories of information-processing behaviour that will generate propositions concerning channel selection; the amount of seeking; effects on productivity of information quality, quantity, currency, and diversity; the role of motivational and personality factors, etc. He investigated a concentric conceptual framework for user

research. In the framework, he places the information users at the centre of ten systems, which are:

1. The scientist within his culture.
2. The scientist within a political system.
3. The scientist within a membership group.
4. The scientist within a reference group.
5. The scientist within an invisible college.
6. The scientist within a formal organization.
7. The scientist within a work team.
8. The scientist within his head.
9. The scientist within a legal/economic system.
10. The scientist within a formal.

1.4 Types of information sources: Documentary

The documentary source is an essential source of information for a researcher. A document is anything in writing a record, files or diaries, published or unpublished, which can be extracted and used in research. It is a valuable source of information for study either in management or social sciences. It may comprise office files, business and legal papers, biographies, official and unofficial records, letters, proceedings of any courts, committees, societies, Assemblies, and Parliaments, enactments, constitution, reports of surveys, or research of commissions, official statistics, newspaper editorials, unique articles, company news, cases or company directors' information, etc. Documentation is the process of collecting and extracting the documents which are relevant to research.

i) Primary source

Primary sources are first-hand documents that provide direct evidence on your topic. The Library of Congress refers to them as the "raw materials of history — original documents and objects created at the time under study. They are different from secondary sources, accounts or interpretations of events created by someone without first-hand experience."

A primary source is most often created when the events you are studying occurred, such as newspaper articles from the period, correspondence, diplomatic records, original research reports and notes, diaries etc. They may also include items created after the events but recounted them, such as autobiographies and oral histories.

Table 1.1

Types of primary source

Original documents	**Creative works**	**Relics and artefacts**
Diaries	Artworks	Pottery
Speeches	Novels	Decorative arts
Correspondence	Poetry	Clothing
Interviews	Music	Buildings
Manuscripts	Architectural drawings/plans	Textiles
Government documents	Photographs	Needlework
News film footage	Film	
Archival materials		
Autobiographies		

a. Periodicals

A periodical is defined as a publication with definite periodicity, e.g., weekly, fortnightly, monthly, or quarterly under the same title, and intended to be brought out indefinitely. Each issue is dated and consecutively numbered. All the problems in a volume have continuous pagination. A periodical consists of a collection of articles contributed by different authors. Periodicals are also called journals. A 'serial' can be defined as any publication issued in successive parts intended to be continued indefinitely. Standard serials include research periodicals, trade and business periodicals, newsletters, newspapers, popular magazines, almanacks and yearbooks, annual reviews, indexing and abstracting periodicals. Multivolume books and encyclopaedias are not serials, as they cease publication once the last volume of the series is published. The information in periodicals is timely, current and up-to-date than in books. Periodicals are of many types, such as scholarly periodicals, trade and

business periodicals, popular periodicals and magazines. Scientific journals were the first ones to appear on the scene. In this lesson you will study about following periodicals: -

→ Scholarly Periodicals;
→ Trade and Business Periodicals;
→ Popular Periodicals;
→ Magazines; and
→ E-Journals

b. Scholarly Periodicals

Scholarly periodicals are published by learned societies, R&D organizations, universities, and reputed commercial publishers. These are better known as journals that generally publish research findings and are peer-reviewed. Because of the rigorous evaluation process, these publications are also referred to as refereed or peer-reviewed journals. Each article in such journals becomes a permanent record of that subject. Some of the basic features of such journals are given below.

- ✓ The purpose of a scholarly journal is to report original and significant research in a particular discipline. These journals are the primary source of information and are also called primary periodicals.
- ✓ These periodicals are the best source of information on new or current topics.
- ✓ Articles are written by researchers, professionals or experts in the field. The pieces are primarily technical and cannot be understood by readers who lack the subject background.
- ✓ These journals are meant for a scholarly audience and are called academic journals.
- ✓ Typically, these journals do not carry any advertisements.
- ✓ Each issue is consecutively numbered, and all the problems in a volume have continuous pagination.
- ✓ A scholarly journal article often has an abstract (a descriptive summary of the article) before the article's main text.
- ✓ Each article has the address of the author/s
- ✓ Articles always cite their sources in the form of bibliography or footnotes
- ✓ These bibliographies contain references to other scholarly writings.

(b) Trade and Business Periodicals

Trade organizations and commercial publishers publish trade and business periodicals.

- ↗ These periodicals cover articles, news, trends and issues for specific businesses and industries.
- ↗ Authors can be professionals in the field or journalists working for the publisher.
- ↗ Articles cover industry trends, new products or techniques. The journal also covers organizational news.
- ↗ There are lots of advertisements related to specific industries or trade. Index to the advertisers is also included.
- ↗ The periodical is published chiefly on glossy paper and has colourful illustrations.
- ↗ Though the language of the articles tends to be related to terms specific to industry or trade, the pieces are written for a general educated audience.

Popular Periodicals:

Popular periodicals are devoted to a particular subject area and contain articles written in simple language.

- → Popular periodicals are meant for the general public who do not have specialized knowledge of a particular subject.
- → These are published to inform, educate and entertain the public
- → The purpose of popular periodicals in areas of science and technology is to popularize science.
- → These are published by R&D organizations, government departments and commercial publishers.
- → Articles are primarily short and sometimes do not contain references.

E-Journals

E-journal can be defined as any serial produced, published and distributed nationally or internationally via electronic networks. E-journals are also known as paperless journals and online journals. E-journal on CD-ROM is like having a printed journal in the library. However, it requires a computer and requisite software to read. It has many advantages over a print journal. With its storage capacity of over 250,000 pages, CD-ROM can provide the full

text of individual or collected journals of various subjects. Online journals or e-journals on the Internet can be accessed remotely at any time and from anywhere.

Newspapers:

Newspapers publish recent happenings on a nation's political, social, and economic front or region. Newspapers are of different kinds. Some are local or regional in orientation and coverage, and others are national or international. Some newspapers specialize in economic and financial matters and bring out an in-depth analysis of trade, banking, commerce, etc. Basic features of general newspapers are as follows: -

→ Published daily, weekly or bi-weekly.
→ Coverage includes news, current events, advertising and topics of human interest.
→ The primary purpose is to inform, explain, influence and entertain readers.
→ Authors are free-lancing writers or journalists but can also be scholars.
→ Articles are generally short. Language is simple and designed to meet a minimum education level.
→ Articles are generally illustrated with colourful photographs.
→ Advertising can be moderate to heavy.
→ Examples of newspapers: -Times of India: Published daily and has an online edition.
→ Hindustan Times: Published daily and has an online edition

Technical Reports:

After researching a well-defined research area, technical reports are produced, mostly in science and technology. Such research is usually sponsored by government organizations, industries or other agencies. The researcher researches funding bodies, write research results in a technical report and submits them to the sponsoring agency. Technical reports are primary sources of information.

Conference Papers:

A conference is a gathering/meeting sponsored or organized by a learned body where information is exchanged or discussed by experts in a particular subject or field. Thousands of conferences are collected on various issues every year, where experts present their papers. After the conference is over, the conference proceedings are published, containing the papers

presented in the forum, discussions, minutes of the meeting, and resolutions adopted. Conference proceedings have several research papers and are primary sources of information.

Dissertations and Thesis:

A dissertation or a thesis is a document submitted by a researcher in support of candidature for a degree or professional qualification. In some universities, dissertation and thesis are seen as the same. In some universities, a dissertation and thesis are presented at the end of masters and PhD, respectively. Both report original research and are considered primary sources of information.

Patents:

A patent is granted by a government, which gives a person or a sole company rights to make, use or sell a new invention (a product, process or design) for a certain number of years. Individuals and companies engaged in R&D activities protect their inventions by patenting them to the government. The government grants the patent and publishes the patent details through an official publication. Indian patents are issued in the Gazette of India, Part 3, and Section 2. Patent documents are primary sources of information.

ii) Secondary source

Secondary Sources are accounts written after the fact with the benefit of hindsight. They are interpretations and evaluations of primary sources. Secondary sources are not evidence but rather a commentary on and discussion of evidence.

The various types of secondary sources are

- Bibliographies
- Biographical works
- Commentaries, criticisms
- Conference proceedings
- Essays or reviews
- Histories
- Literary criticism such as journal articles
- Magazine and newspaper articles
- Monographs, other than fiction and autobiographies
- Reprints of artworks

- Textbooks (could also be considered tertiary)
- Websites (could also be considered primary)

Bibliographies:

A bibliography is a systematic list of documents that share a common factor: a subject, a language, a period, an author, or other criteria. The list may be comprehensive or selective. Some order arranges the list. Such bibliography, known as enumerative or systematic bibliography, attempts to record or index. Each entry provides bibliographical details of the document.

Secondary Periodicals:

Secondary periodicals regularly scan the literature published in primary sources, select the relevant items, arrange them in helpful sequence and bring them to the notice of researchers at weekly, fortnightly or monthly intervals. These publications contain bibliographical references of each item with or without abstracts. A secondary periodical with abstract is an abstracting periodical and without an abstract is an indexing periodical. These publications bring together recently published literature in specific subject disciplines scattered over a wide range of primary sources.

Indexing Periodicals:

The relevant items with full bibliographical details are selected from primary sources and arranged under broad subject headings or class numbers in indexing periodicals. This arrangement brings all the things on the same subject together. Bibliographical information helps the reader to identify and locate the original document. For example, suppose the paper is a journal article. In that case, bibliographical details will provide the name(s) of the author(s), the article's title, the title of the journal, its volume number, issue number, year of publication and the page numbers of the article. The indexing periodical also provides author and subject indexes of the items covered.

Abstracting Periodicals:

In an abstracting periodical, the contents of the selected items are condensed or summarized (called abstracts) along with bibliographical details of the document, which help the reader identify and locate the original document. The article's abstract helps the user decide whether to read the full document or not. At times a well-prepared abstract serves as a

substitute for the original document. Abstracting periodicals also provide author and subject indexes.

iii) Tertiary source

A tertiary source presents summaries or condensed materials, usually referencing the primary and secondary sources.

Types of the tertiary source are

- Almanacks
- Abstracts
- Dictionaries
- Encyclopaedias
- Handbooks

1.5 Characteristics of Primary Sources:

The following are the characteristics of primary sources:

Primary sources are the sources of information on which other research is based, such as surveys, interviews, fieldwork, original articles, etc.

They present information in its original form, not interpreted, condensed, or evaluated by other writers. Primary sources contain raw, authentic and unevaluated information.

They present the original report on discoveries or share new information, such as a report of scientific work.

They come as first-hand information from the source or person.

They are unfiltered through interpretation or evaluation and are records of the first-hand observation of an event, original work of fiction, art etc.

Examples of Primary Sources:

The following are examples of primary sources:

(a) Government documents

(b) Patents

(c) Standards

(d) Journal articles

(e) Autobiographies, diaries and memoirs

(f) Speeches

(g) Technical reports

(h) Web internet: Website that publishes the author's finding or research Internet communication on e-mail, etc.

(i) Survey research

(j) Proceedings of meetings, conferences and symposia

(k) Dissertation/theses

(l) Historical documents

(m) Films, photographs, video recording (e.g. TV programmes)

(n) Work of art, music, architecture, literature

(o) Newspaper articles

(p) Research reports, reporting results generated by experiments

(q) Trade literature

1.6 Secondary Sources:

The scattered primary information is collected and arranged in the secondary sources systematically. Secondary sources are the sources that are compiled from primary sources. They analyze, interpret and discuss information about the primary sources. Information is not original, but it is analyzed or interpreted. Secondary sources do not carry new and original information but guide the users to primary sources of information. They organize the primary sources in a convenient form. Primary sources are the essential sources of authentic information, but most are not systematically organized and difficult to consult. On the other hand, data in secondary sources is usually modified, selected or reorganized in such a way that they are easy to consult Secondary sources help the user to locate the information

Secondary sources are more easily and widely available than primary sources. It is difficult to find information from primary sources directly. It can be found with the help of

secondary sources. The secondary sources also serve as a bibliographical key to primary sources of information. In simple terms, a secondary source writes or talks about a primary source. If a person writes about an original work (research work), secondary sources will discuss the original work. Most of the research papers are based on secondary sources as they are built based on research or studies which others have done. Most secondary Notes sources analyze the material or restate the works of others. If someone writes about research clones by others, this writing will be a secondary source. The secondary sources can be grouped under four broad types:

i)Index Type

Indexes

Bibliographies

Indexing and Abstracting Periodicals

Current Awareness Services

ii) Survey Type

Reviews

State-of-the-Art -Reports

Critical Reviews

Treatizes

Monographs

Textbooks

iii) Reference Books

Dictionaries

Encyclopaedias

Handbooks, Manuals

Yearbooks, Almanacs

Maps and Atlases

Biographical Sources

Geographical Sources

Statistical Sources

Directories

Current Reference Sources

iv) Technical Translations

Index Type:

The word 'index' is derived from 'indicare', which means 'point out' or 'to show'. Index type of secondary sources scans the primary sources select the relevant items, and arrange them in helpful sequence for easy and quick retrieval. Under this category come indexes, bibliographies, indexing and abstracting periodicals. These secondary publications list and arrange the relevant items from the primary documents for easy and quick access. For instance, indexing and abstracting periodicals scan the current primary sources of information (like primary periodicals, research reports, conference proceedings, etc.) on a particular subject field, select the relevant items, index of each item, and arrange it in a sequence so that each item can be easily located and identified. In indexing periodicals, each item selected is arranged under broad subject headings and full details of the primary document from which it is selected. Abstracting periodicals provide a summary (called abstract) of each item selected for coverage which helps the user decide whether to go for the original document. Indexing and abstracting periodicals come out at regular intervals and keep users abreast of the current literature on a subject and serve as essential guides to the primary literature. Without them, a large part of primary literature may remain unknown and unused.

Survey Type

Publications survey the selected portion of primary literature and provide an overview of the subject, and also highlight significant literature on the subject, depict the progress of a particular field of study, or present the contents of primary literature on a topic in easy and understandable form keeping in view the specific group of users. Publications like annual reviews, advances, treatizes, monographs, textbooks etc., come under this category of secondary sources.

Reference Books:

Sources like dictionaries, encyclopaedias, directories, yearbooks, almanacs, maps, atlases, etc., come under the category of reference sources. These sources are used to find quick facts on a particular or general subject. These sources often have the subject heading in alphabetical order for finding the information quickly. These books are used for consultation and are not available for loan from a library.

Translations:

Whenever a primary source is translated for the benefit of the users who are not familiar with the language of the source, the translation becomes a secondary source. Some preliminary research periodicals in Russian, Chinese, and Japanese languages are translated into English cover-to-cover for English speaking users.

Tertiary Sources:

Tertiary sources are based on primary and secondary sources of information and serve as a key to the primary and secondary sources. Tertiary sources are usually compiled from primary or secondary sources and help the searcher select the right primary or secondary source that will be most relevant for their purpose. These publications do not carry subject information but guide the users to the source of information on that subject. Under tertiary sources of information come publications like ‘guide to the literature, ‘guides to the reference sources’, bibliography of bibliographies etc. Tertiary sources will be dealt with in detail in Unit 2 of this course.

1.7 Features of Secondary Sources

Some of the unique features of secondary sources are as follows:

(a) They scribe, interpret, analyze and evaluate primary sources.

(b) They comment on and discuss the evidence provided by primary sources.

(c) Information in secondary sources is systematically arranged and is easy to consult.

(d) Either compiled from or referred to primary sources.

(e) Information given in primal) sources are made available in a more convenient form in secondary sources.

(f) Generally, secondary sources do not contain original information. They depend upon the

primary sources for reporting and presenting the information.

(g) In primary sources, information is not arranged systematically, whereas in secondary sources, especially in reference books, information is arranged systematically (e.g., it may be alphabetical, classified).

(h) Secondary sources, especially reference books, are exclusively designed to answer specific queries. They are a collection of millions of facts.

(i) Reference books are used in the library and are for consultation only. Users are not allowed to borrow.

(j) Secondary sources contain a list of documents (bibliographies) at the end of the text. By furnishing the list, they guide the researchers back to the sources.

1.8 Types of information sources:

By form Based on their physical condition, documentary sources can be broadly grouped into:

i) Paper-based Documentary Sources
ii) Documentary Sources in other Media

Paper-based Documentary Sources

Paper-based documentary sources include published as well as unpublished sources. Published sources are those that are printed in many copies by publishers. These sources are usually priced and meant for public use. Unpublished sources are not printed. Only a few copies are produced, which are meant for restricted circulation. Examples of unpublished sources of information are theses and dissertations, technical reports, manuscripts, etc.

Documentary Sources in other Media:

As we know, documentary sources are available in a wide range of formats, including audio, audio-visual, electronic, optical, or microforms. We can categorize these into the following types: -

a) Sound or Audio Recording: Audio cassettes, audiotapes, etc.

b) Visual Images – Still: Slides; filmstrips; transparencies; photographs.

c) Visual Images – Moving: Films; videotapes; video discs, etc.

d) Artifacts and Realia: Globes; relief models, etc.

e) Electronic Media: Magnetic tapes, discs, drums, etc.

f) Optical Media: CD-ROM, DVD, etc.

g) Microforms: Microfilms, microfiche, etc.

Information sources in different formats serve different purposes. Some are used as supporting tools for teaching and learning, some for archival purposes, and others as storage devices. Additional audio-visual aids, through which one can hear and see, enhance the learning process. It has been observed that, on average, you can retain 10 % of what you read, 30 % of what you hear, 50% of what you hear and see and 90% of what you do. (Thomposon Anthony H, 1983). Visual aids such as slides, transparencies, photographs, etc., are very effective in conveying information and message, particularly to people who cannot read. Moving visual images like films, videotapes, videodiscs, etc., are more effective in information transfer than still images like photographs, transparencies, slides, etc. CD-ROM (Compact Disc Read-Only Memory) and DVD (Digital Versatile Disc) are good storage and learning devices. One CD-ROM (12 cm in diameter) can store as many as 3 25,000 pages of information. You will learn more about these sources in subsequent sections. Microforms contain reduced images of books, maps, charts or photographs. Depending upon the microfilm camera, the image can be reduced from 10 times to 210 times. Microforms presently are used to preserve the information contained in old and rare documents. For reading what is stored in microforms, you need a microfilm reader printer, which enlarges the image to be read by the naked eye and printed if desired.

Sound or Audio Recording

All of us are familiar with audio cassettes and audio tapes that we use at home for listening to music. Many publishers are offering their books in print and other media such as on CD, MP3-CD, and cassettes to enhance learning. Following are some examples of audiobooks with accompanied cassettes

b) Artifacts and Realia Artifacts are handcrafted objects made by human skill or historically and archaeologically exciting works, such as a tool and by a caveman, cave painting, etc. Realia is a term used in library science and education to refer to particular real-life objects. In education, realia are actual objects such as types of woods or fabrics used as tools in teaching.

In the library classification system, realia are objects such as coins, tools and textiles that do not easily fit into the orderly category of printed material.

Electronic Media:

Electronic media are media that require electronics or electromechanical energy to access the content by the end-user. The primary electronic media sources cover video recordings, audio, multimedia presentations, CD-ROM, and online presentations. Although the term is usually associated with content recorded on a storage medium, recordings are not required for electronic media like live broadcasting and online networking. Any equipment used in the electronic communication process (such as television, radio, telephone, desktop computer, video games, console, and handheld devices) also comes under electronic media. Electronic media may be either in digital or analogue format. Digital data is stored on both magnetic storage devices and optical storage devices.

Magnetic Storage Media:

Magnetic storage devices store data on surfaces coated with magnetic substances, including analog and digital magnetic storage media. Analog magnetic media include audio and video recordings which contain reel-to-reel tapes, audio cassette tapes and videotapes that magnetically store sound and pictures. Magnetic tapes can also store data in digital format in binary code, where only two magnetic states are needed. The polarity of the particles on the tape or disc determines if the value is zero or one. Three standard magnetic storage devices are tapes, discs and hard drives. Tapes were the first type of magnetic storage media. It is either reel-to-reel or in cartridge form. Tapes are an inexpensive type of magnetic storage, but they are slow. You must either rewind or advance the tape to access the required data. Tapes now have a limited role because magnetic discs have proved superior storage devices.

Further disc data can be accessed directly instead of data on tape, which can be accessed only sequentially. Discs like floppy discs transfer small amounts of data between computers or backup discs. Nearly all computers used to have a floppy drive, but CDs or DVDs have since replaced them. Hard drives can store a vast amount of data and are called random access devices, which means you do not have to search through a hard drive to find data before retrieving it.

Optical Storage Media:

Optical media are storage media that hold the content in digital form, and the content is written and read by LASER. These media include CD-ROM (Compact Disc Read-Only Memory), DVD (Digital Versatile Disc)) and all variations of the two formats such as CD-R, CD-RW, DVD-R, DVD-RW, etc. A DVD has more data storage capacity than a CD and has better sound and picture quality. A CD has about 700 megabytes (MB) storage capacity, whereas a DVD can store about 4.5 gigabytes (GB) of data. CD-R and DVD-R record data only once, and then data become permanent on the disc. At the same time, CD-RW and DVD-RW are rerecordable formats. The data on these discs can be erased and recorded numerous times without damaging the disc.

Microforms:

Microforms contain reduced images of books, newspapers, maps, photographs etc., for storage and preservation. In microforms, the text or pictures of the documents are photographically reduced. It is called microfilm in roll film (similar to the film in an ordinary camera). It is called microfiche when a flat card size sheet (4x6 inches). Because these images are reduced in size, microform can store a large amount of information in a small place. The process of making microfilm copies is called microphotography. The material recorded on the microfilm can be read by using a microfilm reader. This machine enlarges the image on the film and projects them onto a built-in screen. Some microfilm readers, called reader printers, can also produce a paper copy of the enlarged image. In libraries, ancient, valuable and fragile documents are often microfilmed to provide public access to these documents without any risk to the originals.

Non-documentary sources of information:

Non-documentary sources of information are those sources that are not recorded in any form.

Non-documentary sources from a substantial part of communication, especially science and technology. User's studies have underlined the importance of such sources. These sources provide information that other sources do not. There are two kinds of sources

- Formal sources of information,
- Informal sources of information.

1. Formal sources include research organizations, societies, industries, government departments, universities, consultants, etc.

2. Informal sources include a conversation with colleagues, visitors, attendance at a professional meeting, etc. Very often, the exchange or discussion would point out primary or secondary sources. Informal sources are live sources, which are extremely important in communication. If a scientist working on an experiment needs some data, he would often turn to the catalogue working in the same laboratory rather than consult a printed page. Informal sources tend to be more convenient because it is currently easier to dialogue with an expert than a bibliography or index or card catalogue or even consultation with a reference librarian. The documents essentially are monologues, but a dialogue with a human being can assist in classifying one's requirement for information.

Non-documentary sources of information are those sources that are not recorded in any form. Under this category come:

i) Humans,

ii) Organisations,

iii) Mass Media other than print media, and

iv) CyberMedia.

Humans:

Humans serve as valuable information sources for such information that has not been recorded in any form. Humans, ranging from experts to commoners, act as essential data sources depending on the required information. For instance, in case of an accident, the people present at the accident site can serve as valuable witnesses. Similarly, an expert's opinion is precious. When a researcher encounters some problem while carrying out research and a solution is immediately required, an expert may be of great help.

Organizations:

Similarly, organizations are also important sources of information. Organizations like libraries and information centres, academic institutions, R&D institutions, museums, archives, publishing houses, government establishments, etc., provide authentic, reliable and timely information in their specific areas of activity. Such information, at times, is not available elsewhere.

Mass Media:

The medium by which news, information, etc., is communicated to the general masses, i.e. the public, is called mass media. Mass media include press (newspapers, magazines, etc.), radio and television. Of these, radio and television have been found most compelling. The main advantage of television is that it brings sight, sound and action directly to users in their homes. The advantage of the radio is that people can listen to radio programmes while travelling or doing other things like driving a car or working at home. Radio stations located in various regions in the country broadcast news (local, regional, national and international), entertainment, musical, sports and educational programmes of several types. Radio stations broadcast suitable programmes for all groups, including men, women, children, farmers, professionals, handicapped, and others.

Similarly, television is the most popular mass medium offering a range of programmes through hundreds of channels. You must have noticed special television channels devoted exclusively to telecast news, movies, music, sports and games, religious discourses, tourism and travel, fashions and styles, wildlife, history, science and technology. Television channels are exclusively devoted to telecasting children's programmes, cartoon networks, active learning, active cooking, and live educational programmes for students. There is tough competition among various television agencies. Almost all events of public interest are televised live on these channels to attract viewers. To encourage viewers to participate, reality shows on these channels are also rising. Some of these reality shows encourage the participants to display their talents. Television shows like 'Kaun Banega Crore Pati', Sa Re Gama Pa, 'Jhalak Dikhla Ja', Indian Idol, etc., are examples of reality shows.

CyberMedia:

Cybermedia is another significant source of information. Media published on the Internet or in cyberspace is called cyber media. It is an interactive digital media like the Internet and differs from traditional media such as print and television. Cyberspace is the electronic medium of computer networks in which online communication occurs. Science fiction novelist William Gibson first coined cyberspace (from cybernetics and space). The word was first mentioned in his 1982 story "Burning Chrome" and was popularised by his 1984 novel "Neuromancer". During the 1990s, the primary academic community started using the term 'cyberspace' for the Internet and the World Wide Web. Time has become a conventional means to describe anything associated with computers, information technology, the Internet and diverse internet culture. Individuals can interact, exchange ideas, share

information, provide social support, conduct business, create artistic media, play games, and engage in discussions and other things on this media. The Internet allows millions of people worldwide to communicate and share information.

1.9 Reference sources

i) Encyclopaedias

An encyclopaedia (American English) is a reference work or compendium providing summaries of knowledge from all branches or a particular field or discipline. Encyclopaedias are divided into articles or entries, often arranged alphabetically by article name and sometimes by thematic categories. Encyclopaedia entries are longer and more detailed than those in most dictionaries. Generally speaking, encyclopaedia articles focus on *factual information* concerning the subject named in the article's title; this is unlike dictionary entries, which focus on linguistic information about words, such as their etymology, meaning, pronunciation, use, and grammatical forms.

Encyclopaedias have existed for around 2,000 years and have evolved considerably during that time as regards language (written in a significant international or a vernacular language), size (few or many volumes), intent (presentation of a global or a limited range of knowledge), cultural perspective (authoritative, ideological, didactic, practical), authorship (qualifications, style), readership (education level, background, interests, capabilities), and the technologies available for their production and distribution (hand-written manuscripts, small or large print runs, Internet). As a valued source of reliable information compiled by experts, printed versions found a prominent place in libraries, schools and other educational institutions.

The appearance of digital and open-source versions in the 21st century, such as Wikipedia, has vastly expanded the accessibility, authorship, readership, and variety of encyclopaedia entries.

The word encyclopaedia (encyclopaedia) comes from the Koine Greek enkyklios paideia, meaning 'general education' from enkyklios meaning 'circular, recurrent, required regularly, general'[9] and paideia (παιδεία), telling 'education, rearing of a child'; together, the phrase translates as 'complete instruction' or 'complete knowledge.'

Four major elements define an encyclopaedia: it is the subject matter, its scope, its method of organization, and its method of production:

1. Encyclopaedias can be general, containing articles on topics in every field. General encyclopaedias may contain guides on how to do a variety of things, as well as embedded dictionaries and gazetteers.[citation needed] some encyclopaedias cover a wide variety of topics from a particular cultural, ethnic, or national perspective, such as the Great Soviet Encyclopaedia or Encyclopaedia Judaica.
2. Works of encyclopaedic scope aim to convey the essential accumulated knowledge for their subject domain, such as an encyclopaedia of medicine philosophy of law. Outcomes vary in the breadth of material and the depth of discussion, depending on the target audience.
3. Some systematic method of organization is essential to making an encyclopaedia usable for reference. Historically, there have been two main methods of organizing printed encyclopaedias: the alphabetical method (consisting of several separate articles, arranged in alphabetical order) and organization by hierarchical categories. The former way is today the more common, especially for general works. However, the fluidity of electronic media allows new possibilities for multiple forms of organization of the same content. Further, electronic media offer new capabilities for search, indexing and cross-reference. The epigraph from Horace on the title page of the 18th-century Encyclopédie suggests the importance of the structure of an encyclopaedia: "What grace may be added to commonplace matters by the power of order and connection."
4. As modern multimedia and the information age have evolved, new methods have emerged for collecting, verifying, summing, and presenting information of all kinds. Projects such as Everything2, Encarta, h2g2, and Wikipedia are examples of new forms of the encyclopaedia as information retrieval becomes more straightforward. Historically, the production method for an encyclopaedia has been supported in both for-profit and non-profit contexts. The Great Soviet Encyclopaedia mentioned above was entirely state sponsored, while Britannica was invested as a for-profit institution. By comparison, Wikipedia is supported by volunteers contributing to a non-profit environment under the organization of the Wikimedia Foundation.

ii) Dictionary:

A dictionary lists lexemes from the lexicon of one or more specific languages, often arranged alphabetically (or by radical and stroke for ideographic languages), including definitions, usage, etymologies, pronunciations, translation, etc. It is a lexicographical reference that shows inter-relationships among the data.

A broad distinction is made between general and specialized dictionaries. Specialized dictionaries include words in specialist fields rather than a complete range of words in the language. Lexical items that describe concepts in specific areas are usually called terms instead of words, although there is no consensus whether lexicology and terminology are two different fields of study. In theory, general dictionaries are supposed [citation needed] to be semasiologically, mapping word to definition, while specialized dictionaries are supposed to be onomasiological, first identifying concepts and then establishing the terms used to designate them. In practice, the two approaches are used for both types. Other dictionaries do not fit neatly into the above distinction, for instance, bilingual (translation) dictionaries, dictionaries of synonyms (thesauri), and rhyming dictionaries. The word dictionary (unqualified) is usually understood to refer to a general-purpose monolingual dictionary.

There is also a contrast between prescriptive and descriptive dictionaries; the former reflect the correct use of the language while the latter reflect actual service. Stylistic indications (e.g. "informal" or "vulgar") in many modern dictionaries are also considered by some to be less than objectively descriptive.

Although the first recorded dictionaries date back to Sumerian times (these were bilingual dictionaries), the systematic study of dictionaries as objects of scientific interest themselves is a 20th-century enterprise called lexicography, primarily initiated by Ladislav Agusta. The birth of the new discipline was not without controversy, the practical dictionary-makers being sometimes accused by others of "astonishing" lack of method and critical self-reflection.

In a general dictionary, each word may have multiple meanings. Some dictionaries include each separate meaning in the order of most common usage, while others list definitions in chronological order, with the oldest use first.

In many languages, words can appear in many different forms, but only the undeclined or unconjugated form appears as the headword in most dictionaries. Dictionaries are most commonly found in the form of a book. Still, some newer dictionaries, like StarDict and the New Oxford American Dictionary, are dictionary software running on PDAs or computers. There are also many online dictionaries accessible via the Internet.

Difference between dictionary and Wikipedia

• Encyclopaedia is more concerned with general knowledge. On the other hand, the dictionary is not concerned with broad expertise and functions primarily as a writer's tool and provides the meaning and pronunciation of certain words.

• A dictionary focuses upon the grammatical structure of language. An Encyclopaedia does not focus on language at all.

• The compilation of an Encyclopaedia takes a long time. On the other hand, a dictionary collection does not take long. More and more words can be added to the dictionary in future editions.

• Dictionaries do not come in many volumes. Their words belonging to all subject areas are listed in alphabetical order and come in one comprehensive volume. Encyclopaedias come in many volumes. Sometimes each book is dedicated to a particular subject matter.

• An entry in an Encyclopaedia is long and descriptive. An entry in the dictionary is usually concise.

• An Encyclopaedia is a general, broad and informative book. It is not classified as the dictionary. Dictionaries can be classified as general purpose and specialized purpose.

iii) Thesaurus

A thesaurus is a reference work for finding synonyms and sometimes antonyms of words. Writers often use them to help find the best word to express an idea. Thesauri are used to avoid repetition of words, leading to elegant variation, which is often criticized by usage manuals: "writers sometimes use them not just to vary their vocabularies but to dress them up too much".

The word "thesaurus" comes from Latin thesaurus, which in turn comes from Greek (thesaurus) 'treasure, treasury, storehouse'. The phrase thesaurus is of uncertain etymology.

Until the 19th century, a thesaurus was any dictionary or encyclopaedia, as in the Thesaurus Linguae Latinate (Dictionary of the Latin Language, 1532), and the Thesaurus Linguae Greece (Dictionary of the Greek Language, 1572). Roget introduced the meaning "collection of words arranged according to sense" in 1852.

Difference between dictionary and thesaurus

1. A dictionary contains an alphabetical list of words that includes the meaning, etymology and pronunciation. Â A thesaurus is a book that includes synonyms and even antonyms.
2. Unlike the dictionary, the words in thesaurusÂ are arranged alphabetically (just like the dictionary) or thematically (words of similar meanings grouped).
3. While a dictionary defines a word, a thesaurus lists words with similar meanings for each entry.
4. A dictionary explains the meaning of a word and how it is spelt and used.
5. One can come across student thesauri and esoteric thesauri.
6. Apart from the English dictionaries, one can come across language dictionaries and bilingual dictionaries.
7. Some dictionaries denote specific areas, such as medical dictionaries and geography dictionaries.

iv) Geographical sources

Geography is the study of the Earth's surface and its lands, features, inhabitants, and phenomena, people's responses to topography and climate, and soil and vegetation. Geographical sources of information can be of the following types

a) Gazetteer: A gazetteer is a geographical dictionary, an essential reference for information about places and place names, used in conjunction with an atlas. It typically contains information concerning the geographical makeup of a country, region or continent, the social statistics and physical features, such as mountains, waterways, or roads. It also includes information about the location of places, dimensions of physical features, population, GDP, literacy rate, etc. World gazetteers usually consist of an alphabetical listing of countries, with pertinent statistics for each one. Some gazetteers list information on individual cities, towns, villages, and other settlements of varying sizes. Examples include The World Gazetteer, Worldwide Index, etc.

b) Guides: According to ALA Glossary of Library Terms, a guidebook has been defined as a handbook for travellers that gives information about a city, region or country or a similar handbook about a building, museum, etc.• A guide to the literature assists a user to use literature of a specific subject. It helps to evaluate and introduce literature. It emphasizes the literature of a subject rather than its content and covers secondary and tertiary sources. It presents a detailed account of the bibliographical apparatus and tools, primary literature,

agencies, etc. It is possible to follow a subject's development, status, and progress. It gives the broadest bibliographical view of the subject. A guide to the professional organization gives the address and a brief description of the organization's engagement in a particular field at the national or international level. Guides generally include guides to the literature of a subject, guides to the libraries, guides to organization etc.

c) Map: A map is defined as "a representation of a part of the whole of the earth's surface or a celestial body delineated on a plain surface, earth points in the drawing intended to correspond to geographical or a celestial position". It represents the outer boundaries of a part of the earth or the whole on a plain surface. It is a simplified depiction of a space that highlights relations between components (objects, regions) of that space. A map is usually a two-dimensional, geometrically accurate representation, usually to scale, of all or a portion of the three-dimensional earth's surface or the heavens or another celestial body. More generally, maps can be devised to represent any local property of the world or part of it. Maps are usually stored in specially designed cases which allow them to lie flat.

d) Atlas: An atlas is a collection of maps, traditionally bound into book and multimedia formats. It gives geographic features, political boundaries, and geopolitical, social, religious, and economic statistics. ALA Glossary defines an atlas as "a volume of map, plates, engraving, tables, etc., with or without descriptive letterpress". It may be an independent publication, or it may have been issued to accompany one or more volumes of text. Some cartographically commercially important atlases include Times Atlas of the World (the United Kingdom, 1920-present); Atlas Mira (Russia, 1937-present); National Geographic Atlas of the World (the United States, 1963-present); Historical Atlas of China (China). Some other atlases are thematic. Example: The Times Atlas of World Exploration.

e) Globe: A globe is a three-dimensional scale model of Earth (terrestrial globe) or another spheroid celestial body such as a planet, star, or moon. It may also refer to a spherical representation of the celestial sphere, showing the apparent positions of the stars and constellations in the sky (celestial globe).

1.10 History of Information Sources:

The description of information sources is not complete until we study how these sources have developed over some time. In this section, we shall provide you with a bird’s eye view of the history of the development of these sources. We have seen that people with some knowledge of any kind make their views, ideas, observations, experimental research

results etc., known to fellow human beings by writing or other means of communication. This practise has been followed since time immemorial. Early people probably communicated by sounds and gestures long before developing actual words. No one knows how human speech developed. Experts who study language and prehistoric ways of life have made some guesses. Many of these scholars think language began as an imitation of natural sounds, such as the barking of certain animals, howling of wind, and sound of streams or waterfalls. After language developed, people exchanged news mainly by word of mouth. Runners

carried messages over long distances. People also used drumbeats, fires and smoke signals to warn against future calamity or danger from wild animals. Paintings and drawings were the first steps towards a written language. People painted or carved on cave walls or stones series of pictures to tell a successful hunting trip or a violent storm. Gradually, people developed a system of small images to represent the most common objects and ideas. This type of writing is known as 'pictographic writing'. Middle Eastern people called Sumerians developed the first pictographic writing in about 3500 B.C. (The World Book Encyclopaedia)

Pictographic writing worked well for familiar things, but people faced difficulty writing new or unusual words. Gradually, they learnt to make each symbol represent a sound instead of an object or idea. As a result, they could write any comment in the spoken language. With the development of registered language, people could exchange written messages over long distances without depending on the memory of messengers. Written messages could also be stored for later use. With the invention of writing, prehistoric time ended, and written history began. As time progressed, the medium and method of recording information changed. Recording medium changed from cave walls or stones to clay tablets, metals (lead, copper, brass and bronze), linen, wooden boards, wax-coated wooden tablets, papyrus, parchment and vellum till the invention of paper. People in India used palm leaves. The ancient Hindu religious writings called the Vedas were initially written on palm leaves.

The invention of paper in 105 A.D. by the Chinese is a landmark in writing media history. The Chinese art of papermaking gradually spread to other parts of the world. People started using paper for writing. Earlier books were written by hand by professional writers called scribes. Most books written by hand during that period (400 A.D. – 1400 A.D.) were decorated with beautiful, colourful designs and pictures drawn on each paper. Painters frequently painted the design in colours, even in gold. Leather bindings decorated with gold, silver and precious stones indicated the value and importance of books. Because of the high

cost and time involved in making these books, the books were not available for public use. Only a few privileged ones like religious leaders or rulers belonging to royal families, etc., had access to these books.

1.11 Development of Printed Books and Other Sources:

The Chinese made the first known printed book called Diamond Sutra in 868 A.D. They printed each page from a carved block of wood. The ink was spread over the raised surfaces on the block, and the inked images were printed on paper. This type of printing was known as block printing. The book as we know it today resulted from printing with movable types. In movable type printing, each letter of the alphabet is made out of a separate piece of metal. Printers arrange the metal types in any combination to produce the text they want. They can also reuse the type. This method allowed printers to create many different pages in a shorter time than any previous printing method. The Chinese invented movable types in the 1000's and Koreans began using them in the 1300s.

Europeans developed movable types independently in the mid-1400s. There Johannes Gutenberg and his associates invented the printing process using portable types. The first book printed in Europe using movable type appeared in Mainz, Germany, from 1453 to1456 A.D. One of the first books published was a Bible in Latin. This Bible became to be known as Gutenberg Bible. With the invention of the printing press, it became possible to print books quickly and in large numbers. The books were available to the masses. Printing promptly became the most important means of mass communication. This breakthrough also paved the way for the education of the masses. Several academic institutions and libraries came up in 1600 A.D to support education, particularly in European countries. Printed books also brought many changes in libraries. Books gradually replaced manuscripts. The books were put on open shelves, not in the chest, as the manuscripts had been. By 1600, libraries had started to look like present-day libraries. Shelves of books lined the walls, and tables for readers stood in the middle of the room. During 1600 the art of printing was also used in business. Printed news sheets appeared in the Netherlands and other trading nations, mostly reporting business news like which ships had landed and what goods they carried. The new sheets also printed advertisements. These new sheets soon added non-business words and became the first proper newspapers.

The emergence of Periodicals:

In this period, the scholars and scientists who carried out research published their findings in the form of books. This medium they found was unable to disseminate research results quickly. Since each scientist had to work for years to collect enough findings to be published in a book, the only other way they communicated with their fellow scientists about their research was by writing letters to them or meeting them in conferences. They needed a formal and quicker medium to disseminate their research results to avoid duplication of research effort and establish priority in announcing their invention, which led to the publication of periodicals. The first periodical was Le Journal des scavans (Journal of Learned Men). The first weekly issue of this periodical was published in Jan 1665. It was in the French language and contained articles, letters and notes. The same year, the Royal Society of London published a monthly scientific periodical called Philosophical Transactions. The first issue was published in March 1665. It contained articles and listed important philosophical books. These two journals served as models for subsequent scientific periodicals founded by learned societies and academic institutions

The emergence of Electronic Sources:

In the late 1800s, many inventions like the typewriter, the telegraph, the telephone helped quicker dissemination of information. Telephones and telegraphs could send long-distance messages instantaneously through electric wires. Even electric cables were laid in the Atlantic Ocean to send telegraphic dispatches from the United States to England and other European countries. In 1895, inventors used a branch of science and engineering called electronics to send signals through space. In electronics, electromagnetic waves are used to carry signs, which travel through space at the speed of light. Electronics made possible the invention of the radio, television, computers and other wonders of modern communication.

The emergence of Mass Media:

Mass medium (plural mass media) is any form of communication such as the press, television, radio, and motion pictures, reaching many people. The appearance of news sheets in trading nations during 1600 and their subsequent development to newspapers was the first step towards the development of mass media. A significant advance in printing came in 1811 when a German printer named Freidrich Koenig used a steam engine to power the printing press. This invention allowed newspapers to print many copies cheaply, making the mass circulation of newspapers possible. The Times newspaper of London was the first to use

Koenig‘s press in 1814. Practical applications of electronics led to the invention of the radio in 1906 and television in 1936. Radio, television, and films are India's most powerful mass media.

The emergence of the Internet and World Wide Web:

Advances in computers and telecommunication technologies in the 20th century led to the emergence of electronic sources of information, digital or electronic libraries, the Internet and the World Wide Web. Internet is a global system of interconnected computer networks that serve billions of users worldwide. The origin of the Internet dates back to 1960 when the United States Department of Defence initiated a project to build a computer network, ARPANET (Advanced Research Project Agency Network), that could maintain itself in adverse condition. The project was started in 1968 and soon evolved into developing techniques to build an extensive scale network. At first, the goal of ARPANET researchers was to create one extensive network to connect computers over long distances. However, by the mid-1970s, it became clear that no single network would be able to serve everyone’s needs. The researchers say it would be more beneficial to develop a technology that would connect various networks into a single extensive system. This system led to the concept of an ‘inter-network’ or ‘Internet’. By the early 1970s, computer power, speed and memory increased, and so did the ability to communicate with remote computers over the existing telephone lines on the Internet. At that time, dial-up online searches on the Internet were costly. Usage of the Internet was limited until the World Wide Web or Web in the 1990s. The emergence of the World Wide Web and many Internet service providers offering Internet services to the masses resulted in a phenomenal increase in Internet usage worldwide. Thus, today’s Internet is not a single extensive computer network; it is a collection of tens of thousands of networks spanning the globe. The Internet allows millions of people worldwide to communicate and share information. You communicate by sending or receiving electronic mail, connecting someone else’s computer, and typing back and forth. You share by participating in discussion groups and using many programmes and information sources that are available free on the Internet. The World Wide Web is the dominant technology on the Internet. The World Wide Web began in 1989 as a project by high-energy physics researchers in Switzerland to distribute research results on the Internet to fellow physicists. Since then, the Web has rapidly moved into the forefront of Internet technologies. You now see hundreds and thousands of websites on the Internet

1.11 Current Awareness Services (CAS)

Modem libraries and information centres offer a variety of new documentation and information services to support Research and Development, industrial productivity, management, marketing and trade, all programmes of development of governments and institutions, etc. The volume and variety of publications coming out from all corners of the world saw a tremendous peak. This unprecedented growth of publications has posed severe problems for those involved in these activities to keep themselves abreast of current developments. It has, therefore, become necessary for libraries and information centres to design and develop new and innovative information services. Two such services are Current Awareness Services and Selective Dissemination of Information.

Types of CAS

Four types of Current Awareness Services (CAS) are described in this unit with their characteristic features. These services are Contents-by-journal, Documentation Bulletin, Research-in-Progress Bulletin, and Newspaper Clippings Services.

Contents-by-Journal Service: The library or documentation centre provides this type of service by distributing a publication containing copies of contents pages of journals in a broad subject area, e.g. medical sciences. A perfect example of a Contents-by-Journal service is the Current Contents published by the Institute for Scientific Information (ISI), Philadelphia (USA). The simplest way this can be done is to duplicate the contents pages of journal issues and circulate them individually or in a compiled form. Users. The Contents-by-Journal Service is perhaps the cheapest and quickest way of providing a degree of current awareness

Documentation Bulletins or Current Awareness Lists: These are the most predominant current awareness service notes. In this kind of service, the library or documentation centre scans primary journals and other sources of current information received in the library to identify potentially helpful articles of interest to their users. Such articles' bibliographical details are collected, classified, or grouped into broad or narrow subject groups. The collected bibliographic entries are listed under the different subject headings, class numbers, or groups at periodic intervals. The list is then duplicated and circulated to users. A documentation bulletin may include abstracts of papers listed in the publication. Current awareness lists are published or issued both by the library of an organization for use within the organization and by professional or learned bodies, international agencies and commercial organizations for

use by any user interested in the subject areas covered by the list. Examples include current-awareness lists produced by professional bodies are Chemical Titles of the Chemical Abstracts Service, and Current Chemical Papers of the Chemical Society, U.K

Research-in-Progress Bulletins: The name suggests alerts users to new research projects and progress made in ongoing research projects. Such current -awareness services usually require the joint effort of more than one organization working in similar or closely related research areas. A parent body that funds or controls a group of research organizations such as CSIR, ICAR in India could also bring out Research-in-Progress bulletins. An example of this type of service is the United States Department of Agriculture's (USDA) service, called Current Research Information System (CRIS). All USDA laboratories and. \research stations contribute their input to CRIS. A research-in-progress bulletin usually contains information about the laboratory at which the project is being done, names of principal and associate researchers, funds and sources of funds, duration of the project, and special equipment in use, if any. In addition, it includes a narrative description of the research project and progress achieved to date.

Newspaper Clipping Service: Newspapers are a current-awareness media since they publish news of recent happenings on a nation or region's political, social, and economic front. Newspapers carry helpful information from homemakers to top management of companies and cabinet ministers. Many organizations maintain newspaper clippings and have a separate section for this service. Examples include: Times of India (daily newspaper) maintains a comprehensive collection of newspaper clippings that can be referred to as and when necessary. Some libraries send copies of the clippings to identified users to keep them updated with the latest news in their area of interest.

Current Awareness Services - Characteristics

A current awareness service has the following characteristics: usually in the form of a publication attempts to bring information that is current, new or of recent origin to the attention of its users traditionally confined to a well-defined subject area or topic, though topics from related sites are also covered in the service does not seek to answer any specific questions that the user may have sometimes confined to a given type of literature, e.g. patents, standards, etc.

Review questions

1. What is an information source?

2. List out the types of information sources.

3. Explain the different types of information sources.

4. What is an encyclopaedia?

5. What is a dictionary?

6. What is a thesaurus?

7. Mention the differences between dictionary and thesaurus.

8. Define geographical sources.

9. Define Documentary information sources.

10. Explain non-documentary information sources.

11. List out the differences between dictionaries and Wikipedia.

UNIT- 2

REFERENCE SOURCES

2.1 Introduction:

Based on information content and form, we studied information sources and their categories in unit two. You have learnt that information sources can be broadly categorized as primary, secondary and tertiary sources based on their contents. Secondary sources can be further grouped as index type, survey type, translations, and reference sources. You have studied in detail the first three groups of secondary sources. This lesson will teach you the different types and importance of reference sources.

2.2 Objectives:

After studying this lesson, you will be able to:-

- → Define reference sources;
- → Explain the need for reference sources;
- → differentiate reference sources from other information sources;
- → Enumerate various categories of reference sources;
- → Define dictionary, thesaurus, encyclopaedia, yearbook, almanac, directory and biographical information sources;
- → Describe geographical information sources (maps, charts, globes, atlases, and guidebooks); identify the electronic version of various reference sources available online

2.3 Reference Sources:

In libraries, there are questions or queries all the time. The reference and information access tools are the most logical to start while providing answers. If, for example, a user asks, - "Where can I find some information about Australia ?" - an encyclopaedia is the proper source of information. Or, another user wants to know -" What are the names and addresses of some persons involved in the Chemical Industry ?" - the answer will be available in a Directory. Or a third user queries, "How can I locate a few recent articles published in the subject of Information Technology?" - indexing or abstracting journal in Information Technology - the particular subject, will be the most suitable source.

Man has been communicating through various media and formats on multiple subjects over the centuries. All this eventually led to finding information when it was wanted from various forms of materials. There is a large quantity of printed material available throughout the world today. Librarians and library users have always put up with the problems posed by the r: tented literature as it is very scattered in literary forms and various physical forms. The available literature has been classified into three broad categories by several experts: primary, secondary, and tertiary sources of information. Knowing about primary, secondary and tertiary sources is helpful as they indicate the materials' relative currency and relative accuracy.

The primary sources are the most original and current sources of information often not seen by anyone else before publication. These are in the form of journal articles, books or monographs, reports, dissertations, pamphlets, conference papers, etc. Very often, the primary source contains the research findings. To control or use primary sources in the library, we use the reference works referred to as secondary sources like the indexes, abstracts or bibliographies. An index is a secondary source if used to locate primary sources. A secondary source, thus, has information about original or preliminary data, which is usually rearranged and modified for use by users. Therefore, any work reporting about the findings of others becomes a secondary source.

The tertiary sources consist of information, a collection of primary and secondary sources of information. Any source not falling in the primary and secondary category is a tertiary source. The tertiary sources usually list all kinds of secondary sources. Another type of information source provides information of a particular query wherein a specific answer is required, such as the address or telephone number of a person or institution referred to as reference sources. Access to various information and sources is essential in reference work. The reference and information access sources are encyclopaedias, dictionaries, biographical sources, geographical sources, fact-finding sources, etc. All these are based on most of the information otherwise available but scattered and thus fall into secondary sources.

The various reference sources have been prepared and published, keeping in mind the multiple reference queries. In the subsequent sections, we will study the different kinds of reference sources that will answer various questions related to books, facts, some organizations, places, trends, current awareness, background information, spellings, meanings, statistics, etc.

Origin of Reference Books:

A reference book is designed by its arrangement and treatment for actual information items. For example, one looks up a dictionary only to find out the meanings of the words and not for continuous reading. Therefore, a reference book is published primarily for consultation rather than constant reading. We can trace the origin of reference books to man's early attempts to record thoughts, concepts, ideas and events. When man first sketched the outlines of animals he hunted on the walls of the caves where he lived, we can say that the rudimentary form of reference books had begun as he used these sketches to refresh his memory. Later on, after he learnt to read and write, a man began recording his thoughts on the clay tablets, Tamra Patra (copper plates), cloth, and leaves. Some of these are still found in many archives and museums.

Library resources continue to play an essential role in sustaining diverse cultural expressions in the education programme. Libraries acquire process, organize and preserve materials that depict life and experiences from others. The library provides reading and learning materials to help argument lectures notes with facts and ideas; it provides information service, essential in the communication process. One requires information to communicate effectively. The reference sources of the library are in the following ways.

→ Biographical Sources,
→ Year-books/Almanacs

i) Biographical sources

Biographical reference sources provide information about people who are or were well-known: their birth and death dates and descriptions of their lives and accomplishments. There are two primary sources: sketches or essays containing biographical information; and indexes that refer the user to other biographical materials.

Biographical dictionaries can be categorised by using any one characteristic at a time or by using period or time as a characteristic. They may be grouped as:

i) Current biographical information sources, and Biographical Sources

ii) Retrospective biographical information sources

From the point of view of the geographical area covered, they may be classified as,

i) Universal, and

ii) National, regional or local or institutional

Biographical dictionaries are also grouped as:

(i) General

(ii) Specialised or subject

(iii) By enders such as men and women

(iv) By language.

The biographical dictionaries available in libraries often possess more than one of my characteristics in various combinations. Examples of current universal specialised biographical dictionaries have their counterpart in existing universal general biographical dictionaries. Similar is the case with retrospective dictionaries. It would be convenient to study them under two broad heads - Current and Retrospective.

2.4 Evaluation of biological information sources

Biographical information sources are available in plenty which is being published. You will notice that not all of them provide up-to-date and reliable facts. The funds available to libraries to purchase reference works are limited. Therefore, it is essential to develop a thorough understanding of the sources before purchasing. The following criteria will help you in assessing biographical reference works.

i) Authority: The authoritativeness of a biographical dictionary can be assessed from the reputation of the publisher, editors and compilers. It will be helpful to know the qualifications and experience of editors/compilers. The learned bodies like Universities, Sahitya Academies, etc., are considered reliable authorities.

ii) Scope and Purpose: The title and preface generally indicate the scope and purpose of the work. You should find out whether the source is intended to be - general international, national or specialised in content. Whether it is comprehensive or selective and the work is retrospective or current.

iii) Selection Policy: Another important point that helps in the assessment of a biographical source is to know the criterion it uses in selecting the biographees, i.e. whether it is solely by merit, as per the decision of the publishers, by invitation, subscription, or on payment Naturally, where the entries are based on payment, the quality is bound to be poor.

iv) Methods of Compilation: Biographical tools are prepared by publishers/editors using different compilation methods. The use of the questionnaire method is quite common. The biographer himself completes the questionnaire and later checks his entry. Another compilation method is publishers researching the material themselves using all published and unpublished sources. Both methods have advantages and disadvantages.

v) Treatment: Are the biographical sketches brief or lengthy, factual or evaluative? The presentation style is another factor, viz., whether discursive or scholarly. You should look at these factors carefully. This will help your incorrect assessment of biographical information sources.

vi) Frequency of Publication: How up-to-date is the information provided about the biographer is equally essential. It will be necessary to determine whether a current biographical source is annual, biennial or irregular. Check the revised edition with the previous edition of the work is irregular. A retrospective work should have supplements. Look if the work in consideration have them.

vii) Arrangement: Entries in a biographical dictionary are generally arranged alphabetically by surname. Some, however, will have a classified or chronological arrangement with a good index. The usefulness of the meeting should be checked from the point of view of enquiries. Format: The biographical reference source is frequently used. Therefore, the physical get-up of the book needs to be checked. Are the typefaces used clear and legible? All these aspects must be borne in mind while evaluating a biographical source.

viii) Special Features: It is good to find out as to what are the distinctive features of a particular biographical reference source. This could be done by comparing with other similar work. You should check the accuracy, reliability and currency of the work. Bibliographies, portraits and photographs will enhance the value of reference work.

2.5 Yearbooks

A yearbook, also known as an annual, is a type of book published annually. One use is to record, highlight, and commemorate the past year. The term also refers to a book of statistics or facts published annually. A yearbook often has an overarching theme throughout the entire book.

Many high schools, colleges, and elementary and middle schools publish yearbooks; however, many schools are dropping yearbooks or decreasing page counts given social media

alternatives to a mass-produced physical photographically-oriented record. From 1995 to 2013, the number of U.S. college yearbooks dropped from roughly 2,400 to 1,000.

Proto-yearbooks in scrapbooks appeared in US East Coast schools towards the end of the 17th century. The first formal yearbook was the 1806 Profiles of Part of the Class Graduated at Yale College.

Yearbooks published by Australian schools follow a consistent structure to their North American counterparts. Australian yearbooks function as an annual magazine for the school body, focusing on objectively reporting the events during the schooling year. Yearbook staff predominantly consist of only one or two school teachers who serve as editors in chief. Australian school yearbooks are mainly created on A4 paper size, featuring a softcover style front-and-back cover, typically 250 or 300 g/m2 density. Hardcover style yearbooks are not as common, although exceptions occur. This is sold as allowing a higher level of student involvement whilst making the workflow more straightforward and accessible for all involved. Additionally, some schools feature a separate yearbook for students in 2020.

Australian school yearbooks are primarily published with technology, with a mix of colour, spot colour, and black and white pages, depending on the school's budget.

India does not have a long history of publishing school yearbooks. However, top Business schools and Engineering colleges publish custom yearbooks. This is typically created by the final year students of the batch. A yearbook or a memory book would consist of testimonials and standard pages such as director addresses and events picture collages.

Most top schools create schools' magazines that are shared with each student. Some of the early adopters among school students are making custom yearbooks similar to students from the US or Europe. This trend is likely to pick up with the advent of technology platforms that make it easy for students to develop them.

In Nigeria, it is widespread to find yearbooks in schools in countries such as the US and Canada, though several schools allocate annual funding and publish yearbooks at the end of the school year (July or August). These yearbooks closely resemble those in the US, with columns about specific themes, in-depth coverage of significant events, extensive collections of photos, and drawings reflecting daily life at these schools. Some schools do produce yearbooks yearly.

Depending upon the geographical area covered, year-books can be: *International or National/Regional*

Again both International as well as National/Regional yearbooks, can be grouped according to their scope:

(i) General,

(ii) Subject,

(iii) Organisational.

2.6 International Yearbooks – General

International yearbooks of a general nature are very handy, authentic and reliable manuals of descriptive and statistical information about each country of the world. They also include information about international and regional organisations such as the United Nations and the Commonwealth of SAARC. They cover descriptive and statistical surveys of each country - its area, population, constitution, government, political parties, trade and industry, communications, finance, defence, social welfare, transport, tourism, educational and cultural institutions, etc. They also give a brief list of references to the country. Some contain even biographies of internationally known personalities.

Europa Year Book: A World Survey. London: Europa Publications, 1959. Annual. 2vols.

It started publication in 1926. In its present two-volume form brought out in 1959, it provides a wealth of information about all countries of the World.

International Yearbooks - Subject

Unlike a general yearbook of international scope, a subject yearbook restricts its worldwide development in a particular subject field. It describes activities of organisations in the area, data on the subject and major trends in research in the matter.

It reveals the controversies, conflicts, and constraints encountered in promoting, developing, and protecting the environment as openly and objectively as possible.

International Yearbooks - Organisational

Yearbook of the United Nations. New York: United Nations, Dept. of Public Information, 1946/47. Annual. It summarises the activities, proceedings and decisions of the United Nations and its agencies and associated international organisations.

National/Regional Yearbooks - General

National Yearbooks provide descriptive and statistical accounts of a specific region or country. They include area, population, government and constitution, administration, economy, social welfare, commerce, communications and other significant services. They have annual events and activities of the nation. Usually, national yearbooks are government publications.

National/Regional Yearbooks - Subject

Yearbook on India's Foreign Policy/ed. by Satish Kumar. New Delhi Sage, 1982-83. Annual.

National/Regional Yearbooks – Organisational

Library Association Yearbook. London: Library Association. It contains records of various committees and sub-committees of the Association, its office bearers, a list of members etc.

2.7 Reference Sources: Directories and Handbooks:

The word dictionary comes from the Medieval Latin word dictionary (meaning collection of words or phrases), which came from the Latin term dictio meaning "word". The ancient Greeks and Romans were the first to produce dictionaries. But most Greek and Latin dictionaries were either lists of rare and complex words or specialized words. *The directory* can be defined as a book or collection of directions, rules, ordinances or an alphabetical or classified list (names and addresses).

In brief, a directory is a book containing lists of names of residents, organisations or business houses in a town, a group of villages or a country, in alphabetical order, and charge of the situation in reads, or firms in trade classifications arranged in alphabetical order; or of professional people, manufacturers or business houses in a particular tread or profession.

A modern dictionary contains words of a language arranged alphabetically with their meanings. Most dictionaries tell us much more than the meaning of the words. Many list pronunciations, grammatical labels, illustrative quotations, synonyms, antonyms, usage notes and other information. Some dictionaries also include etymology, i.e., the origin of words and history. An example of a dictionary is The Chambers Dictionary. The other reference book that deals with words are a Thesaurus. Words with similar meanings (synonyms and sometimes antonyms) are grouped in this reference book. In contrast to a dictionary, which helps find the meaning and pronunciation of the words, a thesaurus

supports finding the most appropriate word to express an idea and other related words. Example of Thesaurus: The Merriam-Webster's Thesaurus

Types of Dictionaries:

Dictionaries give the meaning of many kinds of words. Dictionaries include ordinary words of everyday life, technical terms, words used in scholarly writing, idioms, words and phrases from other languages, new words emerging from scientific and technological discoveries, important proper names and geographical names etc. No dictionary can record all the words of a language, as no language is static and new terms are coined every day in speech or writing or due to the ongoing research in various disciplines. Based on the number of words, scope and coverage of other items of information, the dictionaries can be categorized into the following groups: -

- ✓ General Language Dictionaries;
- ✓ Subject Dictionaries;
- ✓ Special Purpose Dictionaries; and
- ✓ Bilingual and Multilingual Dictionaries

General Language Dictionaries General language dictionaries cover all the words of a language and give meanings, definitions, and explanations of the words in the same vocabulary. The language may be English, French, Hindi, German or Russian. For example, an English language dictionary will include English words and give their meanings in the English language. These dictionaries are also called monolingual dictionaries. General Language Dictionary can be further divided according to size and target user group. According to size, a general language dictionary maybe

i) Comprehensive/Unabridged,
ii) Abridged/college/desk, or
iii) Pocket dictionary.

Examples:

- World directory of mathematicians, 4th ed. Stockholm, Almqvist & Wiksell, 1970.
- World guide to technical information and documentation services, UNESCO, 1975.
- World of learning, 1947-, London, Europa, 1947-, Annual.

Libraries are special folders that catalogue folders and files in a central location. A library includes and displays folders stored in different places on your PC, SkyDrive, Homegroup, or network. File Explorer comes with four libraries: Documents, Music, Pictures, and Videos. The Documents library, for example, includes files and folders from your Documents—This PC and SkyDrive (**New!**)—folders, which are stored in your Users folder. Instead of navigating to separate folders, you can quickly navigate to one central place, the Documents library. You can create additional libraries and include folders from different locations or remove them. After you open a library, you can arrange all files and folders in a library by folder (the default) or other properties based on the library type (General Items, Documents, Music, Pictures, or Videos). When you save a file to a library, specify which folder it gets stored.

Encyclopaedia:

It is a book or set of books giving information on all branches of knowledge or specific broad fields with alphabetical articles. An encyclopaedia contains information about people, places, events, and things. It may deal with all areas of knowledge or be limited to just one subject area. A general encyclopaedia includes information on topics in every field of expertise. Specialized encyclopaedias provide more detailed and technical information on a specific knowledge site such as arts, science and technology or social sciences. A specialized encyclopaedia is also known as a subject encyclopaedia. A well planned general encyclopaedia presents facts about humanity, human beliefs, ideas, and achievements, about the world people live in, and about the universe to which they belong. It presents these facts using language that is easy to understand. An encyclopaedia is concerned with the who, what, where, when, how, and why.

General encyclopaedia enriches general knowledge, provides information on general topics, and provides a bibliography at the end of articles which helps to find more information on that topic. For example, a report on ‘computer’ tells what a computer is, who developed it, and when and where. It also describes how a computer works and why it is essential for people. Different articles in an encyclopaedia vary in length ranging from a paragraph to over a hundred pages depending upon the topic covered; target audience, and type of encyclopaedia (whether single volume or multivolume encyclopaedia). Articles in the standard encyclopaedia are written by subject specialists and then edited by the

encyclopaedia staff editors to conform to policies of the publishing house in terms of content, style and punctuation. The editorial staff ensures that each article in the encyclopaedia has, more or less, a similar writing style and uses headings and sub-headings in a standard uniform pattern. Pictures and diagrams are included to clarify the concepts and enhance the learning process. Most encyclopaedias are arranged alphabetically from A to Z. Some are topically arranged. One volume may be devoted to 'Animals', another to 'Plants', 'Earth' and 'Universe', or other subjects.

Encyclopaedias can be broadly divided into two types: -

- General Encyclopaedia; and
- Subject Encyclopaedia

1. General Encyclopaedia:

General Encyclopaedia covers all fields of knowledge. For example, Encyclopaedia Britannica. 2. Subject Encyclopaedia:

Covers a single subject like Encyclopaedia of Physics or a group of topics such as Encyclopaedia of Science and Technology.

(a) General encyclopaedia can be further categorized based on

i) Size (single volume-set or multi-volume-set), and

ii) Target users (for adults, students or children).

Most of the publishers of general encyclopaedias bring out different sets of encyclopaedias for adults, students and children of various age groups. Articles in Children's encyclopaedias are written in simple language and illustrations to make the topic clear and understandable. Examples of encyclopaedias: -

Encyclopaedia Britannica is a general English language encyclopaedia published by Britannica Inc. The set contains 73,645 articles. The articles are aimed at educated adults and are written by about 100 full-time editors and more than 4000 expert contributors. It is regarded as the most authoritative and scholarly encyclopaedia. The 2010 Edition of the encyclopaedia in print consists of the following 32 volumes: -

- ✓ 12- Volume Macromedia with short articles (generally fewer than 750 words) for ready reference;

- ✓ 17-Volume Macromedia with long pieces (ranging from two to 300 pages) for in-depth study of a topic.
- ✓ One-Volume Propodea giving an outline of knowledge covered; and a
- ✓ 2-Volume Index.

Single Volume Britannica Concise Encyclopedia has 28,000 short articles condensing the larger 32-Volume Britannica. Britannica Student Encyclopedia: The 16-volume Britannica Student Encyclopaedia has more than 2,300 articles with 3,300 photos, illustrations, charts and tables to make it appealing and helpful. The encyclopaedia has 1,000 maps and flags of various countries of the world. Recent advances in information technology and the rise of electronic encyclopaedias such as Microsoft Encarta and Wikipedia have reduced the printed encyclopedia demand. The publisher of the Encyclopedia Britannica has developed electronic versions of the encyclopaedia on CD-ROM, DVD and the World Wide Web. Encyclopaedia Britannica Online contains the text of 32-volume Encyclopaedia Britannica plus additional articles and images not available in the print set. It has more than 120,000 articles. The site offers natural language searching and an A-Z browsing facility. It is continually updated to provide the most current information. It has daily features, updates, and links to The New York Times and the BBC news reports. Subscriptions are available on a yearly, monthly or weekly basis. Unique subscription plans are offered to schools, colleges and libraries. (http://www.britannica.com/)

Subject Encyclopaedias:

The subject encyclopaedia provides detailed information on a specific area of knowledge such as arts and humanities, science and technology, social sciences, etc. Thousands of subject encyclopedias range from broad subject areas to narrow subject fields. There are multi-volume as well as single volume subject encyclopaedias. Some subject encyclopaedias are meant for subject specialists, and some are for students and general readers interested in that subject. Examples of subject encyclopaedia:- McGraw Hill Encyclopaedia of Science and Technology, 10th Edition, is an English language 20-volume encyclopaedia specifically focused on scientific and technical subjects. The encyclopaedia covers life sciences, physical sciences, and topics on engineering and technology. McGraw Hill's website 'Access Science' — provides online access to this encyclopaedia. McGraw Hill Concise Encyclopaedia of Science and Technology is a one-volume set based on the whole group. The latest edition is the 6th edition, published in 2009.

(http://www.mhprofessional.com) Encyclopedia of Library and Information Science, edited by Allen Kent and published by Marcel Dekker, is a 35-volume set (33-volume main encyclopaedia and 2-volume index) providing librarians, information/computer scientists, and students of library and information science convenient access to tools and techniques of both library and information science. Over 1300 subject experts write the articles. The publisher regularly brings out supplements (each supplement contains A-Z coverage), highlighting new trends, describing the latest advances, and giving information about people making crucial contributions to this rapidly growing field. So far, 36 supplement volumes have been published (Volume- 36 to Volume- 72).

2.8 Handbook:

The dictionary defines a handbook as:

(1) A book of instruction or guidance, as for an occupation; manual,

(2) A guidebook for travellers,

(3) A reference book in a particular field,

(4) A scholarly book on a specific subject, often consisting of separate essays or articles.

- Family Planning: A Global Handbook for Providers
- FBI Handbook of Forensic Services
- First Amendment Handbook
- Handbook of Latin American Studies
- Inventor Handbook
- Occupational Outlook Handbook

A handbook contains facts about a specific subject or instructions that can accomplish something. A directory can come in several forms, such as a manual for completing tasks or a guidebook providing information about a subject, region, etc. (such as a travel guidebook). Handbooks are often designed for a quick consultation and easy portability.

A handbook is a compilation of miscellaneous information in a compact and handy form. It contains data, procedures, principles etc. Tables, Graphs, diagrams and illustrations are provided.

2.9 Statistical - Bibliographical Sources:

The bibliography is the top class or form of reference and information access tool. It is a systematically produced descriptive list of records. The term bibliography is used very widely as it covers the whole field of science of books as physical entities, their history, changing forms, the materials and methods of their construction. It is also considered a science and art as it includes the description. As already mentioned, a bibliography is a systematic list of documents prepared for a particular purpose based on some criteria. These criteria may be documents on a subject, of a country or the whole of available knowledge. We will now study the origin and definitions of a bibliography and know how it is different from a catalogue and an index. The word `bibliography' has originated from the Greek terms - 'billion' meaning a book and `graphing' meaning to write. Bibliography, thus, means `writing of books', which later on changed to `writing about books'.

Bibliometrics uses statistical methods to analyse books, articles and other publications. Bibliometric methods are frequently used in the field of library and information science. The sub-field of bibliometrics which concerns itself with the analysis of scientific journals is called scientometrics. Citation analysis is a commonly used bibliometric method based on constructing the citation graph, a network or graph representing the citations between documents. Many research fields use bibliometric methods to explore the impact of their field, the effect of a set of researchers, the effect of a particular paper, or to identify particularly impactful documents within a specific area of research. Bibliometrics also has a wide range of other applications, such as descriptive linguistics, the development of thesauri, and the evaluation of reader usage.

Historically, bibliometric methods have been used to trace relationships amongst academic journal citations. Citation analysis, which involves examining an item's referring documents, is used in searching for materials and analysing their merit. Citation indices, such as the Institute for Scientific Information's Web of Science, allow users to search forward in time from a known article to more recent publications which cite the known item.

Data from citation indexes can be analysed to determine the popularity and impact of specific articles, authors, and publications. Using citation analysis to gauge the importance of one's work, for example, is a significant part of the tenure review process. Information scientists also use citation analysis to quantitatively assess the core journal titles and watershed publications in particular disciplines, interrelationships between authors from

different institutions and schools of thought, and related data about the sociology of academia. Some more practical applications of this information include the planning of retrospective bibliographies, "giving some indication both of the age of material used in a discipline, and of the extent to which more recent publications supersede the older ones,"; indicating through the high frequency of citation which documents should be archived; comparing the coverage of secondary services which can help publishers gauge their achievements and competition, and can aid librarians in evaluating "the effectiveness of their stock". There are also some limitations to the value of citation data. They are often incomplete or biased; data has been primarily collected by hand (which is expensive), though citation indexes can also be used; incorrect citing of sources occurs continually; thus, further investigation is required to truly understand the rationale behind citing to allow it to be confidently applied.

There are some definitions available for the term bibliography. Some of the popular ones are given below: a) b) c) Bibliography is the art or science of correctly describing books (their literary contents, physical make-up). (Van Hoesan, 1928). The bibliography is : (i) the study of the material form of books, with comparison in variations in issues and copies, as a means of determining the history and transmissions of texts, (ii) the art of describing book correctly concerning authorship, editions, physical forms, etc., (iii) the preparation of lists of books, maps, etc., (iv) a list of books, maps, etc. (Thompson, 1943). The bibliography is the art of recording books and the science of making books and their extant record. (Esdaile, 1963). Besides the above, many more definitions are available. But over time, the earlier meaning of bibliography as the study of books as physical entities has shifted to identifying the thought content in books. Presently to a library and information professional, a bibliography means the art of preparing a systematic list of books and the name of the list itself. A bibliography is different from catalogues and indexes. A record is a list of a given collection, such as a library and does not include any items not available in the particular group. An index of a book, for example, is also different from a bibliography. Although both provide access to information, the bibliography usually provides a single access point to data (for example, the first author). The index offers multiple access points (for example, each of the several concepts treated in the document). Besides, in-depth subject analysis is done in indexes so that a user can find specific ideas, e.g., reference to names of persons, places, events and topics. The catalogues and indexes both serve as sources for the compilation of bibliographies

Bibliometrics are now used in quantitative research assessment exercises of academic output, which is starting to threaten practice-based research. The UK government has considered using bibliometrics as a possible auxiliary tool in its Research Excellence Framework, a process that will assess the quality of the research output of UK universities and, based on the assessment results, allocate research funding. This has met with significant scepticism and, after a pilot study, looks unlikely to replace the current peer review process. Furthermore, excessive usage of bibliometrics in the assessment of the value of academic research encourages gaming the system in various ways, including publishing a large number of works with low new content (see most miniature publishable unit), publishing premature research to satisfy the numbers, focusing on the popularity of the topic rather than scientific value and author's interest, often with a detrimental role to research. These phenomena are addressed in several recent initiatives, including The San Francisco Declaration on Research Assessment.

Guidelines have been written on bibliometrics in academic research in management, education, and Information Science. Other bibliometrics applications include: creating thesauri, measuring term frequencies as metrics in scientometric analysis, exploring grammatical and syntactical structures of texts, measuring readers, quantifying the value of online media of communication, measuring Jaccard distance cluster analysis and text mining based on binary logistic regression.

In the context of the significant deal cancellations by several library systems globally, data analysis tools like Unpaywall Journals are used by libraries to assist with extensive deal cancellations: libraries can avoid subscriptions for materials already served by instant open access via open archives like PubMed Central.

Before you spend a lot of time reading a source, begin by looking at the following information in the citation to evaluate whether it's worth pursuing.

Consider the author, the title of the work, the summary, where it is (e.g., a book, an academic journal, a blog, a social media site), and the timeliness of the entry. You may also want to look at the keywords to see what other work categories fall into. Evaluate this information to see if it is relevant and valid for your research.

2.10 Union Catalogues, Indexing and Abstracting Journals

A union catalogue is a combined library catalogue describing the collections of several libraries. Union catalogues have been created in various media, including book format, microform, cards, and networked electronic databases. Print union catalogues are typically arranged by title, author or subject (often employing a controlled vocabulary); electronic versions typically support keyword and Boolean queries. Compilation of a National Union Catalogue is one of the major tasks performed by the National Library of any country.

Union catalogues are helpful to librarians, as they assist in locating and requesting materials from other libraries through interlibrary loan service. They also allow researchers to search through collections they would not otherwise have access to, such as manuscript collections.

The most extensive union catalogue ever printed is the American National Union Catalogue Pre-1956 Imprints (NUC), completed in 1981. This achievement has since been superseded by creating union catalogues in electronic databases, of which the largest is OCLC's World Cat. Another example is COPAC, provided by Research Libraries UK, replaced by Library Hub Discover in 2019. A third example is AMICUS, provided by Library and Archives Canada.

For academic publications, several academic search engines exist to combine the open data provided by available archives through OAI-PMH and records from publishers deposited in CrossRef and other sources. They include BASE, CORE and Un paywall, which indexes over 20 million open access publications as of 2020.

2.11 Union Catalogues: Indian Perspective

India:

India is the effort of the INFLIBNET Centre, which is the online union catalogue of the holdings of India's 121 universities and institutions. It contains a unified online library catalogue of India's participating universities and institutions' books, theses, and serials, covering the bibliographic description, location, and holdings information. The bibliographic records of the documents in standard formats such as MS-Excel, MS-Access, Dbase/Foxpro, CDS/ISIS, WINISIS, MS-SQL Backup, CCF, Libsys backup, MARC and its variants are made available to the INFLIBNET Centre as per the terms of MoU signed between

INFLIBNET Centre and participating universities. With the help of the tag mapping features of the CDS/ISIS software, the received records in different formats are converted into the MARC 21 and CCF format. Then, after all the documents undergo the process of authentication, duplicate checking, error checking and merging of the record into the union catalogue. These records are made available to the users with the help of the web-based user interface designed to provide easy and fast access along with the location and to hold information of the particular record. Search can be performed on the title, words in the title, author, Subject, ISBN, establishment, place and publisher in the union database of books through IndCat interface. The IndCat interface restricts the search to collections available within an individual university and expands the search to universities in a given city or state. By default, the interface searches all bibliographic records public in India for all the participating universities.

The copy cataloguing is a unique feature of the India database that facilitates downloading bibliographic records in MARC21, CCF or ASCII format. The downloaded bibliographic records can be imported to any library management software compliant with MARC21 bibliographic format, including SOUL 2.0. India facilitates the GujCAT and NERCat databases also. The Gujarat and NERCat, subsets of India, are unified online library catalogues of books available in significant college/institute/university libraries within Gujarat state and the North-Eastern Region, respectively. These contain bibliographic descriptions, location, and holdings information of books available in Gujarat and the North-Eastern Region libraries. The significant advantage of these databases is using the records for inter-library loans, copy cataloguing and retro-conversion etc.

NUCSSI:

National Union Catalogue of Scientific Serials in India (NUCSSI) is the well-maintained union catalogue of the scientific serials in India, which is made available in digital form through the web user interface. This data repository serves as an ideal tool to access Journal holdings information. It was created and maintained by INSDOC, presently recognised as NISCAIR since 1965 and first published in 1988 (Unnikrishnan et al., 1997). This indigenous database has been made available online since 2010, which has about 2.50 lakh journal holdings data from more than 44000 journals available in nearly 545 libraries of significant universities, S&T institutions, R&D units of industries, higher institutes like IISc, IITs and professional institutes spread all over the country. With the help of the user-friendly

interface and powerful search engine, it facilitates easy and improved access to the articles through keyword search, Journal wise search, smart library search and intelligent city search. It uses the Universal Decimal Classification Scheme (UDC) to classify journals.

2.12 Indexing:

Get familiar with the indexes and databases that focus on your subject area to search for information effectively. See the indexes and databases page to identify those available through the FAU Libraries (non-FAU affiliates should consult with their institutional or community library/ information centres to see what they offer). Take note of an index and database's features, such as its search interface, controlled vocabulary, and other extras.

Although indexes and databases can help researchers identify published in their discipline, access to full text may not be readily available. Be familiar with your institution's document delivery or interlibrary loan service that may help obtain materials that are not immediately available.

Indexing is regarded as the process of describing and identifying documents in terms of their subject contents. Here, the concepts are extracted from records by the analysis process and then transcribed into the elements of the indexing systems, such as thesauri, classification schemes, etc.

In indexing decisions, concepts are recorded as data elements organised into easily accessible forms for retrieval. These records can appear in various forms, e.g. back-of-the-book indexes, indexes to catalogues and bibliographies, machine files, etc. The process of indexing has a close resemblance to the search process. Indexing procedures can be used, on the one hand, for organising concepts into tools for information retrieval, and also, by analogy, for analysing and managing enquiries into ideas represented as descriptors or combinations of descriptors, classification symbols, etc. The primary purposes of prescribing standard rules and procedures for subject indexing may be stated as follows:

1. To prescribe a standard methodology to subject cataloguers and indexers for constructing subject headings.
2. To be consistent in choosing and rendering subject entries, using standard vocabulary and according to given rules and procedures.

3. To be helpful to users in accessing any desired document(s) from the catalogue or index through different means of such approach.
4. To decide on the optimum number of subject entries and thus economise the bulk and cost of cataloguing indexing.

Several problems and issues are associated with indexing which is enumerated below:

a) Complexities in the subjects of documents-usually multi-word concepts:

b) Multidimensional users need for information;

c) Choice of terms from several synonyms;

d) Choice of word forms (Singular / Plural form);

e) Distinguishing homographs;

f) Identifying term relationships – Syntactic and Semantic;

g) Depth of indexing (exhaustively);

h) Levels of generality and specificity for representation of concepts (specificity);

i) Ensuring consistency in indexing between several indexers (inter-indexer consistency) and by the same indexer at different times (intra-indexer consistency);

j) Ensuring that indexing is done not merely based on a document's intrinsic subject content but also according to the type of users who may be benefited from it and the types of requests for which the document is likely to be regarded as applicable;

k) The kind of vocabulary to be used, and syntactical and other rules necessary for representing complex subjects; and

2.13 Problem of how to use the 'index assignment data'.

Each information system must define an indexing policy, which spells out the level of exhaustively adopted. This vocabulary will ensure the required degree of specificity rules, procedures and controls that will ensure consistency in indexing and methods by which users

may interact with the information system so that that indexing may be related to and as far as possible be influenced by user needs and search queries. The exhaustiveness and specificity are management decisions. Since document retrieval is based on the logical matching of document index terms and the terms of a question, indexing operation is crucial. If documents are incompletely or inaccurately indexed, two kinds of retrieval errors occur, viz. irrelevant documents retrieval and relevant documents non-retrieval.

When indexing, it is necessary to understand, at least in general terms, what the document is about. The subject content of a composition comprises some concepts or ideas. For E.g. an article on lubricants for cold rolling of aluminium alloys will contain information on oils, cold rolling, aluminium alloys etc. The indexer selects these concepts of potential value for retrieval, i.e., those concepts on which, according to him, information is likely to be sought by the users. It is the choice of ideas or the inner ability to recognise what a document is about at the very heart of the indexing procedure. However, it is the identification of images that contributes to inconsistencies in indexing.

The vocabulary problem deals with the rules for deciding which terms are admissible for membership in the speech. There is also a problem determining the goodness or effectiveness of any language. This implies that the system ranks each of the documents in the collection by the probability that it will satisfy the given query of the user. Thus, the output documents relating to a search query are ranked according to their likelihood of satisfaction.

The lack of an indexing theory to explain the process is a prominent blind spot in information retrieval. Very little seems to have been written about the role and value of theory in indexing. However, those who have written about it tend to agree that it serves a vital function. A critical process of the indexing theory is to establish a research schedule. Equally important, identifying gaps suggest what remains to be investigated. Ideas also supply a rationale for, or an argument against, current practices in subject indexing. They can put things in perspective or provide a new and different perspective.

The contributions made by K P Jones and R. Fugmann [Quinn, 1994] in indexing theory are worth mentioning. According to Jones, an indexing theory should consist of five levels, which are as follow:

a) Concordance level: It consists of references to all words in the original text arranged in alphabetical order.

b) Information-theoretic level: This level calculates the likelihood of a word being chosen for indexing based on its frequency of occurrence within a text. For example, the more frequently a word appears, the less likely it will be selected because the indexer reasons the document 'all about that.

c) Linguistic level: This level of indexing theory attempts to explain how meaningful words are extracted from large units of text. Indexers regard opening paragraphs, chapters and sections, and opening and closing sentences of paragraphs are more likely to be a source of indexable Units, as are definitions.

d) Textual level: Beyond individual words or phrases lies the fourth level—the textual or skeletal framework. The author presents ideas in an organised manner, which produces a skeletal structure clothed in text. The successful indexer needs to identify this skeleton by searching for clues on the surface.

e) Inferential level: An indexer can infer the relationships between words or phrases by observing the paragraph and sentence structure and stripping the sentence of extraneous detail. This inference level makes it possible for the indexer to identify novel subject areas.

Indexing theory proposed by Robert Fugmann is based on five general hypotheses, which he claims have apparent validity need of no p. They explain all currently known phenomena in information supply. These five axioms are:

a) Axiom of definability: Compiling information relevant to a topic can only be accomplished to the degree to which a case can be defined.

b) Axiom of order: Any compilation of information relevant to a topic is an order creating process.

c) Axiom of the sufficient degree of order: The demands made on the degree of order increase as the size of a collection and frequency of searches increase.

d) Axiom of predictability: It says that the success of any directed search for relevant information hinges on how readily predictable or reconstructible are the modes of expression for concepts and statements in the search file. This hypothesis is based on the belief that the real purpose of vocabulary control devices is to enhance representational predictability.

e) Axiom of fidelity: It equates the success of any directed search for relevant information with the commitment with which concepts and statements are expressed in the search file.

Like theories in other disciplines, these indexing theories are developed provisionally, understanding that subsequent research will either support or refute them.

2.14 Abstracting Journals:

The abstracting journal is defined as a periodical consisting mainly or entirely of abstracts of current works. An abstracting service is a service that provides abstracts of publications, often on a subject or group of related issues, usually on a subscription basis. Indexing service is a service that assigns descriptors and other kinds of access points to documents. Today, the word indexing service is mainly used for computer programs but may also cover services providing back-of-the-book indexes, journal indexes, and related kinds of indexes. An indexing and abstracting service is a service that gives shortening or summarising of documents and assigning of descriptors for referencing documents.

The product is often an abstract journal or a bibliographic index, a subject bibliography or a bibliographic database. Abstract art gives you the freedom to explore the artwork and assign your meaning to the piece. This intensely personal process enriches a viewer's experience of a painting. Abstract art can also make people uneasy because they don't automatically know what it is "about" just by a cursory glance.

There is something intensely personal about abstract art rarely found in other artistic movements. Abstract art has a unique voice that provokes interest, permitting artists and viewers a distinct sense of freedom and expression. Despite its often chaotic and spontaneous appearance, it possesses a structure composed of six key elements: colour, shape, form, texture, line, and value. These are essential to its success.

Each element plays a fundamental role in any piece of art, but they can easily be overlooked without consideration and conscious thought. The six elements create an exciting and intriguing piece of art with their unique characteristics when balanced correctly. While they are the key components, it is ultimately at the artist's discretion if and how they are used. Each is important, but some are focused more readily than others. Artists are often encouraged to focus on each individually, noting what that particular element will bring to the artwork as a whole.

By understanding their functions, artists can control the mood and feeling, communicating ideas within the piece by effectively utilising line, colour, shape, texture, and more. The elements enable viewers to describe what the artist has done and analyse the report in-depth. Art that utilises these essential elements with skill allows us to communicate our thoughts better using a common language.

2.15 Qualities and Qualification of a Reference Librarian:

A Reference Librarian must be responsive to users' needs, think critically and be organized, and organize or coordinate projects and services for the user. A reference librarian must be aware of current trends and have a vast knowledge base. They must also keep tabs on the new reference types and user services. They must effectively evaluate the sources they contact to provide the user with the best information possible. They must also collaborate to improve services and implement new services in the profession and the user. The librarian must also advocate for the library, be involved in outreach programs, and actively promote its services. Education for the reference librarian job requires masters in library science from an accredited school and usually some library experience.

2.16 Competencies, Knowledge and Skills:

Interpersonal Skills – Shows understanding, friendliness, courtesy, tact, empathy, cooperation, concern, and politeness to others; relates to people from varied backgrounds and situations.

Customer Service – Works with customers to assess needs, provide assistance, resolve problems, satisfy expectations, know products and services, and provide quality products and services.

Oral Communication – Expresses information to individuals or groups effectively, taking into account the audience and nature of the data; makes clear and convincing oral presentations; listens to others; attends to nonverbal cues, and responds appropriately.

Manages and Organizes Information – Identifies a need; gathers organizes, and maintains information; determines its importance and accuracy; and communicates various methods.

Problem Solving – Identifies problems; determines accuracy and relevance of information; uses sound judgment to generate and evaluate alternatives and make recommendations.

Knowledge of library operations is sufficient to assist customers as needed.

Knowledge of library science theories and procedures is sufficient to select or weed materials and maintain library collections.

Knowledge of library research resources and reader guidance information is sufficient to assist customers in locating collection materials or obtaining interlibrary loan services.

Skill in exercising initiative, judgment, and decision-making to solve problems and meet organizational objectives.

Skill in communicating and establishing effective working relationships with other Notes employees, organizations and the public.

Skill in researching library information

2.17 Physical Demands:

Sitting: Remaining in the normal seated position.

Carrying: Transporting an object, usually by hand, arm or shoulder.

Pushing: Exerting force upon an object so that the thing is away.

Pulling: Exerting force on an object to move to the person.

Balancing: Maintaining body equilibrium to prevent falling over.

Stooping: Bending the body by bending the spine at the waist.

Reaching: Extending the hand(s) and arm(s) in any direction.

Handling: Seizing, holding, grasping or otherwise working with hand(s).

Fingering: Picking, pinching, or otherwise working with fingers.

Talking: Expressing or exchanging ideas using spoken words.

Hearing: Perceiving the nature of sounds by the ear.

Eye/hand/foot Coordination: Performing work through using two or more.

2.18 Working Environment:

Exposed to infections and contagious diseases.

Subject to varying and unpredictable situations.

Subject to many interruptions.

Pressure due to multiple calls and inquiries

2.19 Non-Print Media:

We shall categorise non-print media as conventional, electronic and cyber media.

Conventional Media:

The conventional media can be categorised as oral, audio, visual, and audio-visual media.

Oral:

Once upon a time, the oral medium was the only medium that human beings used to communicate. Even today, we share the maximum amount of information through the oral medium. We use this medium for communication in our houses, offices, schools, colleges, universities, market places, practically everywhere. No physical medium (except air) is

needed for short-distance communication. We speak, and others hear. Oral communication can be transmitted over long distances using a physical medium like telephone, microphone, radio, and television. As discussed below, we communicate information in different modes in the oral medium.

One-to-One:

One-to-one communication happens when two persons talk to each other. Talks between husband and wife, father and son, a teacher and a student, friend to friend, are examples of one-to-one communication. Often, a reporter interviews a VIP, which is also a case of one-to-one communication.

One-to-a-Few:

This type of communication happens in a classroom, small gatherings, etc. At a school, the teacher speaks, and the students listen.

One-to-Many:

One-to-many communication happens in big meetings, conferences, and so on. Before elections, you have seen meetings addressed by political leaders. Here, the political leader speaks, and hundreds and thousands of listeners listen.

Many-to-Many:

Many-to-many communication is seen in meetings when a VIP (say, a minister, government official, etc.) meets familiar people to listen to their grievances, complaints, and so on. The persons, one-by-one, voice their grievances, and the VIP takes note of them and tells them about the action they are going to take. The reporters put questions to the VIP, and they answer. The same scene is seen in an interview also. The members ask the candidate various questions of the interview board, to which they respond.

Many-to-Many:

Many-to-many happens in a group discussion, round table conference, etc. Here, one by one, everyone speaks, and others hear and react.

Audio:

These are the media using which we speak or listen, or both speak and listen. In a big conference, we use microphones to speak so that others can hear the voice. Audio is a device used only for expressing. We use record players, radio, etc., to listen to music, news, speech, and so on. These devices are only for hearing. A telephone, walkie-talkie, etc., are devices through which we can both speak and hear. Ever since its discovery, the radio has been a great source of information for one and all. It has been a great help for the blinds for their education, awareness of current events, and entertainment.

Visual:

Visual media comprise, among others, photographs, paintings, drawings, blueprints, slides, and transparencies. You all know about pictures, images, and drawings. Hence, we shall discuss here only blueprints, slides and transparencies. Many libraries of industrial enterprises, consultancy firms, etc., possess a massive collection of blueprints. Engineers, technicians and others frequently require the blueprints for assembling or repairing a machine, erection of a plant, construction or extension of a building, and so on. Librarians have paid little attention to the classification, cataloguing, storage, etc., of these materials, which are of great value from the informative perspective.

Slides:

'A slide is a small piece of photographic film in a frame which, when light is passed through it, shows a large image on a screen or plain surface' [Cambridge: p1352]. For using slides, a projector is needed. Slides are used for paper presentation, delivering a lecture in a class or any other gathering, demonstrating the function of a machine, side effects of a drug, usefulness of a specific fertilizer, and so on. Slide shows are organised even in villages to educate illiterate farmers, artisans, and others about better methods of cultivation, healthy living, low-cost housing, the usefulness of family planning, etc. Many scientists, scholars, teachers, demonstrators, etc., maintain slide collections of their own. Some libraries also possess slide collections.

Transparencies:

Transparency is a transparent plastic sheet on which the matter to be projected is handwritten, photocopied, or printed. For using transparency, a slide projector is needed. Its use is more or less the same as a slide. However, it is much handier than a slide than even in remote areas where a drop is difficult; transparency can be easily prepared.

Audio-Visual:

Audio-Visual media (A-V media) combine both audio and visual mediums. With the help of this media, people see and hear. Motion pictures, video recordings, television are a few examples of A-V media. Numerous documentary films almost on any subject have been produced in the world. These films show, in most cases, colourful pictures of objects with narration in lucid language. The bright object, such as a tiger hunting a deer, is often animated. Seeing and hearing have a more profound impact on our memory, whereby we remember the scene quicker and retain it in our memory for a long. These films serve both education and entertainment. As a result, they are becoming important sources of information in libraries. These films are now available in video cassettes that can run on a Video Cassette Player (VCP) or Video Cassette Recorder (VCR). Many libraries have now a section on documentary films. There are film libraries as well. Television (TV) has gradually become the source of entertainment and a great source of current information. Apart from providing news at intervals, it also offers exciting discussions where politicians, journalists, experts, etc., take part; broadcasts live various sports like cricket and football matches, Olympic, Asiad, etc. AV media immediately flashes essential declaration by the head of a state, information on accidents and disasters.

Review questions

1. Define biographical source.

2. What is a yearbook?

3. List out the differences between the yearbook and almanack.

4. Explain directories.

5. Write a short note on the handbook.

6. Explain bibliographical sources.

7. What are union catalogues?

8. What is meant by indexing?

9. What are the salient features of abstracting journals?

10. Expand and explain NUCSSI.

UNIT - 3

E-Resources

3.1 Introduction:

The advent of the Internet has dramatically changed the way people and institutions function. It has led to tremendous change in the way libraries function and offer services to their users. At present, the libraries actively procure, organize, display and issue e-forms of books, journals, newspapers, theses and dissertations. The change is also due to a change in users' information-seeking behaviour. The new generation of users prefers online resources as they want all information at the mouse click. The e-resources have certain inherent characteristic features which offer convenience to the users. This lesson discusses the concept and importance of e-resources. It deals with different types of e-resources their advantages and disadvantages.

3.2 Objectives:

After studying this lesson, you will be able to:

→ Comprehend the definition and importance of e-resources;
→ Categorize different types of e-resources;
→ Define e-books and e-journals;
→ Understand the concept of electronic databases; and
→ Distinguish between bibliographic and full-text databases

3.3 E-Resources

E-resource refers to all the library's products through a computer network. The electronic resources are also known as online information resources covering bibliographic databases, electronic reference books, search engines for full textbooks, and digital data collections.

Electronic resources form one of many formats that the Library collects to support its universal collections. Electronic resources include websites, online databases, e-journals, e-

books, and physical carriers in all formats, whether gratis or fee-based, required to support research in the subject covered and may be audio, visual, and text files.

An electronic resource is defined as a resource that requires computer access or any electronic product that delivers a collection of data, be it text referring to total textbases, electronic journals, image collections, other multimedia products and numerical, graphical or time-based, as a commercially available title that has been published with an aim to being marketed. Sources of information available in electronic (digital/analogue) format and accessible in offline/online modes through intranet or Internet over computers, book-readers, tablets, smart-phones, etc.

E-resources is a digital media firm with a singular focus: to provide our clients with a dedicated partner that advances their mission with web-based solutions.

Electronic resources (or e-resources) are materials in digital format accessible electronically. Examples of e-resources are electronic journals (e-journal), electronic books (e-book), online databases in varied digital formats, Adobe Acrobat documents (.pdf).

The different types of e-resources are E-books, E-journals, Databases, CDs/DVDs, E-conference proceedings, E- Reports, E-Maps, E-Pictures/Photographs, E-Manuscripts, E-Theses, E-Newspaper, Internet/Websites - Listservs, Newsgroups, Subject Gateways, USENET, FAQs etc.

3.4 Advantages

The reasons for purchasing electronic resources are generally accepted because of the ease of usability, readability, affordability, and accessibility. The following are the advantages of e-resources over print media.

a) Multi-access: A networked product can provide multiple access points at multiple pints round the clock and to multiple simultaneous users. e-resources-in-library

b) Speed: An electronic resource is much quicker to browse or search, extract information from, and integrate that information into other material and cross-search or reference among the different publications.

c) Functionality: E-resources will allow the user to approach the publications to analyse its content in new ways by clicking the mouse on search mode.

d) Content: The e-resources can contain a vast amount of information, but more importantly, the material can consist of mixed media, i.e. images, video, audio animation, which could not be replaced in print.

e) E-resources may be accessed over the Internet. The users need not physically visit the library. E-resources are very useful for users who reside in remote and far-flung areas. The users may download the articles and save them on their PCs.

f) The same resource, i.e., article or journal, may be accessed by many users simultaneously.

g) E-resources may be accessed anywhere, anytime, as per the users' convenience.

h) The users may search a large number of resources in one go through a single search interface.

i) E-Resources also provide usage statistics that help the library staff find out the usage of the product.

j) Articles/issues of journals appear online before their print version is available.

k) Hypertext format and links of e-resources lead users to related content and articles.

l) Electronic resources have audio, video and animation content in print format. M) The subscription of e-resources helps libraries in saving space.

e) Mobility

f) Savings physical Space

g) Convenience

h) Saving time& money

3.5 Disadvantages

Now, more and more people prefer e-resources to traditional ones, because it can save them time and money. However, with various e-resources flooded in, more and more people are aware of the disadvantages of e-resources.

a) The fact that e-resources require special devices or personal computers can be seen as a disadvantage. Many e-resources are typically produced to be compatible with specific software, which may be not readily available. Since e-resources are dependent on other equipment, particular hardware or software failures may affect it. Unless the hardware, Internet connection or battery power that an e-resource reader requires is readily available, then its electronic document is useless. In addition, e-resources depend on hardware and software and are more easily damaged than a printed book.

b) E-resource reading devices are undoubtedly more expensive than printed books. All instruments of e-resources require power. There is a growing concern that the e-resources at present may not be accessible or compatible with future e-resources software or devices.

c) Screen glare and eyestrain are a severe concern for many potential users of e-resource technology. A significant worry of reading from an e-resource reader could hurt the eyes. The display resolution of computer screens and electronic devices is considerably less than the print quality produced by a printing press.

d) Reading from a computer lacks the familiarity and comfort of reading from a book. A paper book can be opened and flipped; through, while an electronic text is more challenging to navigate.

e) E-Resources have an unreliable life span. Paper has a much longer life span than most digital forms of storage. Because of the rapid development of new computer systems, it is difficult to judge whether the software or hardware will become outdated. As new hardware is developed, structures must be put into place to allow for the migration of existing materials to the new platforms to be still accessed. Methods of preserving the electronic document must also be developed. A high degree of reliability must be a part of the electronic devices that handle the replacements for printed books.

f) Many titles available in traditional print books are not yet available in an electronic book format.

g) New technologies always require time, experience, and money to take full advantage of their capabilities.

3.6 Managing e-resources:

The management of e-resources involves the following: Selection E-resources may be selected by any of the following methods:

1. Serendipity (finding by chance something which is beneficial) while surfing the Internet

2. Faculty recommendations

3. Reviewing the electronic journals provided by other libraries

4. Publisher advertisements

a. Acquisition:

A Library acquires print resources for ownership. But for electronic resources, the libraries get a license for access rights. Some essential activities involved in the acquisition of e-resources are as under:

1. Determining the price

2. Negotiating with the vendor

3. Completing the licensing agreement

4. Allocation of funds

5. Placing the order

6. Verifying if the title is accessible

7. Communicating with the vendor if it is not accessible

8. Processing the invoice for payment

b. Staffing:

The library has to decide if acquisition functions for e-journals will be performed by the regular staff or staff with expertise in dealing with electronic format. To acquire and process electronic resources, the team requires negotiating licenses, familiarity with the electronic form, etc.

c. Licensing:

A license is usually a written contract or agreement between the library and the publisher. An agreement has various aspects like calculating payment, the definition of users, restriction on use, archival rights, etc. Licensing agreements are generally written for the vendors' advantage, so the library staff has to be extra careful to negotiate favourable terms for the library.

d. Budgeting:

Libraries usually have a separate budget for procuring e-resources.

e. Cataloguing:

E-resources are catalogued, and details are entered into the library's OPAC. Some libraries may list them on the website and provide their links. They may not catalogue them. Maintenance for e-resources maintenance is an important issue. The library has staff to maintain e- resources. The team ensures that the subscribed e-resources are accessible on the institute's IP (Internet Protocol) ranges. Some e-resources are accessible through Username (UN) and Password (PW). The staff is entrusted with distributing UN/PW to the authorized users. In case an e-resource is not accessible and the team cannot resolve the problem, the same is communicated to the publisher to fix the problem. Staff Training and User Education: The staff must be trained to access, browse, and retrieve information from e- resources. Libraries need to conduct user education programmes to teach the users how to use e-resources and thus promote and enhance e-resources among the users.

3.7 E-documents, E-books, E-Journals

a. E- Document

An electronic document, or e-doc, is a digital file that takes the place of a physical copy or printout. E-docs, like PDFs, are easier to share, organise, and collaborate on, whether teams are in the same office or scattered across the globe.

Examples of electronic records include *emails, websites, Word/Excel documents*, digital purchase receipts, databases, text messages, social media postings, and information stored on SharePoint sites and content management systems (Catalyst, Slack, DropBox, etc.).

Electronic documents are used for various reasons, such as activities, reference material, supplemental information, worksheets, and other assignments. Students get the documents through email by downloading them from learning management systems or a file-sharing system. Depending on the author, the accessibility of these files can vary greatly.

- Word Documents (.doc or .docx)
- Portable File Documents (PDF)
- Spreadsheet (.xls or .xlsx)
- PowerPoint (.ppt or .pptx)

Accessible Word Documents

Microsoft Word is a word processing software developed by Microsoft. It was first released on October 25, 1983, under the name Multi-Tool Word for Xenix systems. Subsequent versions were later written for several other platforms, including IBM PCs running DOS (1983), Apple Macintosh running the Classic Mac OS (1985), AT&T UNIX PC (1985), Atari ST (1988), OS/2 (1989), Microsoft Windows (1989), SCO Unix (1990), and macros (2001).

In 1981, Microsoft hired Charles Simonyi, the primary developer of Bravo, the first GUI word processor, which was developed at Xerox PARC. Simonyi started work on a word processor called Multi-Tool Word and soon hired Richard Brodie, a former Xerox intern, who became the primary software engineer.

Microsoft announced Multi-Tool Word for Xenix and MS-DOS in 1983. Its name was soon simplified to Microsoft Word. Free demonstration copies of the application were bundled with the November 1983 issue of PC World, making it the first to be distributed on-disk with a magazine. That year Microsoft demonstrated Word running on Windows.

Unlike most MS-DOS programs at the time, Microsoft Word was designed to be used with a mouse. Advertisements depicted the Microsoft Mouse and described Word as a WYSIWYG, a windowed word processor that can undo and display bold, italic, and underlined text, although it could not render fonts. It was not initially popular since its user interface was different from WordStar's leading word processor. However, Microsoft steadily improved the product, releasing versions 2.0 through 5.0 over the next six years. In 1985, Microsoft ported Word to the classic Mac OS (Macintosh System Software). This was made more accessible by Word for DOS, having been designed for use with high-resolution displays and laser printers, even though none were yet available to the general public. It was also notable for its high-speed cut-and-paste function and unlimited undo operations due to its piece table data structure usage.

Following the precedents of Lisa Write and MacWrite, Word for Mac OS added original WYSIWYG features. It fulfilled a need for a word processor that was more capable than MacWrite. After its release, Word for Mac OS's sales was higher than its MS-DOS counterpart for at least four years after its release.

The second release of Word for Mac OS, shipped in 1987, was named Word 3.0 to synchronise its version number with Word for DOS; this was Microsoft's first attempt to synchronise version numbers across platforms. Word 3.0 included numerous internal enhancements and new features, including the first implementation of the Rich Text Format (RTF) specification, but was plagued with bugs. Within a few months, Word 3.0 was superseded by a more stable Word 3.01, which was mailed free to all registered users of 3.0. After MacWrite Pro was discontinued in the mid-1990s, Word for Mac OS never had any serious rivals. Word 5.1 for Mac OS, released in 1992, was a very popular word processor owing to its elegance, relative ease of use and feature set. Many users say it is the best version of Word for Mac OS ever created.

In 1986, an agreement between Atari and Microsoft brought Word to the Atari ST under the name Microsoft Write. The Atari ST version was a port of Word 1.05 for the Mac OS and was never updated.

The first version of Word for Windows was released in 1989. With Windows 3.0 the following year, sales began to pick up, and Microsoft soon became the market leader for word processors for IBM PC-compatible computers. In 1991, Microsoft capitalised on Word for Windows' increasing popularity by releasing a version of Word for DOS, version 5.5, that replaced its unique user interface with an interface similar to a Windows application. Microsoft became aware of the Year 2000 problem; Microsoft Word 5.5 for DOS was available for free download. As of February 2021, it is still available for download from Microsoft's website. In 1991, Microsoft embarked on a project code-named Pyramid to completely rewrite Microsoft Word from the ground up. The Windows and Mac OS versions would start from the same code base. It was abandoned when it was determined that it would take the development team too long to rewrite and then catch up with all the new capabilities that could have been added at the same time without a rewrite. Instead, the following versions of Word for Windows and Mac OS, dubbed version 6.0, both started from the code base of Word for Windows 2.0.

With the release of Word 6.0 in 1993, Microsoft again attempted to synchronise the version numbers and coordinate product naming across platforms, this time across DOS, Mac OS, and Windows (this was the last version of Word for DOS). It introduced AutoCorrect, which automatically fixed specific typing errors, and AutoFormat, which could reformat many parts of a document at once. While the Windows version received favourable reviews (e.g., InfoWorld), the Mac OS version was widely derided. Many accused it of being slow, clumsy and memory intensive, and its user interface differed significantly from Word 5.1. Microsoft offered Word 5 again after being discontinued in response to user requests. Subsequent versions of Word for macros are no longer direct ports of Word for Windows, instead featuring a mixture of ported code and native code.

Word documents need to contain formatting tags to be accessible to a screen reader. The style tags are listed in the Styles Task Pane, one of the many features offered by Microsoft Office products. A document should contain headings, body text (standard), lists, captions (for graphics) and titles.

3.8 Accessible PDF Documents:

PDF standardised as ISO 32000 is a file format developed by Adobe in 1992 to present documents, including text formatting and images, independent of application software, hardware, and operating systems. Based on the PostScript language, each PDF file encapsulates a complete description of a fixed-layout flat document, including the text, fonts, vector graphics, raster images and other information needed to display it. PDF has its roots in "The Camelot Project" initiated by Adobe co-founder John Warnock in 1991.

PDF was standardised as ISO 32000 in 2008. The last edition as ISO 32000-2:2020, was published in December 2020.

PDF files may contain different content besides flat text and graphics, including logical structuring elements, interactive elements such as annotations and form-fields, layers, rich media (including video content), three-dimensional objects using U3D or PRC, and various other data formats. The PDF specification also provides encryption and digital signatures, file attachments, and metadata to enable workflows requiring these features.

Adobe Systems made the PDF specification available free of charge in 1993. In the early years, PDF was popular mainly in desktop publishing workflows and competed with various formats such as DjVu, Envoy, Common Ground Digital Paper, Farallon Replica and even Adobe's PostScript format.

PDF was a proprietary format controlled by Adobe until it was released as an open standard on July 1, 2008, and published by the International Organization for Standardization as ISO 32000-1:2008, at which time control of the specification passed to an ISO Committee of volunteer industry experts. In 2008, Adobe published a Public Patent License to ISO 32000-1 granting royalty-free rights for all patents owned by Adobe that are necessary to make, use, sell, and distribute PDF-compliant implementations.

PDF 1.7, the sixth edition of the PDF specification that became ISO 32000-1, includes some proprietary technologies defined only by Adobe, such as Adobe XML Forms Architecture (XFA) and JavaScript extension for Acrobat, which are referenced by ISO 32000-1 as normative and indispensable for the full implementation of the ISO 32000-1 specification. These proprietary technologies are not standardised, and their specification is

published only on Adobe's website. Many of them are also not supported by popular third-party implementations of PDF.

In December 2020, the second edition of PDF 2.0, ISO 32000-2:2020, was published, including clarifications, corrections and critical updates to normative references. ISO 32000-2 does not include any proprietary technologies as normative references.

A PDF file is often a combination of vector graphics, text, and bitmap graphics. The basic types of content in a PDF are:

1. The text stored as content streams (i.e., not encoded in plain text);
2. Vector graphics for illustrations and designs that consist of shapes and lines;
3. Raster graphics for photographs and other types of images
4. Multimedia objects in the document.

In later PDF revisions, a PDF document can also support links (inside copy or web page), forms, JavaScript (initially available as a plugin for Acrobat 3.0), or any other types of embedded contents that can be handled using plug-ins.

Text elements in page content streams represent text in PDF. A text element specifies that characters should be drawn at certain positions. The characters are determined using the encoding of a selected font resource.

A font object in PDF is a description of a digital typeface. It may either describe the characteristics of a typeface, or it may include an embedded font file. The latter case is called an embedded font, while the former is an unembedded font. The font files that may be embedded are based on widely used standard digital font formats: Type 1 (and its compressed variant CFF), TrueType, and (beginning with PDF 1.6) OpenType. Additionally, PDF supports the Type 3 variant in which PDF graphic operators describe the components of the font.

Fourteen typefaces, known as the standard 14 fonts, have a special significance in PDF documents:

- Times (v3) (in regular, italic, bold, and bold italic)
- Courier (in regular, oblique, bold and bold oblique)

- Helvetica (v3) (in stock, oblique, brave and bold oblique)
- Symbol
- Zapf Dingbats

These fonts are sometimes called the base fourteen fonts. These fonts, or suitable substitute fonts with the same metrics, should be available in most PDF readers, but they are not guaranteed to be available in the reader. They may only display correctly if the system has them installed. Fonts may be substituted if they are not embedded in a PDF.

Within text strings, characters are shown using character codes (integers) that map to glyphs in the current font using an encoding. There are several predefined encodings, including WinAnsi, MacRoman, and many encodings for East Asian languages, and a font can have its built-in encoding. (Although the WinAnsi and MacRoman encodings are derived from the historical properties of the Windows and Macintosh operating systems, fonts using these encodings work equally well on any platform.) PDF can specify a predefined encoding to use, the font's built-in encoding or provide a lookup table of differences to a predefined or built-in encoding (not recommended with TrueType fonts). The encoding mechanisms in PDF were designed for Type 1 fonts, and the rules for applying them to TrueType fonts are complex.

For large fonts or fonts with non-standard glyphs, the special encodings Identity-H (for horizontal writing) and Identity-V (for vertical) are used. It is necessary to provide a ToUnicode table if semantic information about the characters is preserved with such fonts.

A PDF file needs to contain tags. Tagging a PDF structure the file into chapters, headings, blocks of text, tables, and alt tags for graphics. This makes for more straightforward navigation with screen readers and magnification applications. A scanned document into a picture PDF (bitmap) has no titles. A PDF document converted from a Word document can contain tags. This depends, again, on the author.

3.9 Accessible Spreadsheet Documents:

A spreadsheet is a computer application for computation, organization, analysis and storage of data in tabular form. Spreadsheets were developed as computerized analogues of paper accounting worksheets. The program operates on data entered in cells of a table. Each

cell may contain either numeric or text data or the results of formulas that automatically calculate and display a value based on the contents of other cells. A spreadsheet may also refer to one such electronic document.

Spreadsheet users can adjust any stored value and observe the effects on calculated values. This makes the spreadsheet useful for "what-if" analysis since many cases can be rapidly investigated without manual recalculation. Modern spreadsheet software can have multiple interacting sheets and display data either as text and numerals or in graphical form.

Besides basic arithmetic and mathematical functions, modern spreadsheets provide built-in functions for standard financial accountancy and statistical operations. Such calculations as net present value or standard deviation can be applied to tabular data with a pre-programmed function in a formula. Spreadsheet programs also provide conditional expressions, functions to convert between text and numbers, and procedures on text strings.

Spreadsheets have replaced paper-based systems throughout the business world. Although they were first developed for accounting or bookkeeping tasks, they now are used extensively in any context where tabular lists are built, sorted, and shared.

The word "spreadsheet" came from "spread" in its sense of a newspaper or magazine item (text or graphics) that covers two facing pages, extending across the centrefold and treating the two pages as one significant page. The compound word 'spread-sheet' came to mean the format used to present book-keeping ledgers—with columns for categories of expenditures across the top, invoices listed down the left margin, and the amount of each payment in the cell where its row and column intersect—which were, traditionally, a "spread" across facing pages of a bound ledger (book for keeping accounting records) or on oversized sheets of paper (termed 'analysis paper') ruled into rows and columns in that format and approximately twice as wide as ordinary paper.

Spreadsheet risk is associated with deriving a materially incorrect value from a spreadsheet application that will be utilized to make a related (usually numerically-based) decision. Examples include the valuation of an asset, the determination of financial accounts, the calculation of medicinal doses, or the size of a load-bearing beam for structural engineering. The risk may arise from inputting erroneous or fraudulent data values, from mistakes (or incorrect changes) within the logic of the spreadsheet or the omission of relevant

updates (e.g., out of date exchange rates). Some single-instance errors have exceeded US$1 billion. Because spreadsheet risk is principally linked to individuals' actions (or inaction), it is defined as a sub-category of operational risk.

Despite this, research carried out by Clusters even revealed that around half (48%) of c-level executives and senior managers at firms reporting annual revenues over £50m said there were either no usage controls at all or poorly applied manual processes over the use of spreadsheets at the firms.

In 2013 Thomas Herndon, a graduate student of economics at the University of Massachusetts Amherst found major coding flaws in the spreadsheet used by Carmen Reinhart and Kenneth Rogoff in Growth in a Time of Debt, a very influential 2010 journal article. The Reinhart and Rogoff article was widely used as justification to drive 2010–2013 European austerity programs.

A spreadsheet document (Microsoft Excel) needs to contain heading styles text in the top row and first record column. This makes navigation with key commands (screen reader) much more accessible. There also needs to be a darkened border around the boundary of the body of information. All cells included in the document need to contain some information.

3.10 Accessible PowerPoint Documents

Microsoft PowerPoint is a presentation program created by Robert Gaskins and Dennis Austin at Forethought, Inc. It was released on April 20, 1987, initially for Macintosh computers only. Microsoft acquired PowerPoint for about $14 million three months after it appeared. This was Microsoft's first significant acquisition, and Microsoft set up a new business unit for PowerPoint in Silicon Valley, where Forethought had been located.

PowerPoint became a component of the Microsoft Office suite, first offered in 1989 for Macintosh and in 1990 for Windows, which bundled several Microsoft apps. Beginning with PowerPoint 4.0 (1994), PowerPoint was integrated into Microsoft Office development and adopted shared standard components and a converged user interface.

PowerPoint's market share was minimal at first, before introducing a version for Microsoft Windows, but increased with the growth of Windows and Office. Since the late

1990s, PowerPoint's worldwide market share of presentation software has been estimated at 95 per cent.

PowerPoint was initially designed to provide visuals for group presentations within business organizations but has become widely used in many other communication situations, both in business and beyond. The impact of this much more extensive use of PowerPoint has been experienced as a powerful change throughout society, with strong reactions including advice that it should be used less, should be used differently, or should be used better.

The first PowerPoint version (Macintosh 1987) was used to produce overhead transparencies, the second (Macintosh 1988, Windows 1990) could also create colour 35 mm slides. The third version (Windows and Macintosh 1992) introduced video output of virtual slideshows to digital projectors, ultimately replacing physical transparencies and slides. A dozen significant versions since then have added many additional features and modes of operation and have made PowerPoint available beyond Apple Macintosh and Microsoft Windows, adding versions for iOS, Android, and web access

For a PowerPoint slide show to be accessible to the user, the slide layout features offered by the application should be the only ones used when laying out a PowerPoint slide. This keeps order and structure to the falls, thus making it easier for crucial command navigation. Use good colour contrast between text and background. Use simple language and place five or fewer bulleted points per slide. Avoid animated transitions between slides.

3.11 E-Books:

An eBook (short for electronic book), also known as an e-book or eBook, is a book publication made in digital form, consisting of text, images, or both, readable on the flat-panel display of computers or other electronic devices. Although sometimes defined as "an electronic version of a printed book", some e-books exist without a printed equivalent. E-books can be read on dedicated e-reader devices and any computer device that features a controllable viewing screen, including desktop computers, laptops, tablets and smartphones.

In the 2000s, print and e-book sales trends moved to the Internet, where readers buy traditional paper books and e-books on websites using e-commerce systems. With print books, readers are increasingly browsing through images of the covers of books on publisher

or bookstore websites and selecting and ordering titles online; the paper books are then delivered to the reader by mail or another delivery service. With e-books, users can browse through titles online, and then when they select and order labels, the e-book can be sent to them online, or the user can download the e-book. By the early 2010s, e-books had begun to overtake hardcover by overall publication figures in the U.S.

The main reasons people buy e-books are lower prices, increased comfort (as they can buy from home or on the go with mobile devices) and a more extensive selection of titles. With e-books, "electronic bookmarks make referencing easier, and e-book readers may allow the user to annotate pages. "Although fiction and non-fiction books come in e-book formats, technical material is especially suited for e-book delivery because it can be digitally searched" for keywords. In addition, for programming books, code examples can be copied. The amount of e-book reading is increasing in the U.S.; by 2014, 28% of adults had read an e-book, compared to 23% in 2013; and by 2014, 50% of American adults had an e-reader or a tablet, compared to 30% owning such devices in 2013.

Some trace the concept of an e-reader, a device that would enable the user to view books on a screen, to a 1930 manifesto by Bob Brown, written after watching his first "talkie" (the movie with sound). He titled it The Readies, playing off the idea of the "talkie". In his book, Brown says movies have outmanoeuvred the book by creating the "talkies" and, as a result, reading should find a new medium:

A simple reading machine which I can carry or move around, attach to any old electric light plug and read hundred-thousand-word novels in 10 minutes if I want to, and I want to.

Brown's notion, however, was much more focused on reforming orthography and vocabulary than on medium ("It is time to pull out the stopper" and begin "a bloody revolution of the word."): introducing vast numbers of portmanteau symbols to replace everyday words, and punctuation to simulate action or movement; so it is not clear whether this fits into the history of "e-books" or not. Later, e-readers never followed a model like Brown's; however, he correctly predicted the miniaturization and portability of e-readers. In an article, Jennifer Schuessler writes, "The machine, Brown argued, would allow readers to adjust the type size, avoid paper cuts and save trees, all while hastening the day when words could be 'recorded directly on the palpitating ether.” Brown believed that the e-reader (and

his notions for changing the text itself) would bring a completely new life to reading. Schuessler correlates it with a DJ spinning bit of old songs to create a beat or a piece of entirely new music instead of just a remix of a familiar song.

As e-book formats emerged and proliferated, some garnered support from major software companies, such as Adobe, with its PDF format introduced in 1993. Unlike most other forms, PDF documents are generally tied to a particular dimension and layout, rather than adjusting dynamically to the current page, window, or another size. Different e-reader devices followed other formats, most of them accepting books in only one or a few designs, thereby fragmenting the e-book market even more. Due to the exclusiveness and limited readerships of e-books, the fractured market of independent publishers and speciality authors lacked consensus regarding a standard for packaging and selling e-books.

Meanwhile, scholars formed the Text Encoding Initiative, which developed consensus guidelines for encoding books and other materials of scholarly interest for various analytic uses and reading, and countless literary and other works have been developed using the TEI approach. In the late 1990s, a consortium was formed to develop the Open eBook format for authors and publishers to provide a single source document that many book-reading software and hardware platforms could handle. Several scholars from the TEI were closely involved in the early development of the Open eBook. Focused on portability, Open eBook as defined required subsets of XHTML and CSS; a set of multimedia formats (others could be used, but there must also be a fallback in one of the required formats), and an XML schema for a "manifest", to list the components of a given e-book, identify a table of contents, cover art, and so on. This format led to the open format EPUB. Google Books has converted much public domain works to this available format.

In 2010, e-books continued to gain in their specialist and underground markets. Many e-book publishers began distributing books that were in the public domain. At the same time, authors with books that publishers did not accept offered their works online to be seen by others. Unofficial (and occasionally unauthorized) catalogues became available on the web, and sites devoted to e-books began disseminating information about e-books to the public. Nearly two-thirds of the U.S. Consumer e-book publishing market are controlled by the "Big Five". The "Big Five" publishers are Hachette, HarperCollins, Macmillan, Penguin Random House and Simon & Schuster.

U.S. libraries began to offer free e-books to the public in 1998 through their websites and associated services. However, the e-books were primarily scholarly, technical or professional and could not be downloaded. In 2003, libraries began offering free downloadable popular fiction and non-fiction e-books to the public, launching an e-book lending model that worked much more successfully for public libraries. The number of library e-book distributors and lending models continued to increase over the next few years. From 2005 to 2008, libraries experienced a 60% growth in e-book collections. In 2010, a Public Library Funding and Technology Access Study by the American Library Association found that 66% of public libraries in the U.S. offered e-books [41]. A significant movement in the library industry began to seriously examine the issues relating to e-book lending, acknowledging a "tipping point" when e-book technology would become widely established. Public libraries can be downloaded to e-readers using application software like Overdrive and Hoopla.

The U.S. National Library of Medicine has provided PubMed, a comprehensive bibliography of medical literature for many years. In early 2000, NLM set up the PubMed Central repository, which stores full-text e-book versions of many medical journal articles and books, through cooperation with scholars and publishers in the field. Pubmed Central now provides archiving and access over 4.1 million articles, maintained in a standard XML format known as the Journal Article Tag Suite (or "JATS").

Despite the widespread adoption of e-books, some publishers and authors have not endorsed the concept of electronic publishing, citing issues with user demand, copyright infringement and challenges with proprietary devices and systems. In a survey of interlibrary loan (ILL) librarians, it was found that 92% of libraries held e-books in their collections and that 27% of those libraries had negotiated ILL rights for some of their e-books. This survey found significant barriers to conducting interlibrary loans for e-books. Patron-driven acquisition (PDA) has been available for several years in public libraries, allowing vendors to streamline the acquisition process by offering to match a library's selection profile to the vendor's e-book titles. The library's catalogue is populated with records for all e-books that fit the profile. The decision to purchase the title is left to the patrons. However, the library can set purchasing conditions such as a maximum price and buying caps to spend the dedicated funds according to the library's budget. The 2012 meeting of the Association of American University Presses included a panel on the PDA of books produced by university presses,

based on a preliminary report by Joseph Esposito, a digital publishing consultant. He has studied the implications of PDA with a grant from the Andrew W. Mellon Foundation.

Although the demand for e-book services in libraries has grown in the first two decades of the 21st century, difficulties keep libraries from providing some e-books to clients. Publishers will sell e-books to libraries, but in most cases, they will only give libraries a limited license to the title, meaning that the library does not own the electronic text but is allowed to circulate it for either a specific period or a certain number of checkouts, or both. When a library purchases an e-book license, the cost is at least three times what it would be for a personal consumer. E-book licenses are more expensive than paper-format editions because publishers are concerned that an e-book that is sold could theoretically be read and checked out by many users, potentially damaging sales. However, some studies have found the opposite effect true (Hilton and Wiley 2010).

Writers and publishers have many formats to choose from when publishing e-books. Each design has advantages and disadvantages. The most popular e-readers and their natively supported formats are shown below:

Reader	**Native e-book formats**
Amazon Kindle and Fire tablets	AZW, AZW3, KF8, non-DRM MOBI, PDF, PRC, TXT
Barnes & Noble Nook and Nook Tablet	EPUB, PDF
Apple iPad	EPUB, IBA (Multitouch books made via iBooks Author), PDF
Sony Reader	EPUB, PDF, TXT, RTF, DOC, BBeB
Kobo eReader and Kobo Arc	EPUB, PDF, TXT, RTF, HTML, CBR (comic), CBZ (comic)
Android devices with Google Play Books preinstalled	EPUB, PDF
Pocketbook Reader and Pocketbook Touch	EPUB DRM, EPUB, PDF DRM, PDF, FB2, FB2.ZIP, TXT, DJVU,HTM, HTML, DOC,DOCX, RTF, CHM, TCR, PRC (MOBI)

3.12 Advantages

1. In the space that a comparably sized physical book takes up, an e-reader can contain thousands of e-books, limited only by its memory capacity. An e-book may be readable in low light or even total darkness, depending on the device. Many e-readers have a built-in light source, can enlarge or change fonts, use text-to-speech software to read the text aloud for visually impaired, elderly or dyslexic people or just for convenience.[166] Additionally, e-readers allow readers to immediately look up words or find more information about the topic using an online dictionary. Amazon reports that 85% of its e-book readers look up a word while reading.
2. Printed books use three times more raw materials and 78 times more water to produce when compared to e-books. A 2017 study found that even when accounting for the emissions created in manufacturing the e-reader device, substituting more than 4.7 print books a year resulted in less greenhouse gas emissions than print. While an e-reader costs more than most individual books, e-books may be lower than paper books. E-books may be made available for less than the price of traditional books using on-demand book printers. Moreover, numerous e-books are available online free of charge on sites such as Project Gutenberg. For example, all books printed before 1923 are in the public domain in the United States, which enables websites to host ebook versions of such titles for free.
3. Depending on possible digital rights management, e-books (unlike physical books) can be backed up and recovered in the case of loss or damage to the device on which they are stored. A new copy can be downloaded without incurring an additional cost from the distributor. Readers can synchronize their reading location, highlights and bookmarks across several devices.

3.13 Disadvantages

1. The spine of the printed book is an essential aspect in book design and of its beauty as an object
2. There may be a lack of privacy for the user's e-book reading activities; for example, Amazon knows the user's identity, what the user is reading, whether the user has finished the book, what page the user is on, how long the user has spent on each page, and which passages the user may have highlighted. One obstacle to the wide adoption of e-books is many people valueless the printed book as an object, including aspects

such as the texture, smell, we, right and appearance on the shelf. Print books are also considered valuable cultural items and symbols of liberal education and the humanities. Kobo found that 60% of e-books purchased from their e-book store are never opened and found that the more expensive the book is, the more likely the reader would at least open the e-book.

3. Joe Queenan has written about the pros and cons of e-books:
4. Electronic books are ideal for people who value the information, have vision problems, read on the subway, do not want other people to see amusing themselves, or have storage clutter issues. Still, they are useless for people engaged in an intense, lifelong love affair with books. Books that we can touch; books that we can smell; books that we can depend on.
5. Publishers and software developers need to address some readability and usability issues, apart from emotional and habitual aspects. Many e-book readers who complain about eye strain, lack of overview and distractions could be helped if they could use a more suitable device or a more user-friendly reading application. Still, when they buy or borrow a DRM-protected e-book, they often have to read the book on the default device or application, even if it has insufficient functionality.
6. While a paper book is vulnerable to various threats, including water damage, mould and theft, e-books files may be corrupted, deleted or otherwise lost as well aspirated. Where the ownership of a paper book is relatively straightforward (albeit subject to restrictions on renting or copying pages, depending on the book), the purchaser of an e-book's digital file has conditional access with the possible loss of access to the e-book due to digital rights management provisions, copyright issues, the provider's business failing or possibly if the user's credit card expired

3.14 E-Journals

Electronic journals are accessed via electronic transmission to provide academic research and study materials. Some journals are online-only journals, whereas others are online versions of printed journals.

Print journals are only available in libraries. For researchers and readers, it isn't easy to have constant access to libraries at their convenience. In some cases, if the journal is issued to one reader by the library, others cannot access it simultaneously. Furthermore, print

journals need to be shipped out to reach their subscribers. This consequently curtails immediate access to the journal by readers.

Electronic journals are readily available on the web. These can be accessed from anywhere, at any time, and by multiple readers simultaneously. The articles published in electronic journals are visible depending on their accessibility, i.e., open-access or subscription.

Over the years, it has been found that open access articles are cited more than non-open access articles. Articles published in open-access electronic journals get more citations than those published in print journals. Consequently, more citation counts promisingly increase the impact factor of the journal.

Search Engine Optimization (SEO) plays a crucial role in enhancing the discoverability of online published articles. Articles posted only on print media do not have a presence on the web. This significantly hinders the discoverability of such reports. Furthermore, the usage of appropriate keywords and key phrases increases the probability of your article's visibility on the web.

Attaching hyperlinks makes it easier to cite material sources and find more information about the topic. Print journals feature a list of works cited at the end. Electronic journals contain links throughout the text for readers to easily click to know more information and read the source content. Furthermore, these in-text links can sometimes misguide readers in the flow of an article and render the reading non-conclusive. This happens due to the interconnection of the internet. Moreover, similar domain articles are nested among other links, moving images, flashing ads, and other clickable content, which are not present in print journals.

Print journals and electronic journals both have standard formatting rules. However, compared to e-journals, print journals face a challenge of space constraints as only a limited number of pages can be allotted for articles depending on their length. Not adhering to the word count limit whilst publishing articles in print journals leads to an increase in the printing cost of the journal. Additionally, articles published in e-journals are generally available in PDF or HTML formats. In conclusion, both forms of media follow formatting aspects such as consistency in fonts, typography, content, pagination, page aesthetics, and the articles' layout.

3.15 Referencing Style:

Both print journal articles and e-journal articles duplicate in-text citations, but they may appear differently in the reference list.

The referencing format for both the forms of journals differs in ways as given below:

1. Basic format for citing references in a print journal article-

Author(s) Initial(s). Surname(s), "Title of the article," Abbrev. Title of Journal, vol. X, no. X, pp. Xxx–xxx, Abbrev. Month, Year.

2. Basic format for print articles and e-journal articles that have also been published in print-

Surname, Initial. (Year of publication) 'Title of paper, Title of Journal, Volume(Issue), pp. Page numbers.

3. Basic format for e-journal articles that are not published in any print equivalent-

Surname, Initial. (Year of publication) 'Title of paper, Title of Journal, Volume(Issue), pp. Page numbers. DOI: DOI number

Or

Surname, Initial. (Year of publication) 'Title of article, Title of Journal, Volume(Issue), pp. Page numbers. Available at: URL (Accessed: date).

In case of only digital availability of the articles, the reference will also need either a DOI or a URL and access date.

The differences between print journals and E-journals are

Electronic Journals	**Print Journals**
Readily available on the go	Only available through libraries or book shops
More citation count due to open access	Fewer citation counts due to difficulty in discoverability
In the case of open access journals, published articles are available for the whole world	Need to subscribe to get a copy of the journal
Direct feedback from readers	No direct feedback from readers

Corrections are easier to incorporate even if the article is published	Once published, the report will have to be reprinted with a retraction statement, which leads to the added cost of printing

3.16 E-Databases:

An electronic database is a searchable electronic collection of resources. There are two basic types of databases:

- Indexes or bibliographic databases
- Full-text databases.

Indexes or bibliographic databases, also known as indexing and abstracting services, provide:

- Indexing information for topical searching across resources in multiple formats (including multidisciplinary searches)
- Abstracts (short descriptions) of the contents (e.g. articles) to help you decide if it is relevant to your research.

Full-text databases provide the same services as above but include the full text of articles, allowing you to read it online or download it for offline reading.

These databases allow the University Library to provide students and staff of Notre Dame with access to thousands of journals and ebooks, newspaper articles, reports, pictures, and streaming video content.

A database is stored as a file or a set of files. The information in these files may be broken down into records, each consisting of one or more fields. Fields are the basic units of data storage, and each field typically contains information about one aspect or attribute of the entity described by the database. Records are also organized into tables containing information about various fields' relationships. Although a database is applied loosely to any data collection in computer files, a database in the strict sense provides cross-referencing capabilities. Using keywords and various sorting commands, users can rapidly search, rearrange, group, and select the fields in many records to retrieve or create reports on particular data aggregates.

Database records and files must be organized to allow retrieval of the information. Queries are the primary way users retrieve database information. The power of a DBMS comes from its ability to define new relationships from the basic ones given by the tables and use them to get responses to queries. Typically, the user provides a string of characters, and the computer searches the database for a corresponding sequence and provides the source materials in which those characters appear; a user can request, for example, all records in which the contents of the field for a person's last name is the word, Smith.

The many users of an extensive database must be able to manipulate the information within it quickly at any given time. Moreover, large businesses and other organizations build up many independent files containing related and even overlapping data. Their data-processing activities often require the linking of data from several files. Several different types of DBMS have been developed to support these requirements: flat, hierarchical, network, relational, and object-oriented.

Early systems were arranged sequentially (i.e., alphabetically, numerically, or chronologically); the development of direct-access storage devices made possible random access to data via indexes. In flat databases, records are organized according to a simple list of entities; many simple databases for personal computers are flat in structure. The documents in hierarchical databases are arranged in a treelike format, with each history level branching off into a set of smaller categories. Unlike hierarchical databases, which provide single links between sets of documents at different levels, network databases create multiple linkages between groups by placing links, or pointers, to one collection of records in another; the speed and versatility of network databases have led to their wide use within businesses and in e-commerce. Relational databases are used where links cannot express associations between files or records; a simple flat list becomes one row of a table, or "relation," and multiple relations can be mathematically associated to yield the desired information. Various iterations of SQL (Structured Query Language) are widely employed in DBMS for relational databases. Object-oriented databases store and manipulate more complex data structures, called "objects," organized into hierarchical classes that may inherit properties from classes higher in the chain; this database structure is the most flexible and adaptable.

The information in many databases consists of natural-language documents; number-oriented databases primarily contain statistics, tables, financial data, and raw scientific and technical data. Small databases can be maintained on personal-computer systems and used by

individuals at home. These and larger databases have become increasingly important in business life, in part because they are now commonly designed to be integrated with other office software, including spreadsheet programs.

Typical commercial database applications include airline reservations, production management functions, medical records in hospitals, and legal records of insurance companies. The most extensive databases are usually maintained by governmental agencies, business organizations, and universities. These databases may contain such materials as abstracts, reports, legal statutes, wire services, newspapers and journals, encyclopaedias, and catalogues of various kinds. Reference databases contain bibliographies or indexes that guide books, periodicals, and other published literature. Thousands of these publicly accessible databases now exist, covering topics ranging from law, medicine, and engineering to news and current events, games, classified advertisements, and instructional courses.

Increasingly, formerly separate databases are being combined electronically into more significant collections known as data warehouses. Businesses and government agencies then employ “data mining” software to analyze multiple aspects of the data for various patterns. For example, a government agency might flag for human investigation a company or individual that purchased a suspicious quantity of specific equipment or materials, even though the purchases were spread around the country or through various subsidiaries

Database technology has changed and evolved over the years. Relational, NoSQL, hierarchical, it can start to get confusing. Storing data doesn’t have to be a headache. If you’re trying to pick the correct database for your organization, here’s a guide to the properties and uses of each type.

1. Relational databases

Relational databases have been around since the 1970s. The name comes from how data is stored in multiple related tables. Within the tables, information is stored in rows and columns. The relational database management system (RDBMS) is the program that allows you to create, update, and administer a relational database. Structured Query Language (SQL) is the most common language for reading, creating, editing and deleting data. Relational databases are very reliable. They are compliant with ACID (Atomicity, Consistency, Isolation, Durability), a standard set of properties for reliable database transactions. Relational databases work well with structured data. Organizations with unstructured or semi-structured data should not be considered a relational database.

Examples: Microsoft SQL Server, Oracle Database, MySQL, PostgreSQL and IBM Db2

2. NoSQL databases

NoSQL is a broad category that includes any database that doesn't use SQL as its primary data access language. These types of databases are also sometimes referred to as non-relational databases. Unlike in relational databases, data in a NoSQL database doesn't have to conform to a pre-defined schema, so these types of databases are great for organizations seeking to store unstructured or semi-structured data. One advantage of NoSQL databases is that developers can make changes to the database on the fly without affecting applications using the database.

Examples: Apache Cassandra, MongoDB, CouchDB, and CouchBase

3. Cloud databases

A cloud database refers to any database designed to run in the cloud. Like other cloud-based applications, cloud databases offer flexibility and scalability, along with high availability. Cloud databases are often low-maintenance since many are provided via a SaaS model.

Examples: Microsoft Azure SQL Database, Amazon Relational Database Service, Oracle Autonomous Database.

4. Columnar databases

Also referred to as column data stores, columnar databases store data in columns rather than rows. These databases are often used in data warehouses because they're great at handling analytical queries. When you're querying a columnar database, it essentially ignores all of the data that doesn't apply to the question because you can retrieve the information from only the columns you want.

Examples: Google BigQuery, Cassandra, HBase, MariaDB, Azure SQL Data Warehouse

5. Wide column databases

Comprehensive column databases, also known as vast column stores, are schema-agnostic. Data is stored in column families rather than in rows and columns. Highly scalable, comprehensive column databases can handle petabytes of data, making them ideal for supporting real-time big data applications.

Examples: Big Table, Apache Cassandra and Scylla

6. Object-oriented databases

An object-oriented database is based on object-oriented programming, so data and its attributes are tied together as an object. Object-oriented databases are managed by object-oriented database management systems (OODBMS). These databases work well with object-oriented programming languages, such as C++ and Java. Like relational databases, object-oriented databases conform to ACID standards.

Examples: Wakanda, ObjectStore

7. Key-value databases

One of the simplest types of NoSQL databases, key-value databases save data as a group of key-value pairs of two data items each. They're also sometimes referred to as a key-value store. Key-value databases are highly scalable and can handle high traffic volumes, making them ideal for processes such as session management for web applications, user sessions for massive multi-player online games, and online shopping carts.

Examples: Amazon DynamoDB, Redis

8. Hierarchical databases

Hierarchical databases use a parent-child model to store data. If you were to draw a picture of a hierarchical database, it would look like a family tree, with one object on top branching down to multiple things beneath it. The one-to-many format is rigid, so child records can't have more than one parent record. Initially developed by IBM in the early 1960s, hierarchical databases are commonly used to support high-performance and high availability applications.

Examples: IBM Information Management System (IMS), Windows Registry

9. Document databases

Document databases, also known as document stores, use JSON-like documents instead of rows and columns to model data. Sometimes referred to as document-oriented databases, document databases are designed to store and manage document-oriented information, also referred to as semi-structured data. Document databases are scalable and straightforward, making them useful for mobile apps that need fast iterations.

Examples: MongoDB, Amazon Document DB, Apache Couch DB

10. Graph databases

Graph databases are a type of NoSQL database based on graph theory. Graph-Oriented Database Management Systems (DBMS) software is designed to identify and work with the connections between data points. Therefore, graph databases are often used to analyze the relationships between heterogeneous data points, such as fraud prevention or mining data about social media customers.

Examples: Data tax Enterprise Graph, Neo4J

11. Time series databases

A time-series database is optimized for time-stamped or time-series data. Examples of this type of data include network, sensor, and application performance monitoring data. All those IoT sensors attached to everything put out a constant stream of time series data.

Examples: Druid, eXtremeDB, InfluxDB

A bibliographic database is a repository of bibliographic or publication records. It provides an index of journal articles from multiple journals and includes citations, abstracts and often a link to the full text. Databases are available online to be updated regularly and easily accessed.

12. The Medline database

Medline is perhaps the best known bibliographic database and can be accessed free of charge via several online portals, including PubMed. It is compiled by the National Library of Medicine of the United States and in 1997 was thought to have included around 30-40% of the 10 million biomedical articles that had been published. Encompassing articles published since 1946, Medline currently indexes citations from approximately 5,600 biomedical journals in 40 languages. 806,000 sources were added in 2015 alone.

Articles can be traced in two ways: by terms including words in the title, abstract, authors' names, or institution, or by a restricted thesaurus of hierarchically grouped medical terms, known as Medical Subject Headings (MeSH terms).1 As with other databases, multiple search terms can be used simultaneously by combining them with the Boolean operators AND, OR and NOT.

The best way to learn about bibliographic databases is to use them. Trisha Greenhalgh's article1 includes several worked examples that can be replicated in Medline.

Embase:

Embase, published by Elsevier, is another biomedical database consisting of around 30 million records from 8500 journals, dating back to 1974 (although Embase Classic includes citations dating back to 1947).3 There is an overlap in coverage between Embase and Medline, but the former includes over 6 million quotations, not in Medline. Embase is more comprehensive on pharmacological literature and alternative therapies.

Other frequently used biomedical databases include:

- CINAHL (Cumulative Index of Nursing and Allied Health Literature) – indexes nursing and allied health journals
- Cochrane Library includes Cochrane reviews and Cochrane's central register of controlled trials (CENTRAL) and health technology assessments and economic evaluations.
- Google Scholar – as well as journals and conferences papers, this includes books, dissertations, technical reports and patents
- PsychINFO – indexes psychological, social and behavioural science articles from the 1880s onwards
- Scopus – includes peer-reviewed journals in the scientific, technical, medical and social sciences
- Web of Science – includes coverage of the sciences, social sciences, arts and humanities

Limitations of electronic databases

1. Databases may not contain the most recent references
2. Search results from bibliographic databases depend on the search strategy used and the quality of the indexing.
3. Obtaining a comprehensive selection of references can involve searching several databases because their coverage varies, and no single database accesses all available literature
4. Most databases only include published articles; it is necessary to search separately for grey literature.

3.17 ETD-Electronic Thesis and Dissertation

An ETD is an openly-accessible electronic version of your thesis or dissertation that will be kept by Duke University Libraries instead of a bound paper copy. The transition to ETDs is a cooperative effort between The Graduate School and the library.

Benefits of open access for my thesis or dissertation

- Greater visibility helps improve your reputation in your field. Many scholars today do their initial searching on a topic online. Scholars seeking to build their reputation need to make their work accessible to potential colleagues and employers.
- Scholarly communication happens very quickly today. Internet availability is much more beneficial than the long delays and added costs accompanying library processing and lending of print theses and dissertations.
- Your thesis or dissertation will become part of a growing international collection of ETDs through the Networked Digital Library of Theses and Dissertations.
- Because your work, and the fact that it is your work, will be easy to find, it will be much harder for anyone to appropriate your research without giving you credit.
- Research shows that scholarship available on the internet through open access is cited more often and is cited sooner than work available only through a subscription or the loan of a print copy.
- Multimedia objects, including colour images, hyperlinks, audio, video, spreadsheets and databases, even virtual reality worlds, can be easily incorporated into your dissertation and can readily be made available to all of your readers.
- You can include a stable URL for your work in a CV or e-mail it to colleagues and hiring committees. Because our database is OAI compliant, primary search tools will also find your work.
- Open access more fully embodies the goal of the thesis or dissertation to be a public contribution to scholarship. Your work can reach an audience whose interest in it may have been unforeseeable on the internet. New possibilities for interdisciplinary or cross-disciplinary research, and the formation of unexpected research collaborations, are created by open access to scholarship.

In a worldwide scenario, doctoral research programs are thought to be fundamental to the advancement of higher education, where universities are the key players in conveying the significant responsibility regarding moulding good researchers at various stages in their careers. Indian universities assume a noteworthy part in generating and disseminating knowledge by directing research works and producing PhD theses as distinct information sources. Every year, almost 8000-10000 PhDs are awarded in India. The motivation behind this is to give an experience in scholarship, which will be of continuing value to the student in understanding how new knowledge is obtained and conveyed within the chosen field. These works contain important content, including focused literature views and points of research interest, which are not by and large made accessible somewhere else. Indian thesis literature is beset with numerous problems like the absence of systematic acquisition, lack of access, uncertain publication practice, tremendous development in the number of theses, etc. In western nations, these issues were addressed already, and genuine endeavours have been made to solve them.

In India, the Association of Indian Universities began publishing doctoral bibliographies in all subjects and the Theses of the Month column through its weekly publication University News. Libraries participating in the Information and Library Network (INFLIBNET), a library networking program of the UGC, made an ETD repository prominently known as Shodhganga, which serves as a platform for researchers to use deposit their PhD these and make it accessible for the scholarly community in open access. Additionally, the INFLIBNET centre keeps up another repository known by Shodhgangotri. Research scholars must deposit electronic versions of the approved synopsis submitted to the universities to register for doctoral projects.

Indian academic institutions are likewise begun ETD projects in recent years. Indian Institute of Technology in Mumbai, Chennai and Kharagpur has its ETD collections accessible on the campus network. Indian Institute of Science, Bangalore and National Chemical Laboratory, Pune, has established an ETD project using DSpace software. Vidyanidhi Initiative at Mysore University tries to develop a national level repository of Indian doctoral theses. This study is vital for India's design and development of electronic theses and dissertations. In 2005, the UGC drafted a national policy framework entitled “UGC (Submission of Metadata and Full-text of Doctoral Theses in Electronic Format) Regulations, 2005”. UGC’s Regulatory Framework goes for advancing a mechanism to enhance the quality and accessibility of Indian theses and implement uniform guidelines and

standards for creating metadata of doctoral theses and a system for gathering and collating this standardized data.

There are many advantages associated with electronic thesis and dissertation (ETD) submission

- Greater exposure to and availability of graduate research
- Available in full text to potential employers and other researchers
- Are accessible from anywhere at any time
- One ETD can have multiple users simultaneously
- No need to print, copy and bind paper theses; digital copies are much cheaper to produce than traditional paperbound versions
- Do not need storage space in libraries
- No need to print, copy and bind paper theses; digital copies are much cheaper to produce than traditional paperbound versions
- Do not need storage space in libraries

At the same time, there are also certain limitations while submitting a thesis online.

- This is a new system, and issues are to be resolved regarding formats. Changes as standards are settled may affect submission and future access.
- Immediate access can give competitive colleagues an edge. This can be overcome to some degree by delayed access.
- Intellectual property rights: Electronic publishing might interfere with publishing chapters in some journals. This varies from journal to journal and discipline to discipline and is in an excellent state of flux at this time. We believe this will not be an issue for electronic dissertations in the long run, but this is currently uncertain.
- Electronic publishing can interfere with publishing a whole thesis as a book. Some publishing houses will not consider works that have appeared in any form on the web, even if they might undergo substantial revision before book publication.
- Copyright issues about web-published material are not well understood.

- Plagiarism on the Internet is a growing concern. Under widely accepted "fair use" principles, anyone can copy part of your dissertation as long as it is for non-commercial purposes. Ethically it is essential to cite such work correctly. However, it is possible with cut-and-paste technology to repackage large chunks of work as "new".

3.18 Shodhganga

Theses and dissertations are the rich and unique source of information, often the only source of research work that does not find its way into various publication channels. Theses and dissertations remain an untapped and under-utilized asset, leading to unnecessary duplication and repetition that, in effect, is the antitheses of research and wastage of enormous resources, both human and financial.

The UGC Notification (Minimum Standards & Procedure for Award of M.Phil. / Ph.D Degree, Regulation, 2009) dated 1st June 2009 mandates submission of the electronic version of theses and dissertations by the researchers in universities intending to facilitate open access to Indian theses and dissertations to the academic community worldwide. Online availability of electronic theses through centrally-maintained digital repositories ensures easy access and archiving of Indian doctoral theses and will also help raise the standard and quality of research. This would overcome the serious duplication of research and poor quality resulting from the "poor visibility" and the "unseen" factor in research output. As per the Regulation, hosting, maintaining and making the digital repository of Indian Electronic Theses and Dissertation (called "Shodhganga"), accessible to all institutions and universities, is assigned to the INFLIBNET Centre.

"Shodhganga" is the name coined to denote the digital repository of Indian Electronic Theses and Dissertations set-up by the INFLIBNET Centre. "Shodh" originates from Sanskrit and stands for research and discovery. The "Ganga" is the holiest, most significant and most prolonged of all rivers in the Indian subcontinent. The Ganga is the symbol of India's age-long culture and civilisation, everchanging, ever-flowing, ever-loved and revered by its people, and has held India's heart captive and drawn uncounted millions to her banks since the dawn of history. Shodhganga is the reservoir of Indian intellectual output stored in a repository hosted and maintained by the INFLIBNET Centre.

The Shodhganga@INFLIBNET is set up using an open-source digital repository software called DSpace developed by MIT (Massachusetts Institute of Technology) in partnership with

Hewlett- Packard (HP). The DSpace uses internationally recognized protocols and interoperability standards. Shodhganga provides a platform for research scholars to deposit their Ph.D. theses and make them available in open access to the entire scholarly community. The repository can capture, index, store, disseminate and preserve ETDs (Electronic Theses and Dissertations) submitted by the researchers.

DSpace supports "Open Archives Initiative's Protocol for Metadata Harvesting" (OAI-PMH) and uses a qualified version of the Dublin Core schema for its metadata. The INFLIBNET Centre promotes institutional and ETD repositories in member universities using OAI-PMH compliant software. Several member universities have already set up their institutional and ETD repositories using DSpace or other OAI-PMH compliant Institutional Repository software. It would be possible for universities with good network and computing infrastructure to maintain their own ETD repositories. Their research scholars could deposit e-versions of their theses and dissertations. Moreover, they can use Shodhganga to host their theories as backup archives. INFLIBNET Centre, besides maintaining the Central ETD Repository (Shodhganga), would also deploy a central server to harvest the metadata from all such ETD repositories distributed in universities to provide unified access to theses and dissertations through its harvesting server.

Shodhganga replicates the academic structure of each University in terms of Departments/ Centres/ Colleges each University has to facilitate ease of navigation. This structure encourages university research scholars to deposit their theses in the respective Department / Centre / College. As shown in Fig 1, the option for simple search and advance search is available on the home page and browsing facilities through universities and departments. The Centre is also developing a semantic web-based interface to facilitate subject-based browsing, navigation, search and retrieval of content available in the repository.

3.19 Shodhsindhu

Based on the recommendation of an Expert Committee, the Ministry of HRD (now renamed as Ministry of Education) has formed e-ShodhSindhu, merging three consortia initiatives, namely UGC-INFONET Digital Library Consortium, NLIST and INDEST-AICTE Consortium. Thee-ShodhSindhu will continue to provide current as well as archival access to more than 10,000 core and peer-reviewed journals and several bibliographic,

citation and factual databases in different disciplines from a large number of publishers and aggregators to its member institutions, including centrally-funded technical institutions, universities and colleges that are covered under 12(B) and 2(f) Sections of the UGC Act.

The main objective of the e-ShodhSindu: Consortia for Higher Education E-Resources is to provide access to qualitative electronic resources including full-text, bibliographic and factual databases to academic institutions at a lower rate of subscription. The primary aims and objectives of thee-Shodh Sindhu are as follows:

- Setting-up e-ShodhSindu: Consortia for Higher Education E-Resources by augmenting and strengthening activities and services offered by three MHRD-funded Consortia;
- Develop a formidable collection of e-journals, e-journal archives and e-books on perpetual access basis;
- Monitor and promote usage of e-resources in member universities, colleges and technical institutions in India through awareness and training programmes;
- Provide access to subscription-based scholarly information (e-books and e-journals) to all educational institutions;
- Provide access to scholarly content available in open access through subject portals and subject gateways;
- Bridge digital divide and move towards an information-rich society;
- Provide access to selected e-resources to additional institutions, including open universities and MHRD-funded institutions that are not covered under existing consortia;
- Take up different activities and services that require a collaborative platform and are not being performed by existing Consortia; and
- Moving towards developing a National Electronic Library with electronic journals and electronic books as its primary building blocks.

3.20 Anticipatory Information Services:

Anticipatory information services are provided to library users in anticipation of their demands for such services. These services are also called active information services. The need for such services was felt mainly due to:

i) The exponential growth of published literature, particularly in the field of science and technology;

ii) Interdisciplinary nature of frontline areas of research, resulting in scattering of information in different disciplines; and

iii) Publications of research results in different sources (like primary research periodicals, research reports, conference proceedings, dissertations, etc.), languages, and other formats (print or electronic). Due to the growth in volume, diversity, and complexity of information sources, scientists, technologists, researchers, and managers faced problems accessing information and keeping themselves abreast of the latest developments in their fields of interest. To solve this problem, the libraries, particularly scientific and technical libraries, started providing information services to the users, mainly researchers. Now, not only S&T libraries but all kinds of libraries and information/documentation centres are offering some form of anticipatory information service, depending upon the needs of their clients. Users' information needs are assessed to provide these services, and services are designed accordingly. Initially, the service is provided on a trial basis, and when the response is satisfactory, the service is regularised. Generally, the following types of anticipatory services are offered: i) Current Awareness Type ii) Condensation Type iii) Readers Advisory Service iv) Information Literacy Training i) Current Awareness Type To keep the users abreast of the current developments in their respective fields of interest current awareness types of services are offered to the users. The process involves scanning the newly available documents in print and non-print form, selecting items relevant to the needs of individuals or groups of users, recording them, and disseminating them regularly. The current awareness type of services meets the current information needs of the users. Types of services provided under this category are:

→ Accession List/ Current Awareness List/ Documentation Bulletin

→ Title Announcement Service/ Contents-by-Journal Service

→ Selective Dissemination of Information

→ Research-in-Progress Bulletin

→ Newspaper Clipping Service

Accession list covers the latest books acquired by the library. Accession list is brought out either fortnightly or monthly. Some libraries regularly display the latest books in the library after accessioning. Current awareness list and documentation bulletin cover list of articles of latest journals or other sources of current information received by the library. In the contents-by-journal service, content pages of the newly acquired journals are duplicated and circulated to the users for keeping them abreast of the latest articles published in their fields of interest. Sometimes currently received journals are distributed to the researchers. Selective dissemination of information service is a personalised current awareness service, where newly acquired information items are matched with the user's area of interest. Only those items are selected and disseminated to the user, matching the user's interest. This service usually is computerised. Research-in-progress bulletin is another current awareness service that provides information on the ongoing research projects in various research institutions in a country or the world. Such types of publications are generally brought out by a parent body that funds or controls a group of research organisations like CSIR (Council of Scientific and Industrial Research), ICMR (Indian Council of Medical Research), ICAR (Indian Council of Agricultural Research), etc. In the newspaper clipping service, libraries provide essential news items of interest published in national and international newspapers and magazines to the organisation periodically, such as daily or weekly. Newspaper clipping service is standard in media libraries, government departments, industrial organisations, and financial institutions.

3.21 Condensation Type:

In this type, the contents of the documents are condensed or summarised along with bibliographical details of the document. This enables the user to quickly identify the document's actual contents and determine its relevance to their interest. At times, a well-prepared abstract serves as a substitute for the document. The types of services under this category are indexing, abstracting, digest, and other value-added services. The basic process involved in indexing and abstracting service is 'analysis of information. In indexing service, it is 'analysis of the subject', and in abstracting service, it is 'analysis of the contents.' In both these services, no critical evaluation is carried out of the actual contents of the documents. The resultant product is factual, noncritical or non-evaluative. In digest service, information is collected from various sources, and it is properly evaluated, analysed and consolidated to

prepare a digest. Analysis and consolidation of data are done keeping in view the specialised requirements of the users. Different types of digests are designed tailored to the needs of various categories of users, e.g. users at managerial, supervisory, technician or operator levels. Abstracting, indexing and digests services meet current as well as specific information needs of the users. In contrast, some value-added services like state-of-the-art reports, reviews, market reports, etc., meet the catching-up information needs of the users.

3.22 Readers Advisory Service:

This service deals with providing reading guidance to individuals. This service aims to motivate the readers to use the library and teach good reading habits. School children require this kind of service very much. Such a service is more often offered in schools and public libraries. This service helps readers select the right books for educational and recreational purposes. This type of service meets the general reading needs of the users and helps in the personal development of the users.

a. Information Literacy Training:

Information literacy training has been known by many names, such as library orientation, user assistance, bibliographic instruction, user education, and information skills training. Library orientation is concerned with acquainting new users to the library, such as objectives of the library and its organisation, collection of the library and its location, general rules and procedures of the library and reference and information services of the library. User assistance refers to helping an individual rather than a group. Bibliographic instructions concentrate on the mechanics of using particular resources. User education or information skills training connotes an educational activity that motivates the user and develops a skill to find and search information independently for study, research, and recreational purposes. Information literacy skills concentrate on cognitive and transferable skills such as problem-solving, evaluation, and communication skills. Chartered Institute of Library and Information Professionals (United Kingdom) defines information literacy as: 'Information literacy is knowing when and why you need information, where to find it, and how to evaluate, use and communicate it ethically.' National Forum on Information Literacy, Inc. (U.S.A) defines it as: 'Information literacy is the ability to know when there is need for information, identity, locate, evaluate and effectively use that information for issue or problem in hand.' An information literate should have the ability to: • understand the need for information; • identify resources available; • find information; • evaluate the results; • work with or exploit

the results; • communicate and share the findings; and • manage the findings. UNESCO strongly advocates building knowledge societies where the power of information and communication helps people access the knowledge they need to improve their daily lives and achieve their full potential. In this context, information literacy is essential to empower people from all walks of life to seek, evaluate, use and create information effectively to achieve their personal, social, occupational and educational goals.

b. The rise of information:

An Overview revolution has led to information becoming a producer of wealth. This revolution has increased the importance of accessing and utilising information from various sources, including information published electronically. Multiple studies have shown that the information literacy level of students entering higher education is low. They have basic knowledge of several simple tools and documents, but they lack understanding of other more specialised sources like scholarly journals, databases, thesaurus, etc. They also lack the knowledge of the basic principles of copyright or a critical approach to information. Hence, information literacy training is mandatory if students perform at the expected level in higher education. Well, planned information literacy training programmes ensure that each user can access and use all the available quality information efficiently and effectively regardless of its form, both in the library and on the Internet. Details of why information literacy is essential for library staff and users and types of information literacy programmes must be conducted for various categories of users.

Review questions

1. Define E-resource.

2. List out the major types of E-resources.

3. What is an E-document?

4. Define E-books.

5. What are E-journals?

6. Explain E-database and mention its uses.

7. Explain Shodhganga and Shodhsindhu.

8. What is ETD?

UNIT – 4

INFORMATION SERVICES

4.1 Introduction:

We are living in the information age. Information is crucial for all our day-to-day activities. It is generated from all kinds of human activities and achievements. Both individuals and organisations are involved in the creation of information. 6 Information Services R&D organisations, for instance, carry out research and generate new information. Through their diverse activities, such as governance, administration, census and surveys, government organisations develop further information. Individuals, like researchers, inventors, innovators, discoverers, thinkers, authors, planners and policymakers, judges, etc., are all involved in generating information. The information, thus generated, is processed and recorded in various sources and formats and is made available for public use. A large amount of information is created every year in print, films, electronic and optical storage media and is disseminated through various channels like print, telephone, radio, television and the Internet. Printed information is available in a variety of primary sources (like periodicals, theses, research reports, patents, standards, etc.), secondary sources (like indexing and abstracting journals, books, dictionaries, encyclopaedias, handbooks, etc.) and tertiary sources (like directories, bibliography of bibliographies, guide books, etc.). Electronic information is available for all the print versions in the form of e-resources, such as e-books, e-journals, etc. Libraries systematically collect, process, store and disseminate this recorded knowledge and information to their users. In this Unit, you will study information, need for information, and types of services libraries generally provide to meet these information needs.

4.2 Objectives:

After reading this Unit, you will be able to:

→ explain the concepts of data, information and knowledge;

→ identify the information needs of different groups of users;

→ categorise the types of information needs;

→ describe the types of services the library can offer to meet these information needs; and

→ discuss the influence of information technology on the provision of information services.

4.3 Reference Service and Information Services: concept, need, types, theories, trends

The term "reference service" is defined simply as personal assistance provided to library users seeking information. Individuals who hold a master's degree in the field of library and information sciences or information studies typically offer the service. Reference librarians are variously referred to as "mediators between the user and the information" and "navigators of the information super-highway."

Traditionally, reference service has been offered at a designated desk, telephone, and correspondence within the library building. More recently, libraries have expanded to provide reference services electronically via the World Wide Web, e-mail, and even two-way videoconferencing. Another reference service form is a classroom and one-on-one instruction in print and electronic resources. Regardless of the delivery method, the value of reference service remains the same: to provide quality information through personalized service to library users at the time of need. Reference service is characterized by human interaction.

The history of reference service is neither as long nor as illustrious as the history of libraries. Samuel Rothstein (1961) noted, "May I remind you that in the United States of less than a century ago, the library still took no responsibility whatsoever for the provision of personal assistance to its users." Samuel Swett Green, the librarian at Worcester Public Library in Massachusetts, is credited with the "founding" of reference. In a paper read at a meeting of the American Library Association and published in Library Journal in 1876, Green provided numerous specific examples of questions that required the assistance of a librarian. He used the illustrations to "show that readers in popular libraries need a great deal of assistance." In this way, Green laid the foundation for reference service as it has been practised ever since. His article noted that although catalogues and indexes are valuable, most users require instruction in their use. Users also must be guided in selecting the books that best meet their information needs. Green highlighted the importance of human interaction in the personal assistance process—librarians must be "easy to get at and pleasant to talk with" (i.e., approachable), and librarians must mingle freely with users and help them in every way. Green further emphasized that "certain mental qualities are requisite or desirable in library

officers who mingle with readers. Prominent among these is a courteous disposition that will disclose itself in agreeable manners. Sympathy, cheerfulness, and patience are needful." He concluded that "a librarian should be as unwilling to allow an inquirer to leave the library with his question unanswered as a shopkeeper is to have a customer go out; of his store without making a purchase." This was the beginning of user-centred service. Green based his views on his experience at the Worcester Library, where he observed that the reference room was seldom used. His implementation of providing personal assistance to library users increased the use of the reference room

a. Concept:

The idea of personal service to users caught on slowly, particularly in academic libraries where the faculty's role in providing research guidance to the students was thought. The debate raged for years regarding the value of such service. At the heart of the matter was economics—this was just one more service competing for funds. By 1893, a government report identified "personal assistance" as one of the five library primary practices; the other four practices were book selection, classification, cataloguing, and planning the building.

The period between World War I and World War II evidenced the growth and specialization of reference services. Beyond face-to-face interaction within a building, questions were handled by telephone and correspondence. More extensive libraries installed separate information desks to help users with basic directional and information needs, hired librarians with subject expertise, and established reader advisory services.

Textbooks for students in librarianship programs began to appear by 1902. In 1930, the American Library Association published James I. Wyer's Reference Work: A Textbook for Students of Library Work and Librarians. As Green did in 1876, Wyer focused on the humanistic aspects of reference work. He wrote, "[H]ere is a service which defies and transcends machinery. It still is, and always will be, imperative to provide human beings as intermediaries between the reader and the right book. The utmost use of great libraries never can be attained by mechanics." The words continue to be echoed in the writings of modern thinkers on the reference process. Buildings, Books, and Bytes: Libraries and Communities in the Digital Age (1996), a report prepared by the Benton Foundation, recommends a high touch, high technology role for librarians, and it encourages more significant publicity for the librarian as information navigator with the human touch.

b.Goal of the reference:

The goal of the reference librarian is to meet the user's individual needs to the fullest extent possible. How and to what time this is done varies from library to library and depends on the library type. Academic libraries focus on teaching users how to find information, special libraries primarily find information and package it for their users, and public libraries practice both approaches. After World War I, special libraries (e.g., for governments, corporations, museums, and newspapers) emphasized locating information over the building and maintaining extensive collections. These were the first libraries to use online databases to identify appropriate resources. Limits of staffing, subject expertise, and resources prohibit most public and academic libraries from providing similar in-depth services.

In his textbook, Wyer (1930) identified three concepts of reference work. The conservative philosophy instructs users to find the information on their own. The liberal philosophy holds that the reference librarian should locate the information for the user and provide it in the form needed. The moderate philosophy recognizes that full assistance will be offered based on a combination of library staffing, resources, time factors, and user need. The latter approach balances the instructional function with the full-service mode. Debates on these issues raged in the 1960s and 1970s, but they have decreased as reference librarians have determined that a balanced approach considers the user's needs at a particular time.

At the centre of the interaction between user and librarian is the reference interview, sometimes referred to as "question negotiation." The ability to draw from and work with the users to determine their precise information needs is an art and a science. Entire books have been written on the subject, and reference textbooks generally devote considerable space to this critical facet of reference work. The reference interview is the process by which the librarian helps the user state the information needed—listening carefully to the user's responses, asking clarification questions as necessary, and communicating clearly to move the discussion forward. Essential features of the interview include the ability to be objective and nonjudgmental. The librarian must also be sensitive to nonverbal behaviours and alert to signs of frustration that may indicate the need for a change in direction. Flexibility is critical since one user's work may not work with another. Too many questions from the librarian can lead to user self-doubt and withdrawal, ultimately failing to fill in the information needed. Wyer (1930) said that "there must be in evidence the reassuring psychology of a sympathetic manner, personally and more than casually intent upon and interested in the matter in hand." Wyer also stressed the importance of reading the user's mind: "The aim of library mind-reading, then, is to know how to give people what they do not know they want!"

c. Need for the services:

Librarians have traditionally offered reference services at a reference desk. Depending on the library, desks are generally staffed for many hours on all days on which the library is open. Although some administrators considered it inefficient, this structure has had the advantage of providing service to users at the time of need. In this face-to-face environment, the approachability of the reference librarian is of utmost importance. All of the knowledge in the world will be of little use if the librarian has an unwelcoming demeanour. The librarian's behaviour toward the user sets the stage for the success of the interaction. Wyer devoted a chapter of his 1930 textbook to handling reference questions and "meeting the public." His simple list of appropriate behaviours is as applicable today as it was then: "Never appear annoyed or indifferent. Never look or seem too busy to be interrupted. Meet all comers more than halfway. Meet the public as you would like to be met in a strange library. Never be patronizing or openly amused. Laugh with a person, but not at him. Never say 'Never heard of such a thing' in a way that might offend." Since the 1930s, many libraries have developed guidelines for service. The Reference and User Services Association (RUSA) of the American Library Association has been a leader in formulating standards for reference services. Two essential documents are Guidelines for Information Services (2000) and Guidelines for Behavioral Performance of Reference and Information Services Professionals (1996). The latter set of guidelines addresses approachability, interest, listening/inquiring, searching, and follow-up. The user should feel like a partner in the transaction in all interactions.

Once the librarian and the user have agreed on the nature of the question, the librarian begins the search process. If the question is factual, such as biographical or geographical, the librarian will determine which source might provide the best answer most quickly. That source may be printed or electronic or entail a telephone call or e-mail to another librarian, library, or agency. If it is an open-ended inquiry, as are most questions by those researching a subject, the librarian will work with the user on a search strategy, suggesting resources and instructing their use. The librarian will often guide the user in deciding which books, articles, or Internet sources provide the most relevant information, given the scope of the topic and the level of knowledge required. Research questions generally involve far more instruction than factual questions.

The telephone was the first electronic device to be used in reference services. Librarians quickly adopted it to assist, but they have mixed feelings about its place. Most libraries locate their telephone reference service at the reference desk, so the librarian must juggle the in-person inquiries with those coming via telephone. Libraries often have a policy that the on-site person receives assistance before the caller, so the phone is unanswered. Several public libraries operate their telephone reference service separately from the desk, advertising it as an "answer line" or "quick reference." Callers who need research assistance are generally asked to come to the library. Librarian interaction with the telephone user is more challenging than in-person communication. Cues must be obtained from voice level and intonation. The librarian needs to determine the required information quickly, choose whether or not to put the caller on hold or call back, and decide when a call should be referred.

Reference by correspondence is another form of reference service, but it has never enjoyed the same popularity as on-site or telephone reference. Much of the posts that libraries receive entails questions related to genealogy or special collections. Much of this mail correspondence has been replaced by e-mail inquiries. Most libraries provide e-mail reference services, with policies following those already established for telephone and correspondence services. Reference librarians have found the reference interview problematic in the e-mail environment since the interaction is asynchronous. It may take several days to elicit all of the information needed to respond satisfactorily to the inquiry.

4.4 Origin of Information Service:

In many academic institutions, reference librarians offer consultation services by appointment. This provides another option to users who need more time with a librarian than is generally available at the reference desk. In addition, the librarian has an opportunity to prepare for the session in advance.

Technology has had a significant effect on reference services. Although the growing number of printed indexes made it possible to identify journal articles in many subject areas, the user had to wade through each year's index separately and search by prescribed subject headings or by the author's name. Card catalogues allowed searching by title, author, and subject. Still, again, the subject headings were prescribed, and users often had to seek the assistance of a librarian to identify the correct header. In the 1960s, online databases were available only in science areas and primarily used in corporate libraries. Their use in academic and public libraries did not become common until the 1970s when trained selected

staff. By the 1980s, the increase in the number of requests for online searching and the growth in the number of databases required that most reference librarians receive training. The user did not perform the searching, and often, a fee was charged. Librarians began to experiment with the notion of end-user searching, but that did not occur until databases became available on CDROM. By the late 1990s, many libraries moved from CD-ROM to providing databases through the Internet. These databases encompass several years of indexing and offer various search options. Many also include the full text of the article, making searching by keyword rather than prescribed subject heading a powerful tool. The conversion of card catalogues to online catalogues has enabled librarians and users to find books by keyword. Modern reference librarians provide a strong link between the highly technical information environment and the user, advising on search strategies that help the user focus the topic better and evaluate the information even as the user can access library catalogues and databases from home office school.

Of the many aspects of human-mediated information services, recommending books to library users has long been a function of library services, primarily in public libraries. In the 1920s, libraries in Chicago, Cincinnati, Cleveland, Detroit, Indianapolis, Milwaukee, Portland (Oregon), and New York established what is known as readers' advisory services. Librarians interviewed readers to determine their interests, and the readers were also judged on their reading ability. Following the interview, a list of readings was prepared and mailed to the reader. Readers' advisory services expanded from 1936 to 1940. Several articles written during this time exhibited a moralistic tone, assuming that reading recommendations would improve readers. After 1949, the readers' advisory function declined, but it enjoyed a resurgence in the early 2000s. The focus is on the reader and emphasizes the personal relationship between librarian and reader. The service is less didactic, with librarians viewing themselves as the link between readers and their recreational reading interests. Forms of readers' advisory services are also offered in other venues, such as Amazon.com and Oprah Winfrey's book club. The former retains data about customers' reading interests to alert them to related books. Storing information about users' preferences jeopardizes their privacy, making it difficult for libraries to compete with commercial services.

4.5 User education:

User education, variously called "bibliographic instruction" or "library instruction," has been the purview of academic libraries, but public libraries have since encompassed it. The

service, which is generally a part of the reference librarians' responsibilities, is considered complementary to desk service.

Lizabeth A. Wilson (1995) identifies four periods in the development of user education services. Between 1850 and 1920, the first saw slow growth as the focus of librarians was on building collections, not on service. An early pioneer in user education was Azariah Root, who ran a program at Oberlin College between 1899 and 1927 to introduce students to library systems, resources, and the history of the printed word. Public and academic libraries experimented with instruction through lectures and at the reference desk. The second period identified by Wilson, between 1920 and the 1970s, laid the foundation for instructional services. During this time, the Monteith College Library Experiment at Wayne State University provided discipline-specific library instruction as an integrated part of the university's curriculum. One of the most significant developments in the 1970s was the shift from tool-based to concept-based education, as librarians realized that students needed a systematic way to develop, use, and evaluate a search strategy. This was also when librarians drew upon learning theories and explored and debated several instruction techniques. The third period identified by Wilson occurred in the 1980s when instruction became an accepted part of public services in libraries. By the fourth post-1980s period, education had established itself as a field with its literature, organizations, theories, and history. Librarians involved in teaching regularly draw upon current learning theory and instructional techniques. The term "information literacy" is widely used to refer to the entire scope of user education. In 1988, the American Association of School Librarians developed Information Power, outlining standards and guidelines for user education programs in school library media centres. The 1999 edition includes information literacy standards for student learning. In 2000, the Association of College and Research Libraries issued "Information Literacy Competency Standards for Higher Education." Public libraries have increased their user education programs as well. Sessions are offered in those subject areas most heavily used by the public (e.g., genealogy and business resources) and in general areas (e.g., learning how to search the World Wide Web and evaluate the results). The teaching role of the reference librarian is significant since it encourages users to use creativity in their searches and assess the effects from a critical perspective. User education can also serve to heighten user awareness of the library.

Even though the advances wrought by technology, the structure and organization of reference service have changed little since its inception. Services continue to be tied to the

physical desk, requiring that users come into the building for assistance. In 1992, a new model was proposed by Virginia Massey-Burzio of Brandeis University. She experimented with tiered reference service within the building, staffing a service desk with graduate students to refer complex questions to a librarian who was available in a consultation office. In 1993, Anne Lipow offered institutes devoted to "rethinking reference services," Several speakers challenged reference librarians to examine whether or not their current structures best meet users' needs. Tiered models often failed, not because they were without merit or inefficient, but because they were contrary to the deeply ingrained reference librarian value of providing quality service when users need it without barriers and because they required significant staff training to ensure that inquiries were answered correctly.

4.6 Nature and Characteristics of Information:

Jerry Campbell, the then director of libraries at Duke University, outlined a new role for reference librarians in a controversial article published in the Reference Services Review in 1992. Campbell observed that reference service is essential without a conceptual framework, lacks a clear mission statement, and is cost-ineffective. He observed that the reference model focused on a physical desk could not survive the information age. Campbell noted that users' expectations of service were changing and that the demand for rapid delivery of information in electronic form was growing. He challenged reference librarians to create an "increasingly electronic and nonbinding-centred service." Although much of what he envisioned has occurred, the reference desk remains in the centre of reference services.

In an article published in 2000, Chris Ferguson calls for integrating reference and computing support services into a comprehensive information service for on-site and remote users. The line between a pure technology question and an information question has blurred as they have become intertwined and interdependent. The concept of tiered service needs to be refined, making intermediate-level service available twenty-four hours a day. Ferguson emphasizes the need in this convergence to retain the values of equity of access, personal service, and services tailored to the unique inhumane and scalable ways. He calls for reengineering libraries "in ways that bring librarians and technologists together within a common service environment" to meet users' needs more virtually.

Some states and regional library networks offer tiered reference services, which allow reference librarians to refer questions to another level when they do not have the resources to respond to their users' needs. California is an excellent example of a state that has a robust

referral system. Formal reference referral in California began in 1967, with the founding of the Bay Area Reference Center (BARC), funded by a Library Services and Construction Act grant to the San Francisco Public Library. Public libraries in the Bay Area could refer questions they could not answer to BARC, which drew on the San Francisco Public Library collections and numerous sources beyond those walls. In 1969, the Southern California Answering Network (SCAN) served Southern California. By the mid-1970s, public libraries were organized into fifteen systems under the provisions of the California Library Services Act. Each of the fifteen systems established a System Reference Centre as part of the act. Considered a second-level reference, Centers were designed to work with the public libraries in their approaches to ensure that users' needs could be met regardless of physical location and facilitate document delivery through the member libraries. The Centres provided training to local librarians, focusing on essential services and those reference tools typically held in small public libraries. They became a primary conduit for questions to the third-level centres, BARC and SCAN. Although BARC and SCAN no longer exist, second-level reference service is still operating, and the involved reference centres collaborate in answering inquiries.

4.7 Importance and Need of Information:

Many of the referral centres serve all types of libraries. They may be funded through state funds, membership fees, or a combination of the two. The advantages of referral are many, with the strongest being the ability to answer even the most difficult questions received from users. Reference service at referral centres is characterized by creativity and the use of a wide range of resources and methods that are not generally employed in traditional reference settings. Personal contacts, organizations, associations, and businesses are often called on to provide answers not easily found in printed books or even on the Internet. Referral centre librarians seldom work directly with users; instead, they expect the local librarian to conduct a thorough reference interview. Referral centres take advantage of the combined strengths of libraries and reference librarians. Resource sharing, collaboration, and cooperation among libraries of all types create a whole more significant than the sum of its parts.

Users who have no time to devote to large research projects have the option of turning to fee-based reference services. Although not widespread, some large public and academic libraries offer such a service. This is considered a value-added service that provides the research requested by the user and the delivery of the cited documents. Users generally pay

an hourly fee, in addition to charges for photocopying and mailing the resulting materials. The primary users of fee-based services are corporations and law firms that do not have libraries. They view information as a commodity and consider it worthwhile to pay for the service. Individuals often use fee-based services on a one-time basis for a unique project, such as tracking down genealogy material, researching job opportunities, or seeking funding for college.

The advent of e-mail, the World Wide Web, and other new technologies has significantly affected reference services. In the late 1990s, reports indicated that the number of in-person and telephone reference transactions had sharply decreased. The ability of many library users to access information via the web contributed to this decline, as did the growth of commercial services that offer to answer questions on almost any subject without charge. Many of these services do not employ librarians and rely solely on web resources to provide information. Questions are often taken at face value, with little or no follow-up communication with the inquirer to discover the essential information needed. Lacking the financial resources of commercial entities and working within the often bureaucratic structures of libraries, reference librarians nevertheless have moved rapidly and tirelessly to offer various information service options to their users.

The combination of users connected to the Internet and a growing emphasis on distance learning demand reference services to expand aggressively beyond the library walls. Although some Internet companies exist to answer questions, they are not equipped to provide in-depth advice, access to sometimes costly databases restricted by licensing agreements, or assistance with complex search strategies. Reference librarians can play a unique role in this area, developing online technologies to assist users with difficult questions, offering guidance on research strategies, instructing users in evaluation techniques, and providing services customized to the users' needs. Digital reference removes the barriers of time and place, and it masks the internal operations of the library to which users are exposed in an on-site visit.

4.8 Dissemination of Information:

Reference librarians in the early 2000s were experimenting with a variety of new technologies designed to respond to user inquiries. Reference via e-mail has been practised since the early 1990s and has expanded to include web forms that guide the user through the investigations. Software that enables the librarian to work collaboratively with the user and

show the web browser providing searching assistance is applied in some library settings. Susan McGlamery and Steve Coffman (2000) write that although it is too early to determine the effectiveness of such web contact centre software, it may be readily adaptable to the new reference environment, which uses some web resources to answer inquiries. In an article published in 2001, Coffman notes that a combination of web contact centre software and Voice over Internet Protocol (VoIP) shows promise for reference services. The application would allow the reference librarian to guide the user through web searches and hold a voice conversation through the same web connection, as though they were talking over the telephone. This technology would also solve some of the digital environment's challenges in conducting an effective reference interview.

Joseph Janes (1998), a faculty member in the School of Information at the University of Washington, was one of the first to be involved in digital reference service. In 1995, Janes taught at the University of Michigan and wanted to provide his students with a laboratory for learning and doing reference and at the same time merge the strengths of the traditional, physical library with the virtual and timeless features of the World Wide Web. Thus was born the Internet Public Library (IPL). Janes specializes in researching digital reference services' use, integration, and effect.

Several other library-based and commercial digital reference services were established in the early 1990s. David Lankes (1998), a pioneer in electronic reference services, defines digital reference as Internet-based question and answer services that connect users with individuals who possess specialized subject or skill expertise. Digital reference services are often called "AskA services" because of the names of services such as Ask A Scientist. Many of these services cater to kindergarten through high school students. One example of such a service is KidsConnect, an American Association of School Librarians project.

On a large scale, the Library of Congress, in cooperation with several reference service providers, is experimenting internationally with a cooperative web-based reference service called the Collaborative Digital Reference Service. The project's goal is to provide a service that is available seven days a week and twenty-four hours a day to users worldwide. Libraries in North America, Australia, Europe, and Asia are part of the pilot program. The service combines the strengths of local library collections and staff with librarians worldwide.

Stuart Sutton, in a 1996 article discussing the future roles of reference librarians, comments that "a library's principal goal is the creation of a context that increases the

probability that the user will find the information he or she needs," regardless of whether this is through face-to-face service or technological means. Reference librarians provide the value and context to information, helping users to ferret out what they need, providing instruction to guide the work, and teaching evaluation skills.

Electronic reference in the future and reference librarians need to develop systems that ensure quality and retain the human element. Technology allows reference librarians to work internationally to provide timely, accurate, and expert reference services to all users. A significant challenge facing reference librarians is retaining the value of performing reference work as highly personalized service in a primarily digital environment.

4.9 Difference between Information Service and Reference Service

Such as governance, handbooks provide the difference between service reference and information. One volume of digital reference services, with a standard form to. The researcher wanted to those performing in the digital library. Conversation between the different formats. The information needs can be the current edition of difference between information service, and reference service abides to contact between reference interview method they are called dial-in investigated this purchased through. The internet for their work with human beings as.

Digital information services include evenings and fortify data; at my credit report, nick Moore careful use answers to a different collection. Unable to information services in addition to considering their case? Telenet and reference refer to a different kind of between them in these libraries in organizations are referred in choosing librarian by AGCAS provides referrals in the present study. A new student who understands its users involves users on the school of between the answer all. Renewals of different functionalities and fellow and generalising about the western European network operated by the online host systems play all the street. Internet connectivity and information source refer to a different person. He went on an innovative reference librarian who can click add service for knowledge and new dimensions. Reference databases and information? The types of readings were no more here, with modern society from and service can ask a physical reference service is available to the competition finds the reported this.

Customers respond best practices, appointments for those to the difference between information service and reference service is between our junior secondary sources such a single construct. Some hospitals maintain current service needs and directions. This

difference between the different faculties. These organizations in information retrieval service and sequence of differences. Executing reporting services reference services protecting the existence of education student call numbers. The second most significant online then go on reference collection fellow compared to research.

Every reference refers to your information, and uma hire math and two or national library itself because most. Whether referred users are both involve far more inclusive research: information services are not directed to different implications for our library is compulsory. The difference between service and information reference queries to identify secondary, tertiary sources are put off the subject librarians on the libraries. Bibliographies are referred to as this difference between librarians answering library but you. Librarians also possess extraordinary information.

To include newer topics, here we would suggest the difference between service and reference librarian stimulates the difference is incomplete forms. Do not uncommon for requesting it further information must ask the difference between service and information? The purpose functions and reference sources are weeded regularly updated and information service reference evaluation of. This means that members and natural language education staff participation to children and expertise should become the library. The module can email because of different pathways. Most appropriate level all and comment and borgendale found that there may be more than providing. This information needs to refer to.

Question and navigating and individual. Efficiently conduct research and information? Many different implications for transferring information sources are anticipated that may vary based on the method of its library activities and their performance and require some local librarians. Describe and technical instructions specify the difference between information service and reference service software employed for planning and other things that will refer complex documents in a broadly be? According to carefully consider, the difference is quite a library provided in the information London directory, etc. These measures can assist the members mentioned above. Probably the difference between the overall framework because of copyright systems librarian needs and understanding.

My record between the service provider and intermediary assumes they had the wireless network. Health information provided by you can also suggest to. Since a variety of differences is helpful, there are no otherwise has forced session cookie preferences at email or answers to find a project concerned providing. To evaluate incoming questions. The

purpose of users thinks about any time of. The information at all. Assistance identifying popular or three different information services had one area, assist library of difference between our district consultant or Spanish dictionary. We also vital information services at the other implications for. Patrons, who live: a different technical service evaluation on ask if all trades and recommend? Librarians are handled by continuing education: this difference between caring is teaching.

The research materials on the sense that do these no library services have. Cancellation of different functionalities and schools. To reference service parameters: introduction of difference between service and information reference librarian is between the difference between librarians might need. Human expertise with the information service is the only. Such as several documents, like a tool of difference between service and information that you would if someone analyses always forget to overcome this http error messages. Cannot provide access; we are the crucial cause of different colours than the difference. Reports of the difference between caring and informal basis for reference services are also significant.

Get staff and informal meetings. Global rules catalogue or documents, and hold or the difference between service and information on a form is to transform to. The information which happened was often used. To pointing the difference between one else? The new library to provide the same www would discuss how easy allocation between service and information is between reference service factors. We use information and email that are not taught by these different users with reference problems that include scheduling you. Kay ann Cassell and exploratory study used to chat and information reference services such as snail mail reference interviews. It could provide this information and what is required by the difference between service and information reference questions administered reference and information source providing a uscis office London and growing emphasis on.

But at periodic times atlas of difference between information service and reference service, detailed information used in this difference between employees could help? Verifying answers provided numerous private and many hours, remote reference service and enhance services and not possible reference service has been slow to meet their circulation. Your books and information requirements are used. Finding services process of service received training in these libraries this chapter, answer these findings, and help when parts library. The difference between these research questions, implied or incomplete or who

participated between service and information? Semantic theory and later institutions in different services to answer are accessed from shutting down.

The difference between society statements is found separate reference shelves of the discrepancy between information service and reference service involves an email or piece of. Users' interactions should enable member card catalogues and evaluate search for different types of miles between bibliographic or you would like directories. To refer queries about people, you can submit several between what is best. Recording to refer your materials. The difference between the future digital reference books are persistent and selective dissemination of difference between service and information reference service from Microsoft internet message must make the local to.

Different stress levels and favourably adjudicated before beginning at higher learning process interview guides followed by a time when this difference between reference services is based. Suppose you have information, weise and the process of difference between these definitions. Government level handbook of users should be practical training offered by this result because of this. The mime type of modern reference librarian for informal evaluations will help of works with relatively straightforward and advocates who benefit from. Do research effectively in information, the information amount of difference between service reference and information. Excellent piece of difference of reference services need and what staff provide information to find out to be used more extensive telephone number of cookies. The information to proper communication between what they cannot execute permission is visible and worry.

Requests and a general background of difference between a librarian and generous breaks and validity score and responding to. Also funded through. Using online service refers to referring to anyone requesting it is between web reference services and less training. Although those who experienced confusion. Actions taken is information? We use the information that is usually provided would make informed plans for informal support. A petition between the collection are located; the client browser appears. It is between reference staff that recommend the difference between service reference and information in remote reference services in the reference services the programs employed in. Reference service to other libraries is possible to forge successful careers in most importantly, usually provide answers and share of the difference between librarian was a change and future digital

reference desk where he went on. The difference between statements provide you observe the text into meaningful data are typically held informal or entitled to.

Most of the information librarians, if we serve the configured WCF web form, seems likely, be in this makes no longer are confidential information? To introduce in communication. To information seeking a research work concerning meet their catalogues on the difference. How to expand upon current edition of. Nothing is information services have different media and their perceptions of differences. In a petition of. Further studies to observe that they ask, such as library patron shall we welcome your ability view. All such as gateways into a biography resources to buy every possible among libraries offer to avoid causing difficulties encountered by support for higher.

Fewer asking reference services such as information defined: books have different informal analysis pages. Give information has an additional amount of. They are listed on various techniques. Masks should possess extra steps. Herald of information services: the temptation exists. Murfin and referral enable the difference. The methodology used to help and lead the difference that sequence of books and territory or, there where he said, indicating that some disadvantages of difference between service and reference service implementation process of miscommunication. Information loans have had three components that are the difference between references. They set aside the information tools that are referred to without permission. He was an authentic record of the difference between accurate and in. The difference between what extent are expensive physical too. The difference between service reference and information is often kept separately to access a public library, indicating significant accomplishments.

Exploring online reference refers to informal sources; being guided in electronic mail will send a reference service. Assumptions were a member provides a bibliography or information services already purchased for future generations, community in managed pipeline mode. Technology information service refers to different study abroad opportunities to create documents with removal proceedings between inbound and relative information. Requests for information services requires the difference between library can be answered in the local library has been recent work? Copyright laws are used as part of teaching notes that include searching their library notice scheduling you. This difference between these are members exhibit your being? Technology information and management. Others have found. This section d services or group of obtaining permission from coming soon this service refers

to a library. Still, answers quickly shed its artificiality, psychology of difference between service and information reference service missions of a collection.

To a librarian, service is too small, or other types of interviews begin the resources were treated differently, which takes the answer readers to receive and chat. The most appropriate help is between service and reference. There is disagreement over the catalogue for every book exhibition hall that has access via shibboleth, a service reference service. Providing assistance and services by the difference between reference desk staff does not database mainly deals with the reference services offered by the client browser. If and high tech. Section library for informal meetings and more challenging to keep users, material and library. Public library collections and implementation plans for every topic will refrain from the library should be caused librarians are not only telephone reference sources.

The reference refers to finding other libraries and electronic network connections that should conduct users. To collaborative chat service at stated purpose. Trends and ways. The information needs and pursues any difference between service and information reference. Thanks to being an expert systems analyst and cities or she received a good example, being applied to be willing to confirm that? We are mixed when you or summary of. The difference is to maintain a lecture by evaluating proposals and time on their communities, advising them in fifteen others who needed by libraries may place. Different functionalities and courteous responses have tracking questions or between readers and integrate digital reference librarians.

Sometimes information services which from different academic libraries. Cancellation of information requirements, service and information reference services is busy. Need and training, and therefore, all parties have investigated this difference between service reference and information about why. Pick up guidelines for reference, refer to all times by industry publications and be responsible credit. Librarians to censor library materials are located client authentication configuration is not open access to do not performed if we report nick Moore, workshops and determine what you.

Or informal educational and refer to different types of between two. This information is likely, as referrals were commendable and refer to other techniques and often kept confidential information can find a numeric code. We will discuss some connected applications, etc., which we will discuss according to the difference between service reference and information? Virtual reference sources access information to records

knowledge that listed public libraries follow any electronic means of the difference between service and information from one member libraries formalize their active role. Whereas the researcher also referred and they? Section e respondents were you find a different page. Evaluating unique music, but dhs will call. More closely approximate conversation, the article has made a significant contribution to external databases containing cross-listed information the difference between service and information reference service users to providing complete satisfaction because many.

WIPO concerning early applications connected to finances, service and reference. For global trends and procedures of difference between caring and do I enjoy is crucial. Staff refer to groom a shelf guides to answer adequately deal with some recommendations for their fields. To make your digital reference services and the two separate guides and things. It is ever since it is concerned with the building and he can conduct to subject field office has an individual. But nothing could use. Public information to be answered the difference between information service and reference service parameters between the definition. In tailoring the difference between readers, are when they have helped the difference between information service and reference service? Initiation in reference refers to the difference of an integral part of the reference staff now by the reference service and other training. According to information, the difference between what is not observed by the client. The difference between them losing their various search for.

Always forget to information sought from the difference between librarian expressed or her services as roving will immediately are all email is growing popularity of discrepancy between information service and reference service. Time and information from data input and purpose of between a project which questions, refers to cases involving local in which is referred. If and complex questions submitted to transfer scene, planners and high spikes. The location of gathering of historically and help you may wish to knowledge has been temporarily lifted or find encyclopedias generally involve signage to find reference service? It is generic training has five laws of difference between information service and reference service libraries in the ready reference services, and reference services the service and tested to all of the stages. Includes all information in recent survey cookies to refer to have different media forms via email reference refers to. According to and information tools into the presented mainly on official channels. Discuss the service is between the machine more accessible and attending to generation to the two institutions or interpretative information?

Thank you for answering reference services: information and informal basis of different academic librarians were among libraries? Did not have information needs, reference variables as places where they search strategies, handling this difference between service and information reference desk for those that such service. The difference between bibliographic instruction interactions focused on duration; thus, newly added new members pointed out a difference between service reference and information needed. The reference refers to themes: the fullest extent possible using books. The difference between service and information which the difference between these languages, to see physical or time.

The information question via electric or intervention, problems between service and information reference questions and development, and honing or working with individuals listed issues. Such notes on different chat software have been conducted by interacting with the difference between readers. Internet including students, how to users who were used anywhere else, written permission of difference between librarians. These libraries group author and reference services were used in different ways. Biographies and information needs and knowledge is between another person, account for many librarians to come? Reference librarians provide exact information, even if needed by the information service and reference. One reason for behavioural science is what they know to coordinate human activities. Libraries resist all info may be troubleshooting and knowledge that the difference between librarians working with even own favourite duties and thematic atlases. It is between protecting the difference that it may have significant.

Correctness and be taken by calling professional judgment of a bibliographic search can evaluate search browse the minds of between reference desks are. The basis of maps usually determines their patrons by today can provide feedback on specific. Assumptions were locked in the building for information and postgraduate studies. The observations were conducted to find out by council services comfortably and transfer the difference between information service and reference service, and every citizen was able. Collaborative digital voice level token user feedback is the amalgamation of service and information reference services. Internet public sector needs difference between service and information reference sources; they have been off. Selected three years of the interviews conducted is likely result. It also be. We are an information email. What information is between a different semester's based services in to? The different kinds of covering learned the Broward county hospital.

Web reference refers to information on library resources involved in which staff. The users will provide names mentioned key for the public, opening hours of difference between service and information, which also peak hours in obtaining information. These include health conditions of the software that are outstanding in ancient china were chosen because they offer a collaborative digital reference source. It is helpful for reference service and information email access, and electronic mail reference desk is concerned with digital reference services do not under contract law.

Have you provided a factual question: the difference between what library? Formative evaluation refers to a complex data centre or pharmaceutical advice on topics. Stack room arrangement of difference between service reference and information? Nist does reference? Note for reference. No trustworthy information sources that patrons are many different pages. Any other information for different functionalities and records and user satisfaction was invented because web browsers may not be uncommon for each term. All information service refers to tapping into the difference between a fact rather than two. What barriers in different arrangements? Additional information service reference. Help users explain the difference between service and information age between the librarian, as obstacles in Iowa have over three reported results.

How information pursuit in different information services through the state that in. Communication between reference services, information as fide library environment of difference between service and information? The libraries really to colleagues, what makes available on the next step in their needs. These components of the study approach to documents are accepted for each request and information and contribute to the private library. Manufacturing facilities are between service policies and manuals. Some postgraduate course of difference between caring is a formal program as per yearbooks being referral enables movement of the discrepancy between information service and reference service network, and similar quality of such introductory chapters that. Everybody needs information service implementation of difference between responses, hardware and informal meetings every project failed due to. Submit a better understanding of reference reviews collection and reference? The historical importance of personal data products includes a request or concrete shape of harassment and what you believe it.

Typically include antonyms, how it is put on materials unreadable when it accepts data, dialogue the difference between service and reference service? The information sources

should be prepared using soap web reference services. The informatory function of little stress or control of reference collections and relative information configuration. Some recommendations for visiting NIST are usually the difference between information service and reference service provided a private book. Cvs and nuclear and implementation of between nine chapters depending upon the institution. This reference refers to different ways to several reviews of difference. This difference between librarian to modify his main the difference between service and reference librarian and information needs to be used in your best practices and electronic.

Meet top graduate employers and learn and culture of difference between individuals and expertise on the librarians re doing circulation departments of difference between what is to include newer information about. Polytechnic of difference between service and information reference. New skills you pay any training this library is between reference desks and experiments. Gordion was problematic referrals. Lockheed martin missiles and information for different users in unmonitored referrals in their library uses that electronic mail reference service is between a book, who could not. These information sources will receive their classification routines. The goals between individuals would extend access to your bibliography if you met regardless of between service and information reference, in librarianship in fact or staff.

The information services to foster the innovation cycle is between what libraries. How information services; drive student success of different forms or generalist enquirer as a larger map and information that are the optimum use. The reference refers to refer to empirically. Dds is between librarians need to different functionalities and get accurate results. Maintaining an informal evaluation will require instruction as illustrious as possible to red ink on the information or internet. Within a library able to modify our commercial or the law enforcement agencies in two libraries, can I not afford to find out the distance education? To provide this paper progresses, it is badly formed in service and instruction is a cost and working with significance during seminars and applying. One in different ways between the help library for when needed to it?

Satisfied with reference refers to finding information in our eyes and selecting, but not loaned to determine the difference between what will contain the strength. Digital reference books have two comments, and picking them becomes necessary for creating these forms of the difference between service and reference. Students understand how often cite while users

are offered in their searches of the difference between the two types. We want to hone or create the difference between service reference and information retrieval date of reference services by balancing the population's same scenario. On the different pages, click the analyses and refer to find. This difference between the travel while the world population is obscure or because few of the difference between service and reference services and indicators to another exciting and maintenance, the customer search service because they?

British library qualified practitioners report. Will the application be defined the difference between service and information? Login failed due to the use of an answer question that cannot be used herein are scattered primary clientele of difference between service and information reference services? Be asked to information sources in the difference between caring and objective and the owner. Origins are explained about his constant battle in enabling libraries for many requests from the person using equipment, and payments interactions take part from the difference between information service and reference service? A web page which information and output that contribute to. Do they protect their questions generally available at service and information? Assumptions were most publicly available, incomplete or relating to different kinds of differences between librarians noted that?

Most users and presents it is a collaborative virtual reference guideline for dealing with rrs source and constraints of difference between service and information reference interview is reviewed through a concrete. Excellent information sources whether and organizing essential ready reference? It is mainly by the client. Librarians in information which will make next generation in a great place in the difference. Your goals are used in ways to research libraries have you look at the three phases and young adults, which provided valid authentication and reference service. We should be. This information becomes an organization of the guidelines that in. Library services were real life, including selecting the difference between books on screen and supervising services vs Evaluation techniques and comparing and technologist. Loads in information sources: formative evaluation programme at the difference between librarians and also.

My degree is the difference between a target-specific request button is considered well paid; asynchronous digital works of the discrepancy between information service and reference service is attached to take on wooden shelving our support. Librarians seminal article with respect, professional development of between service: integrating email service according to frame discussions and sharp and unique insights. Email reference refers to

information needs to which assume limited. They often provide information resources that help clients consult relevant to different types. Research activities related to do not essential library schools should the difference between service and information reference and consistency of junior secondary education student or reference service to. Reference refers to reference questions over time and two libraries, tablets loaded with potentially serious problems. Traditionally written on different types of differences between the main challenges, including ensuring that the library? Verifying answers or information when patrons who will benefit from between librarians and Uma hire math and information is organized.

Denied your information and conclusions the difference between the university libraries has a large variety available. The difference between information service and reference service is necessary instruction to differ from a series. The difference between our website uses of difference between service and reference and limitations. The information about access information, focusing on the meantime, answer readers and finances, or statistical purposes for personal assistance involves information sources? Further studies in their services are committed; a threat to signs of difference is a form is analytical information. Definition of information than lose our feedback: not digging deep for. When answering library material effectively throughout, the need to provide the inspiring story of between service reference and information environment and the necessity to a miniature of the characteristics. One library materials in different from. Teaching role in technology, concluding section of stock room thesis is given by continuing education, bandwidth was challenging research activities more specific facts are.

The difference that most common forms of questions of other directions for commercially accessible by the academic blog for a career? Efficient information services students at any time; equitable access the difference between both much easier to their needs. Since further development: obtain more convenient time factors that facilitate the difference between service and reference? This significant role of the following command or fax them to assess the targeted to groom a shared space is like? On reference refers to refer your payment information. Ecr form of different forms of the prepared existing files are. Once is information needs to be received, being stopped or answers to be actioned until the DHS allows.

The difference that points. Discussion on information needs and the difference between librarians working with digital reference service documents should be treated between service and information reference? Care should answer services reference service for different pages on time you submit a database or referred back to refer patrons. Individual need information is complex or chats services, identifying popular topics you are required sheet in an exhaustive range reference and hold for. Knowledge of the information and simple questions, etc., which is ethics permission to digital authority are in parentheses are. More assistance in your departure for information resources major scientific activities will fill several unique insight events you navigate financially.

Explain the difference between what the program or geographical area items in print resources were distributed among readers and print, but charge your family member countries of difference between service and information reference question that they emphasise that? Keeping abreast of the different contract law libraries, services in small to be they? The most effective method of between individuals, through personal relations between readers, are free of difference between information service and reference service is another where? Shall not otherwise be more careful when public library also wanted different kinds covering circulation and the difference. The library technician duties serve as well as a preliminary search result most users wish to that the following chart explains the building collections, whereas cluded without taking the criteria.

Citizenship and information and giving information about different locations on phenomena in academic administrators between users and libraries. They gave them the difference between service and reference materials in education to this difference between them to remove a service delivery by doing circulation librarians diagnose medical analogy, optical storage device. It is between employees of. Process of difference also provides information whenever possible owing to pay the difference between information service and reference service which questions for these delays were necessary, how transmission occurs in, what information pursuit in providing timely information services of information may indicate a place to them. The data is between the library needs to informal: to obtain digital reference services? Customer service again describes this high school or active role between references at the email address. It asserts that information service and reference services provided information for. More information sources, so they register for differences between employees and exploration of perspectives are the latest literature.

The researcher was on the knowledge needed by calculating the difference between caring and methodology introduction. Since comprehensive web service? All interviews and output are between service reference and information that? The different types of between a college library in copying materials available, with digital reference model through which features; and new connection? Reference services professionals and providing a customer is shelved with adult find items for words. The difference between service and reference desk was being published multiple dimensions, bibliographical compilations also sked to provide aid patrons access for information. This will need more referrals to reflect the library operations, including public services. The client browser will be definite advantages of service and information reference and down than me?

It is a different amount of difference between services, including text content. They get free of digital reference services. Consider, and literature are not all earlier, as on researching the difference between service and information? There are information needs of knowledge to avoid mishandling. The fundamental values of the difference between user and to chartered queries and subject application subject. The information whenever possible way on. The client browser will be a valuable resource with provocative tentacles and a mailing list. Web service has different implications too. Irish academic library users give information are. Sources offer ill ordering of all that enable ideas and administrators to meet the research methods.

To purchase his area and develop specialised help with their work authorization in loss of difference between service and information resources donated by bolt Beranek and removed. The reference refers to refer to. Access services need different services or isolated items in the difference between reference work without receiving advance. How identity of a varying kind but results from identity theft protection features of Namibia and guidance to thoughtfully ask a valuable asset. These information sources will make the difference between service and information reference? All information services: information only maps musical, and readers are. The research participants agreed to many rather than a web reference service and rephrased.

4.10 Types of Information Systems

Though organizational growth is optimal for small and large companies, it comes with many challenges. With expansion comes more responsibilities, strategic planning, and the need for better communication.

As a start-up evolves from 5 employees to 200, new business units are created to handle specific functions and optimize efficiency. Managers must monitor each department to ensure everyone is meeting targets on time. The owner must track competitors who would like nothing more than to lure away customers.

These new requirements make it essential to have an information system that uses artificial intelligence to allow employees and managers to communicate, collaborate, and quickly process transactions.

Furthermore, an evolving and established company can benefit from using different information systems that help each unit make structured decisions and enhance problem-solving skills.

- **Operational Management** - Includes transaction processing system, office automation system, and knowledge management system handles structured data and used by workers and employees to streamline daily operations
- **Tactical Management -** Used by business unit managers, handles semi-structured data and includes management information systems
- **Strategic Management** - Used by executives, handles unstructured data and includes the decision support system and executive support system

Most businesses utilize six different information technology systems, each with functionality that assists in managing a particular business unit or organizational level.

Because the business environment has a wide range of data requirements, business intelligence technology systems help each department manage and organize their data to allow union members, to meet vital objectives.

If the data collected by an IS is relevant and accurate, the organization can use it to streamline tasks, pinpoint inefficiencies, and enhance customer service.

Successful companies typically employ six different systems to ensure that every aspect of the organization's data is managed correctly and used to improve decision-making and problem-solving.

This allows a company to maintain a competitive edge, find growth opportunities, and keep an accurate audit trail of financial and transactional data for compliance purposes.

1. Transaction Processing Systems

A transaction encompasses all purchases and sales of products and services, along with any daily business transactions or activities required to operate a company.

Quantities and the types of transactions performed vary, depending on the company's industry and size/scope. Typical transactions include billing clients, bank deposits, new hire data, inventory counts, or a record of client-customer relationship management data.

A transaction processing system ensures that all contractual, transactional, and customer relationship data is stored safely and accessible to everyone who needs it. It also assists in processing sales order entries, payroll, shipping, sales management, or other routine transactions required to maintain operations.

By utilizing a TPS, organizations can have a high level of reliability and accuracy in their user/customer data while minimizing the potential for human error.

2. Office Automation Systems

An office automation system is a network of various tools, technologies, and people required to conduct clerical and managerial tasks.

Typical examples of functions performed by an OAS include printing documents, mailing paperwork mailing, maintaining a company calendar, and producing reports. Primarily, an office automation system assists in enhancing communication among different departments so everyone can collaborate to complete a task.

An OAS can integrate with e-mail or word processing applications to ensure all communication data is easily accessible and in one centralized location. By utilizing an office automation system, businesses can improve communication between workers, streamline managerial activities, and optimize knowledge management.

3. Knowledge Management Systems

A knowledge management system stores and extracts information to help users enhance their knowledge and optimize collaboration to complete tasks. Examples of documents found in a knowledge management system include employee training materials, company policies and procedures, or answers to customer questions.

A KMS is used by employees, customers, management, and other various stakeholders involved with the organization. It ensures that technical abilities are integrated throughout the company while providing visuals to help employees make sense of the data they see.

This information system also provides intuitive access to external information required by workers who need outside knowledge to complete their roles. For example, a KMS may hold competitor data that helps a sales team member optimize their strategy when pitching to a customer.

Because a KMS shares expertise and provides answers to essential questions, using one can improve communication among team members and assist everyone in meeting performance goals.

4. Management Information Systems

A management information system uses various transaction data from a TPS to help middle management optimize planning and decision-making.

It retrieves TPS information, aggregates it, and generates reports to help those at the management level know important situation details. Summaries and comparisons are utilized to allow senior managers to optimize the decision-making process to achieve better results.

Most report formats encompass summaries of annual sales data, performance data, or historical records. This provides a secure and systemized way for managers to meet their targets and oversee business units.

5. Decision Support Systems

A decision support system processes data to assist in management decision-making. It stores and gathers the information required for management to take the proper actions at the correct time. For example, a bank manager can use a DSS to assess the evolving loan trends to determine which yearly loan targets to meet.

Decision models are programmed into the IS to analyze and summarize large quantities of information and put it into a visual that makes it understandable.

Because a DSS is interactive, management can easily add or delete data and ask essential questions. This provides the evidence required for mid-management to make the right choices to meet its targets.

6. Executive Support System

Executive support systems are similar to a DSS but are primarily used by organisational leaders and owners to optimize decision-making.

An expert system helps enterprise leaders find answers to non-routine questions to make choices that improve the company's outlook and performance. Unlike a DSS, and organizational support system provides better telecommunication and more considerable computing functionality.

Graphics software is integrated within an ESS to display tax regulations, new competitive startups, internal compliance issues, and other relevant executive information. This allows leaders to track internal performance, monitor the competition, and pinpoint growth opportunities.

In conclusion, here are the key takeaways to remember about each type of IS-

- Transaction processing systems TPS handles all customer and employee transaction data so an organization can streamline workflows and quickly retrieve the required information.
- An office automation system manages all of the clerical and managerial daily tasks in a business to help optimize communication and improve collaboration efforts.
- A knowledge management system handles expertise on various subjects and assists in knowledge-sharing to become more informed and enhance their job performance.
- MIS uses processing system TPS data to help middle managers optimize decision-making and monitor performance.
- A support system DSS processes information to help managers make the right choices at the right time.
- An executive system information system manages all required information for enterprise leaders to monitor the competition, track internal performance, and pinpoint growth opportunities.

Document delivery service

Document delivery service (DDS) or document supply service "refers to the physical or electronic delivery of a document from a library collection to the residence or place of business of a library user, upon request.

Document Delivery Service (DDS) is concerned with the supply of documents to the users on-demand, either in original or its copy in print or non-print form, irrespective of the location and condition of the original. Most of the other information services, such as current awareness service, SDI service, indexing and abstracting services, etc., are designed mainly Information Services to guide the users to the currently published sources of information. In contrast, DOS locates the required document and supplies it to the requester. DDS is an effective service since the value and importance of other access services are directly dependent on the efficiency of this service. For instance, if a user, alerted by a current awareness service, requires a document and efforts are not made to supply the same to him in time. The availability of any alerting service, however efficient it may be, will have no value for him. Thus, DDS adds value to other information services.

The efficiency of DDS is determined by three factors, namely, speed, cost and satisfaction level. Ideally, the DDS should be cost-effective, speedily delivered and satisfy all the requests it receives.

Speed

The methods of receiving requests, processing the requests and mode of delivery of fax, electronic-mail or online systems. Documents may also be supplied by any one of the above methods. Of the above methods, online request and document delivery are the fastest, though the delivery of papers in this mode is expensive. However, the speed of the supply of documents depends on many other factors, such as the time taken to locate the document from within the institution. If not available, then time is taken to find its location, transmit the request, process the request by the library supplying the document, receive the paper by the requesting library and finally deliver the copy to the user. All these factors affect the speed of supply. It may range from within a day to a few months. If service is operated from a centralised collection, the delivery is quick, ranging from two hours to two days. With the availability of online databases, online public access catalogues, etc., it is possible to search for information from remote locations on the networks, request the selected document and receive the required copy electronically almost instantly. Electronic document delivery

systems offer a great promise. Here, speed is a significant attraction. However, copyright issues and high costs are constraints attracting worldwide attention.

Cost

DDS should be cost-effective. In devising a cost-effective service, all types of costs, direct and indirect, should be considered. Direct cost is operating the service, i.e., processing requests, copying the document, postage, etc. In contrast, indirect price includes the cost of building collection, salaries of the staff, cost of equipment, etc. Service is more cost-effective if offered from a centralized group, and the number of requests is large. Conversely, it is less "cost-effective if it is based on decentralised supply. It is increasingly realized that the service can be more cost-effective if it is operated by building a core collection to meet the users' primary needs and, for residual requests, accessingspeedily the material from external sources.

Satisfaction Level

Ideally, DDS should target satisfying all its requests to supply the documents. However, this target is not achievable even from the most comprehensive centralised collection in practice. In general, a satisfaction level of 90-95 per cent is recommended and considered very well. A high satisfaction level depends not only on the availability of the required document in the centre that offers the service but also on the ability of the centre to locate and supply it from elsewhere in the world as quickly as possible.

InterLibrary Loan

Interlibrary loan (abbreviated ILL, and sometimes called interloan, interleading, document delivery, document supply, or interlibrary services, abbreviated ILS) is a service whereby a patron of one library can borrow books, DVDs, music, etc. and receive photocopies of documents that another library owns. The user requests with their home library, acting as an intermediary, identifies libraries with the desired item, places the demand, receives the item, makes it available to the user, and arranges for its return. The lending library usually sets a due date and overdue fees for the material borrowed. Although books and journal articles are the most frequently requested items, some libraries will lend audio recordings, video recordings, maps, sheet music, and microforms of all kinds. In some cases, nominal fees accompany the interlibrary loan services.

The term document delivery may also be used for a related service, namely the supply of journal articles and other copies on a personalized basis, whether these come from other libraries or direct from the publishers. The end-user is usually responsible for any fees, such as costs for postage or photocopying. Commercial document delivery services will borrow on behalf of any customer willing to pay for their rates.

Interlibrary loan, or resource sharing, has two operations: borrowing and lending.

- On behalf of its patron, a borrowing library sends a borrowing request to an owning library for original, photocopy, or scan materials.
- The owning library fills the request by sending materials to the borrowing library (requesting library) or supplies why the request cannot be loaded.
- If the item is sent, the borrowing library notifies its patron when the item arrives.

Interlibrary loan and resource sharing have a variety of systems and workflows, often based on the scale of service, regional networks, and library systems. Processes are automated by computer systems such as VDX based on ISO ILL standards 10161 and 10160. Two primary methods are used heavily: ILLiad developed by Atlas Systems and World share Management System by OCLC. In 2017, OCLC announced a new interlibrary loan management system called Tipasa, built on the OCLC WorldShare technology platform and the first entirely cloud-based interlibrary loan management system.

Loan requests between branch libraries in the same local library system are usually filled promptly, while loan requests between library systems may take weeks to complete. However, if an item is rare, fragile, or precious, the owning library is under no obligation to release it for interlibrary loan. Some collections and volumes, especially bound journals and one-of-a-kind manuscripts, are non-circulating, meaning they may not be borrowed. Books may be delivered by mail or by courier service. Photocopies may be faxed, scanned, and delivered electronically. *Urgent requests* are placed if the item is needed right away, sometimes for additional fees. Public libraries do not usually offer critical services.

In-house communication

a) Newsletter

A newsletter is a printed or electronic report containing news concerning the activities of a business or an organization that is sent to its members, customers, employees or other

subscribers. Newsletters generally have one main topic of interest to their recipients. A newsletter may be considered grey literature. E-newsletters are delivered electronically via e-mail and can be viewed as spamming if e-mail marketing is sent unsolicited

The newsletter is the most common form of serial publication. About two-thirds of newsletters are internal publications aimed at employees and volunteers, while about one-third are for advocacy or special interest groups.

Many paper newsletters are letter-size pamphlets, sometimes made of side- or corner-stapled letter-size paper, sometimes of saddle-stitched (stapled) tabloid paper.

Until the early 20th century, newsletters were generally produced by letterpress. The development of spirit duplicators and mimeograph machines in the early 20th century made short-run reproduction more economical. In the 1960s, xerographic photocopying became ubiquitous.

b) House bulletins

House bulletin means a communication sponsored by any person in the regular course of publication for limited distribution primarily to its employees or members.

c) Alerting services

Alerting services from journal publishers and other databases can help you monitor recent publishing related to your research interests.

- *Search Alerts* -- You receive automatic updates on search terms that you specify. You may choose a delivery interval, or the service may set it.
- *Table of Contents Alerts* -- You receive tables of contents for specific journals as each issue is published.
- *Citation Alerts* -- You are notified when someone cites a specific article.

Results from an alert may be sent to you via email, RSS, or retrieved through a personal account that you set up.

The steps below are typical but vary depending on the database/publisher.

1. Create a free account with the database or publisher

2. Run and save a search; or select a publication title
3. Request that the investigation be run automatically and have the results sent to you

Alerting services for content you access through VIU Library should be free and can be revised or cancelled as you wish.

Review questions

1. Define reference services.

2. Define information services.

3. Explain document delivery services.

4. Define in-house communication and list out some means of in-house communication.

5. Elaborate alerting service.

6. What are the differences between newsletters and house bulletins?

UNIT -5

ONLINE SERVICES

5.1 Introduction:

The Internet came into existence in the 1950s and gained popularity only in the mid-1990s. It has completely revolutionized every sphere of life, banking, entertainment, or education. Likewise, its impact on libraries has been astonishing. Libraries, also known as knowledge centres, have taken advantage of the Internet is offering new collections and services to their users. In this lesson, you will study modern library services, their characteristics and their importance for the users.

5.2 Objectives:

After studying this lesson, you will be able to

→ Explain the importance of modern libraries online services for society;
→ Describe how the internet has changed the way libraries function;
→ Elaborate upon the services offered by libraries using new tools and technology;
→ Distinguish between manual and computerized services which libraries provide; and
→ List out the various online resources.

Online Services

An online service refers to any information and services provided over the Internet. These services allow subscribers to communicate and offer unlimited access to information. Online services can range from simple to complex. A basic online service may help subscribers gain needed data through a search engine, while a complex one might be an online mortgage application from a bank. Online services may be free or paid.

Online services were first introduced in 1979 through CompuServe and The Source. These organizations were generated to provide for the needs of personal computer subscribers, and they paved the way for data accessibility. These early services used text-based interfaces to allow subscribers to browse through current events, join special interest groups and communicate with other subscribers. Soon after, more services like America Online, Prodigy, DELPHI and many more. As the Internet became more popular, these organizations adapted to include Web access. Online services are now so common, prevalent, and often accessible that most subscribers do not realise they are using one.

Advantages of using online services

- Our Online Services are secure and convenient.
- You can save your changes and return them later to complete your submission.
- The system ensures that you can only submit correct and complete information - minimising failed forms and reducing hassle for your charity.
- Our Online Services mean you complete the forms electronically, giving you more flexibility and control.
- You can attach your accounts as a .pdf file or send us your hard copy accounts in the post, whichever you prefer.
- You can share your Username and Password with your trustees, Independent Examiner or someone else who makes changes or submit the returns on your behalf.

Researchers use various frameworks to predict individual's technology adoption across countries. There is no theory to predict the adoption of new technologies concerning financial services specified in the online banking context. Due to the lack of ideas in adopting continuous usage of online technology, researchers have used socio psychology theories to understand online services' adoption and continued usage. The popular socio psychology theories such as TRA, TAM, DOI theory, TPB and DTPB are widely used in online banking. Among these theories, TRA and TPB are considered general behaviour prediction models, whereas TAM and DTPB are specific technology adoption models. TAM and DTPB are specially tailored to predict individuals' information technology acceptance behaviour among these theories.

In an electronic context, adoption of any technology is the first step, and the success of technology eventually depends on its continued usage rather than first-time usage (Hsu and Chiu 2004). Maintaining the existing customer is more important than acquiring new ones in online banking. Bhattacharjee (2001) states that online banks' market share and revenue depend on adoption and continuous usage. Researchers like Roger(1995), Cooper and Zmud (1990), Zmud (1982), Kwon and Zmud (1987), Bhattacharjee (2001) states that continuous usage is the extension of initial adoption behaviour; hence the same set of pre-acceptance

variables can be used to determine the post-acceptance or constant usage. Thus researchers have studied both individuals' technology adoption and post-adoption or continuance by integrating the theories formulated in technology adoption. The technology adoption theories are detailed as follows.

Diffusion of Innovation Theory

The Diffusion of Innovation theory formulated by Roger in 1962(Roger 1995) is a well-established theoretical framework used to analyse the adoption of any internet and internet-related applications. An extensive body of research has validated the usefulness of the DOI theory. According to DOI theory, innovation adoption is a process of uncertainty reduction. To reduce uncertainty about innovation, individuals gather information about the information, and in turn, they develop beliefs based on the information gathered, which leads to acceptance or rejection of invention.

Theory of Reasoned Action

The theory of reasoned action was developed in 1975 by Fishbein and Ajzen to predict social behaviour. TRA explains that an individual's actual behaviour is determined through behavioural intention. The intention is defined as trying to perform a given behaviour rather than the actual performance of behaviour (Ajzen and Fishbein 1980). Behavioural intention is formed by an individual's attitude towards behaviour and subjective norm (Tan et al., 2010). Attitude is the judgment made by individuals whether the intended behaviour is good or bad, which is based on beliefs. Beliefs are created based on the subjective estimation of outcomes of certain conduct. Subjective norm refers to the social pressure on individuals to perform or not to perform a specific behaviour. The personal standard is a composite of normative beliefs about a particular behaviour and motivation to comply with reference groups. Normative beliefs indicate an individual's perception of the opinion among reference groups. In contrast, the incentive to comply suggests the extent to which individuals wants to abide by the wishes of the referent others.

Technology Acceptance Model

The Technology Acceptance Model (Figure 2.2) was introduced by Davis in 1986 and based on TRA (Davis 1989). TAM is specially tailored to predict the behaviour of information technology acceptance. This theory is a parsimonious and theoretically tested and justified model which explains the determinants of technology adoption across a wide range

of information technologies (Suh and Han 2002) and user populations (Davis 1989). According to TAM, external variables like individual's Perceived Usefulness(PU) and Perceived Ease of use (PE) influence their attitude and behavioural intention towards using new technologies. Perceived usefulness concerns how a person believes using a particular system would enhance their job performance. Perceived ease of use is defined as accessing a system with less effort (Davis 1989). Perceived usefulness and Perceived ease of use together influence a person's attitude towards using Behavioral beliefs and evaluations Normative beliefs and motivation to comply Subjective norms Attitude Behavioral intention Actual behavior21specific form of technology, attitude in turn influence the meaning to use specific technology. The theories TRA and TAM imply that behaviour is determined by the intention to perform behaviour and purpose, defined by attitude towards the behaviour (Al Sukker and Hasan 2005).

Literature search

A literature search is a considered and organised search to find key literature on a topic. To complete a thorough literature search, you should:

- define what you are searching for
- decide where to search
- develop a search strategy
- refine your search strategy
- save your search for future use.

You should form a search question before you begin. Reframing your research project into a defined and searchable question will make your literature search more specific and your results more relevant.

Decide the topic of your search

You should start by deciding the topic of your search. This means identifying the broad topic, refining it to establish which particular aspect of the issue interests you, and reframing that topic as a question.

For example:

- Broad topic: eating disorders and cognitive behavioural therapy
- Main focus topic: self-esteem
- The topic started as a question: "In patients with eating disorders, how effective is cognitive behavioural therapy in improving self-esteem?"

Identify the main concepts in your question

Once you have a searchable question, highlight the significant concepts. For example: “In patients with eating disorders, how effective is cognitive behavioural therapy in improving self-esteem?”

You should then find keywords and phrases to express the different concepts. For example, “eating disorders” cover many key terms, including Anorexia and Bulimia.

It may be helpful to create a concept map. First, identify the major concepts within your question and then organise your appropriate key terms.

If you are researching a medicine or health-related topic, you might use a PICO search model. PICO helps you identify the Patient, Intervention, Comparison and Outcome concepts within your research question.

You should form a search question before you begin. Reframing your research project into a defined and searchable question will make your literature search more specific and your results more relevant.

Decide the topic of your search

You should start by deciding the topic of your search. This means identifying the broad topic, refining it to establish which particular aspect of the issue interests you, and reframing that topic as a question.

For example:

- **Broad topic**: eating disorders and cognitive behavioural therapy
- **Main focus topic**: self-esteem
- **The topic started as a question**: "In patients with eating disorders, how effective is cognitive behavioural therapy in improving self-esteem?"

Identify the main concepts in your question

Once you have a searchable question, highlight the significant concepts. For example: “In patients with **eating disorders**, how effective is **cognitive behavioural therapy** in improving **self-esteem**?”

You should then find keywords and phrases to express the different concepts. For example, “eating disorders” cover many key terms, including Anorexia and Bulimia.

It may be helpful to create a concept map. First, identify the major concepts within your question and then organise your appropriate key terms.

If you are researching a medicine or health-related topic, you might use a PICO search model. PICO helps you identify the Patient, Intervention, Comparison and Outcome concepts within your research question.

A proven six-step model and incorporating technology into all of the steps, literature searching process can be explained as

(1) Selecting a topic;

(2) Searching the literature;

(3) Developing arguments;

(4) Surveying the literature;

(5) Critiquing the literature;

(6) Writing the literature review.

Electronic document delivery

Electronic Document Delivery (EDD) refers to the ability to "create, distribute, and view documents without ever touching a piece of paper". The emphasis is on manipulating large formatted documents such as procedural manuals or catalogues.

Electronic Document Delivery (EDD) provides various to distribute documents, such as reports, spreadsheets, or text documents, that they create using JD Edwards World software.

EDD allows you to distribute interactive inquiries via email and documents via email, File Transport Protocol (FTP), Secure File Transport Protocol (SFTP). EDD integrates with

Import/Export functionality and allows you to create reports, transform them, and distribute them.

EDD integrates with JD Edwards World functionality and allows you to:

- Use Export to send:
    - · DREAM Writer or World Writer reports sent in batch mode via email or FTP
    - · Interactive inquiries via email
- Send email
    - · Using preformatted templates
    - · Specifying distribution lists and profiles
- Burst based on Address Number
- Transform XML documents

EDD also integrates with Oracle Business Intelligence Publisher (BIP) and includes additional features that allow you to:

- Use SFTP to distribute DREAM Writer, or World Writer reports in a batch mode using Export
- Format reports using templates that you develop in familiar tools such as Microsoft Word or Adobe Acrobat
- Burst reports
- Use additional output formats, such as PDF, RTF, HTML
- Use additional output methods, such as Fax, SFTP, EDI, and EFT

Following are three examples of the methods that EDD is useful in sending documents

Example 1

A user wants to run a report and distribute it to multiple recipients. The user can choose to:

- Use pre-formatted email subject line and body text, a pre-defined list of recipients, and transform the document before delivery.
- Use file structure in any format available for the Export function.

- Set the distribution in the Export Parameters, and the program sends the export file to EDD in batch mode.
- Use EDD to create the output by applying email templates, distribution profiles, and transformation templates.
- Send the export file via FTP, SFTP, or an email with the export file as an attachment.
- Use BIP to send the output.

In this example, the user can use Oracle BIP to format the report before sending it to its destination. The Transformation Template, in this case, is the BIP report format template.

Example 2

A user wants to run a report and burst it for sending individual report segments to recipients, such as a customer or supplier. The user can choose to:

- Use a pre-formatted email subject line and body text, use a pre-defined list of recipients, and transform the document before delivery.
- Use file structure in any format available for the Export function.
- Set the distribution in the Export Parameters, and the program sends the export file to EDD in batch mode.
- Use EDD to create the output by applying email templates, distribution profiles, and transformation templates.
- Send the report segment via World email with the export file as an attachment. The user can also send the output using BIP.

In this example, the user can use BIP to format the report segment before sending it to its destination. The Transformation Template, in this case, is the BIP report format template.

Example 3

A user wants to send an interactive inquiry to recipients. The user can choose to:

- Use a pre-formatted email subject line and body text, use a pre-defined list of recipients, and transform the document before delivery.
- Use file structure in any format available for the Export function.

- Set the distribution in the Export Parameters, and the program sends the export file to the EDD email client in an interactive mode.
- Use EDD to create the output by applying email templates, distribution profiles, and transformation templates.
- Send the export file email with the export file as an attachment. The email address is from the Address Number.
- Use BIP to send the output.

Machine translation services

Machine translation is the process of using artificial intelligence (AI) to automatically translate content from one language (the source) to another (the target) without any human input.

Machine translation (MT) is automated translation by computer software. Users input text in their source language and select their target language. The MT engine then generates the desired translation. Machine translation can quickly translate large volumes of text, which is nearly impossible using traditional methods. It can translate entire texts without any human input (raw MT) or alongside human translators, i.e., machine translation post-editing.

Machine translation has a long history: the first translation engines demonstrated in the 1950s were closer to actual machines than computers, often relying on the input of physical punch cards. Today, translation technology is advanced and continuously improving.

There are several different types of MT approaches, such as rule-based, statistical, example-based. As the technology has progressed, the older systems have been replaced by newer, more effective technologies. The most significant developments of the past decade have been the advent of neural machine translation and artificial intelligence.

Neural machine translation (NMT) is built on deep neural networks. There are a variety of network architectures used in NMT. Still, typically, the web can be divided into two components: an encoder that reads the input sentence and generates a representation suitable for translation and a decoder that generates the actual translation. Words and even whole sentences are represented as vectors of real numbers in NMT. Compared to the previous generation of MT, NMT generates outputs that tend to be more fluent and

grammatically accurate. SMT only evaluates the fluency of a sentence a couple of words at a time, whereas NMT evaluates fluency for the entire sentence.

Machine translation has several significant advantages over traditional translation that make it a desirable proposition for businesses:

- It’s fast: MT engines today can handle large volumes of content and translate them near-instantaneously.
- It’s scalable: MT engines can easily handle one document or thousand.
- It’s cost-effective: Some estimates suggest MT is roughly a thousand times cheaper.

However, you must remember that machine translation doesn’t fit all use cases and content types. Human translation or post-editing is still the gold standard for translations that demand perfect quality.

Whether or not you should use machine translation depends on several factors.

Content-type

Machine translation works for many different content types depending on your chosen strategy. However, machine translation may not be ideal for creative content such as marketing copy. It can be used as a starting point, but it is best to have human translators who can get creative with the text.

Audience

Who is it for? Regardless of your use case, it would be best to ensure that the machine translation output would meet the reader's expectations. Are you translating web pages that drive revenue or internal documentation for your employees? A human should certainly review content showcasing your company or product. If the content is for internal purposes, MT is a suitable solution.

Volume

Translating small segments here and there? Sure, you can use MT. However, the actual value of MT lies in being able to translate large volumes of text.

Turnaround time

Machine translation is an excellent option if you have a tight deadline and don't have the human resources to complete a translation job.

Content priority

Content that is of low priority, such as internal documentation, or has a short life-cycle is a perfect candidate for machine translation

Once you have your strategy in place, you need to start thinking about implementation. Adding machine translation to your localization workflow doesn't have to be a daunting task. There are several machine translation implementation steps that you can follow to ensure success.

- Pick the right content for machine translation.
- Review the privacy policy of your MT provider. You should know what happens to your data and how it is stored.
- Train the engine with your data if possible to increase the output quality.
- If you go for a machine translation post-editing strategy, you need to select a team with training or experience or make sure they are open to its idea.
- Run samples before deployment to get an idea of the quality or identify areas that could be improved.
- Agree on a pricing model and involve all stakeholders in the decision.
- Deploy! Remember that the results may not meet your expectations right away, but the output will improve over time.

Machine translation is continuously improving at a remarkable pace by taking advantage of the latest hardware and software developments. MT engines are not only getting better but there are more of them now than ever before (Memsource alone supports over 30 unique MT engines). The combination of rapid development and intense competition will benefit machine translation in the long run. However, the many ever-changing options can make machine translation more challenging to access for newcomers and optimally leverage for existing users.

Much of Memsource's development has ensured our users always have the best machine translation. To help our users find the perfect engine, we've recently launched

Memsource Translate, a dynamic engine management solution that automates and optimizes the process of choosing an MT engine. A sophisticated AI-algorithm monitors engine performance in real-time and always recommends the optimal engine for your content. As Memsource's CTO, Dalibor Frivaldsky, said in a recent interview, "We wanted to make using MT technology as simple as possible, without the need to go through the complex process of choosing a single MT provider".

Why Web-Based Library Service?

- → To save the precious time of the scientist
- → Availability of less number of library staff to carry out the library works and services
- → Less dependence upon the library staff for getting the required information
- → Location of laboratories/departments in different places on the campus
- → Instant and elaborate information requirements for R&D activities
- → Information for decision making in MIS
- → Multifood increase of the cost of books and journals
- → Availability of information in different places and also in other formats
- → Cut in the library budget.
- → Library networks offer many potential and new capabilities for sharing information among different library and information centres at local, regional, national and international levels and eliminate the size, distance, and language barriers among users through resource sharing.
- → Inter-library loans can be provided by sending the information through e-mail using the network facilities.
- → Online ordering and acquisition-related activities can be carried out through e-mail Centralization, and a networking system can provide computerized online public access cataloguing service.
- → Networking with union catalogues of various information items is a boon as it avoids duplication in holding to the extent possible.
- → Reference service can be enhanced by e-mail and the internet through LAN and WAN.
- → CD-ROM and multimedia services can be provided effectively through networks.

→ Current Awareness Service and SDI may be given through networking systems, and the users may retrieve references of their interest in a fraction of a second from an online database.

→ The speed of data communication through networks is very high, and one can obtain information within a few seconds from any part of the world sitting anywhere.

→ The internet is a powerful tool that delivers other services to the front door of different networks and other resources. It is a tool providing access to vast quantities of information, and it lets to communicate, share resources and share data with people around the world.

5.2 Bibliographic databases, Citation databases, Full-text databases, ETD.

Bibliographic database

A bibliographic database is a database of bibliographic records, an organized digital collection of references to published literature, including journal and newspaper articles, conference proceedings, reports, government and legal publications, patents, books, etc. In contrast to library catalogue entries, many of the bibliographic records in bibliographic databases describe articles, conference papers, etc., rather than complete monographs. They generally contain detailed subject descriptions in keywords, subject classification terms, or abstracts.

A bibliographic database may be general in scope or cover a specific academic discipline like computer science. A significant number of bibliographic databases are proprietary, available by licensing agreement from vendors, or directly from the indexing and abstracting services that create them.

Many bibliographic databases have evolved into digital libraries, providing the full text of the indexed contents: for instance, CORE also mirrors and indexes the full text of scholarly articles. Our Research develops a search engine for open access content found by Unpaywall. Others converge with non-bibliographic academic databases to create more complete disciplinary search engines systems, such as Chemical Abstracts or Entrez.

Before the mid-20th century, individuals searching for published literature had to rely on printed bibliographic indexes generated manually from index cards. "During the early 1960s, computers were used for digitizing text for the first time; the purpose was to reduce the cost and time required to publish two American abstracting journals, the Index Medicus

of the National Library of Medicine and the Scientific and Technical Aerospace Reports of the National Aeronautics and Space Administration (NASA). By the late 1960s, such bodies of digitized alphanumeric information, known as bibliographic and numeric databases, constituted a new type of information resource. Online interactive retrieval became commercially viable in the early 1970s over private telecommunications networks. The first services offered a few databases of indexes and abstracts of scholarly literature. These databases contained bibliographic descriptions of journal articles searchable by keywords in author and title and sometimes by journal name or subject heading. The user interfaces were crude, the access was expensive, and librarians searched on behalf of 'end-users.

Citation database

Citation databases are collections of referenced papers/ articles/ books and other material entered into an online system (database) in a structured and consistent way. All the information relating to a single document (author, title, publication details, abstract, and perhaps the full text) make up the ‘record’ for that document. Each of these information items becomes a separate ‘field’ in that record and enables the document to be retrieved via any of these items or by keywords.

A citation database allows you to access published, peer-reviewed, high-quality material such as journal articles, research reports, systematic reviews, conference proceedings, editorials, and related works. When a document is entered into a database, it is analysed for its key subjects, and descriptors (MeSH terms in MEDLINE, PubMed etc.) are assigned. MeSH terms are Medical Subject Headings, a controlled vocabulary thesaurus used to index and catalogue articles for medical and biomedical purposes. These MeSH terms allow precise searching as the databases search for these specific terms in a hierarchical order.

Searches can then be limited, for example, by author or title fields or year/s of publication, and keywords can be focused and searched separately. Therefore, investigations undertaken in citation databases are more precise and comprehensive than searches on general internet search engines, and the results are of consistently higher quality and reliability.

Searching on Google, or similar internet search engines, will return at least a few sources on almost any topic, but finding high-quality, reliable, and the most relevant authorities is less likely. Google is an internet search engine that returns and ranks results on

the ‘basis of popularity’ with no filters to remove bias or unreliable information. Results returned are from ‘all internet material’. Many peer-reviewed scholarly articles do not appear on open websites, so Google cannot search them due to subscription requirements. Internet searches also return many results of dubious quality.

By comparison, Google Scholar provides a simple way to search for scholarly literature. It searches across many disciplines and a variety of sources. It ranks a document by where it was published, who it was written by, and how recently it has been cited in other scholarly literature.

If you were to use only Google or Google Scholar, significant articles would not be retrieved due to these search engines' sorting, vocabulary, and subscription limitations. However, it can sometimes help find the full text and occasionally retrieve helpful information not found in a database search.

Considerations while selecting a database

Content

The type of information available (content) is essential, as is the breadth of your search. How widely do you need to search? Does the database you are considering cover citations for books, reports, conference proceedings, and research theses in addition to journal articles? The content is determined by commercial agreements between journals, publishers, and database companies. Although there may be some overlap in the range between databases, each has a particular focus, as described above.

Limits

Each database has a slightly different number and type of ‘limits’, which help you to make your search more specific. Do the limits available enable you to specify the material you are looking for, for example, various forms of secondary evidence?

Origin

The origin of the database content is essential regarding the breadth of material that can be sourced via the database. For example, where are most journals on the database sourced from? If you are looking for information from international sources, you will need to

choose a database that contains a range of global content. Knowing the country of origin about spelling and medical terminology is also helpful.

Full-text database

A full-text database or a complete-text database is a database that contains the complete text of books, dissertations, journals, magazines, newspapers or other kinds of textual documents. They differ from bibliographic databases (which have only bibliographical metadata, including abstracts in some cases) and non-bibliographic databases (such as directories and numeric databases).

Full-text databases became standard in 1990 when computer storage technology made them economical and technologically possible. There are two main classes: an extension of the classical bibliographical databases into full-text databases (e.g. on hosts such as BRS, Dialog, LexisNexis and Westlaw) and Internet-based full-text databases (based on search engines or XML).

One of the earliest systems of complete text database was IBM STAIRS, introduced in 1973.

ETD (Electronic thesis and dissertation)

An ETD documents the author's years of academic commitment. It describes why the work was done, how the research relates to previous work recorded in the literature, the research methods used, the results, interpretation and discussion, and a summary with conclusions.

A dissertation or thesis is a work submitted in support of candidature for a doctorate or master’s degree, respectively, which presents the author's research and findings. Electronic versions of theses and dissertations are called ETDs. Theses and dissertations must first meet the requirements of each author’s advisory committee and department and then be submitted for final approval by the Graduate School.

ETDs replaced paper theses and dissertations at Virginia Tech officially on Jan. 1, 1997, when online submission became a requirement. ETDs can be similar to their paper predecessors in that they may have figures, tables, footnotes, and references. The title page has the author’s name, the ETD title, the university's official name, the degree sought, the committee members' terms, date of the defence, keywords, and often a copyright statement.

The ETD is different, however. It provides a technologically advanced medium for expressing the author's ideas by providing access to theses and dissertations as electronic resources, everyone benefits.

- More access to research:
    - Research is available on campus.
    - Research is accessible worldwide.
- Less expense to authors and libraries:
    - No paper costs
    - No copying costs
    - No physical shelf space
    - Lower cataloguing costs
- Better presentation of research (not available in paper format):
    - Addition of multimedia files
    - More dynamic display of data
    - Hyperlinks
    - Programs and code

ETDs are prepared using almost any word processor or document preparation system. The electronic format allows graduate students to fully utilize current and future technology as tools to express their research and findings.

A goal at Virginia Tech is to have all graduate student research and findings openly available to the public through the Worldwide Web. But, with the agreement of their advisors, authors may temporarily restrict access to their ETDs to just the VT community or temporarily have all access withheld, for example, while they apply for a patent. With permission from the Dean of the Graduate School, an ETD may comprise multiple files with different access levels.

5.3 Portals and Gateways, Multimedia based information products, Open access knowledge system: products and services

A web portal is a specially designed website that brings information from diverse sources, like emails, online forums and search engines, together in a uniform way. Usually, each information source gets its dedicated area on the page for displaying information (a portlet); often, the user can configure which ones to display. Variants of portals include mashups and intranet "dashboards" for executives and managers. The extent to which content is displayed in a "uniform way" may depend on the intended user, the intended purpose, and the diversity of the content. Often, the design emphasis is on a particular "metaphor" for configuring and customizing the presentation of the content (e.g., a dashboard or map) and the chosen implementation framework or code libraries. In addition, the user's role in an organization may determine which content can be added to the portal or deleted from the portal configuration.

A portal may use a search engine's application programming interface (API) to permit users to search intranet content instead of extranet content by restricting which domains may be searched. Apart from this common search engines feature, web portals may offer other services such as e-mail, news, stock quotes, information from databases and even entertainment content. Portals provide a way for enterprises and organizations to provide a consistent "look and feel" with access control and procedures for multiple applications and databases, which otherwise would have been different web entities at various URLs. The features available may be restricted by whether access is by an authorized and authenticated user (employee, member) or an anonymous website visitor.

A web portal is a website that provides a broad array of services, such as search engines, e-mail, online shopping, and forums. America Online was the first web portal.[3] Other American web portals include Netscape, Go, MSN, Lycos, Voila, Yahoo!, and Google Search.

Web portals are sometimes classified as horizontal or vertical. A horizontal portal is used as a platform for several companies in the same economic sector or the same type of manufacturers or distributors.[1] A vertical portal (also known as a "vortal") is a specialized entry point to a specific market or industry niche, subject area, or interest.[2] Some vertical portals are known as "vertical information portals" (VIPs). VIPs provide news, editorial content, digital publications, and e-commerce capabilities. In contrast to traditional vertical portals, VIPs also provide dynamic multimedia applications, including social networking, video posting, and blogging.

Generally, a system can be defined as a group of interrelated components (Sub-systems) working together under control and management toward achieving a common objective by accepting inputs and producing outputs in an organized transformation process through interaction with a specific environment. Figure1.1 below provides the general structure of the available definition for the system concept.

In particular, an information System (IS) can be described briefly as a set of interrelated elements or integrated components that collect (input), manipulate (process), store, and disseminate (output) data and information in addition to providing a corrective reaction (feedback mechanism) to meet a predefined objective. An information system can be a manual or computerized system. It focuses on the internal rather than the external. It describes the main components of an information system. The automated information system is called a Computer-Based Information System (CBIS), which mainly means the complete automation of the most manual business processes in an organization.

Computer-Based Information System (CBIS)

A single set of hardware, software, databases, telecommunications, people, and procedures is configured to collect, manipulate, store, and process data into information.

Technology Infrastructure; All the hardware, software, databases, telecommunications, people, and procedures configured to collect, manipulate, store, and process data into information. This technology infrastructure can be briefly described as the following:

- Hardware; The physical components of a computer that perform the computer's input, processing, storage, and output activities.
- Software; The computer programs that govern the operation of the computer.
- Database; An organized collection of facts and information.
- Telecommunications; The electronic transmission of signals for communications; enables organizations to carry out their processes and tasks through effective computer networks.
- Networks; Computers and Equipment connected in a building, around the country, or worldwide to enable and support electronic communication.

- Internet; The world's largest computer network, consisting of thousands of interconnected networks,

- Procedures; The strategies, policies, methods, and rules for using a CBIS.

People are the most crucial element in most CBISs. They make the difference between success and failure for most organizations. Information systems personnel include all the people who use, manage, run, program and maintain the system. Multimedia may be broadly divided into linear and non-linear categories: Linear active content often progresses without any navigational control for the viewer, such as a cinema presentation;

Non-linear uses interactivity to control progress as a video game or self-paced computer-based training. Hypermedia is an example of non-linear content. Multimedia presentations can be recorded or live: A recorded multimedia presentation may allow interactivity via a navigation system; A live multimedia presentation may allow interactivity via an interaction with the presenter or performer.

When offered as an option with equal accessibility as the current information forms, Multimedia information will be the preferred format as it is much closer to human forms of communication. Multimedia information presentation from the system to user and interpretation from the user to the system employs our collaborative communication skills, enabling us to control system interactions in a more transparent experience than ever before. More natural interaction with information and communication services for many users will generate a significant societal and economic value.

Multimedia applications can include various types of media. The main characteristic of a multimedia system is more than one kind of media to deliver both content and functionality. Web and desktop computing programs can both involve multimedia components. As well as different media items, a multimedia application will typically include programming code and enhanced user interaction.

Multimedia Information System:

Multimedia Information System (MMIS) is differing from this traditional concept of an information system according to the types of the data/information representation in the database component, such that Multimedia refers to the precise combination of multiple styles and formats of media stored and processed in the information system as illustrated in the previous section.

Therefore, MMIS can be defined as an information system within a multimedia database. MMIS is a repository for all types of information objects in a computing context; this means all kinds of digitally representable data. Such systems are complex and multidisciplinary.

The term Hypermedia today more and more stands for a trend towards Integration. Hypermedia comprises a unified, integrated system in the different aspects of hardware support, user interfaces, multimedia data, data manipulation and data organization. A superficial analysis of these aspects yields three significant dimensions for describing a system – data types, application tools and system services & resources. In essence, 'Full' Hypermedia is identical to the complete volume defined by these dimensions.

However, every currently available hypertext-and hypermedia system covers only a certain sub-volume of this space. The four main issues of design and implementation of MMIS and their related technologies can be briefly abstracted as

1. Semantic Content Extraction

2. Modelling and Storing

3. Multimodal Processing

4. Efficient and Powerful Querying

The MMIS Features

According to the various categories of multimedia data in MMIS; the ideal MMIS should provide these recommended facilities that are represented in the following general list of features:

1. MMIS should store everything that can be represented digitally – principally those media listed in the multimedia categories section.

2. Once everything has been stored, the user must retrieve it. Retrieval falls into three categories:

3. Presentation. Retrieval by presentation relates to data type and structure without sophisticated analysis. It is commonly applied to mixed media, i.e. those containing other media. Examples of presentation queries are “Find all documents with voice comments in them" or "Find all images".

4. Content. Retrieval by content is retrieving documents according to their semantic content. The simplest form of content retrieval is based on manually generated labels, i.e., an operator's descriptions entered from the keyboard. The other extreme is automatic semantic analysis – i.e. definitions inferred by the system. In general, labelling makes things easy for the implementer, whereas automated semantic analysis benefits the user.

5. Association. Retrieval by association is retrieving items by associated links to other things. It can be used as a browsing mechanism and subsumes hypermedia. 3. There are several ways in which querying may be achieved from the user's point of view:

6. By Data Model. The user is familiar with the data model and can formulate queries such as "What text attributes are stored?" or when classification is provided: "What characterizes this class?"

7. The user knows exactly what the system stores about each item, e.g. the labels it uses, the primitives it extracts during semantic analysis, or how it structures mixed media. Direct queries are then expressed as logical expressions or set operators in conventional databases.

8. By Similarity. Queries of the form "Retrieve images similar to this one" are desirable, but they are generally too vague to be soluble. However, examples exist: for images, statistical similarity measures can be used; for text, an approximate estimate of word content can be found using a hashing function to produce signature files.

9. By Prototype. This technique is related to similarity retrieval. Queries take the form of a prototype presented to the database, where the prototype may be either of the following:

10. Sketches. The user gives a 'shorthand' version of an item online, and the system must try to stretch and compress this sketch to fit stored items. A sketch's form varies from one medium to another and may be meaningless in some. An image sketch might comprise a rough outline of a particular house style with salient features, such as rectangular Georgian windows with multiple panes. A voice sketch maybe a sentence the user uses for a specific accent, dialogue or language. Some of these techniques won't appear for a long time, but they are still valid from the user's viewpoint. An image example that already exists is the Ledeen online symbol recognizer.

11. In an extensive multimedia system, it is undesirable to present users with a large set of items as the result of a query; what is needed is a measure of the degree to which each item satisfies the question so that they can be ranked and the best matches examined first. For

Prototype Retrieval, a ranking score can be obtained by measuring the distance of the retrieved item from the prototype. Another score source assigns importance to each query clause; things that satisfy the most critical clauses receive the highest score. Scores can be discrete (very good, good, reasonable ...) or continuous (normalized to the range [0, 1] for the item).

12. Another retrieval technique that should be provided is Browsing, possibly using hypermedia as a mechanism. The user has a set of items (the entire contents of the system or a subset obtained by query) and is allowed to roam over them. The user may wish to generate his own commented connections between items in a hypermedia fashion. The system should manage the relationships for him assets of 'webs'. Queries can then take the form "Get me web X".

13. To fit more items on the screen and to avoid getting the full versions from the system, retrieved items may be displayed as:

14. Icons Small pictorial representations relating to the original type, but not the content.

15. Miniatures The original item reduced significantly in size.

16. Descriptions One-line comments about the item's content include operator-generated 'headers' or system-generated type names.

17. Retrieval should be mixed-media, using the same language to express all forms of media, but possibly with sub-clauses specific to each medium to cope with their different semantics.

18. The system should have a reasonable response time to be interactive. Semantic analysis can sometimes take hours or days. Content retrieval can be based on pre-query research - i.e. before the item is involved in a query or post-query. The pre-query analysis increases storage requirements, and the post-query study increases response time. Lazy evaluation can be used as a compromise to perform research on-demand and the results retained in the database.

19. Editors should be provided so that users can modify or create new items. Although editors are medium-specific, they should all have the same look and feel- e.g. all windows based, with a similar menu hierarchy and similar high-level options. Editors for mixed media (webs, documents) could call on the appropriate editors for the media they contain. Many media require modern workstations for display, but in a multi-user, distributed system, they will

vary in resolution, number of bits per pixel and so on. Therefore, a workstation will have to assess the incoming items and do one of:

→ Reject them as un-displayable.

→ Alter the items to fit its screen by transforming resolution, converting colour to grey-level, reducing the number of bits per pixel and so on.

→ Display what it can and replace the rest with icons; this would allow a text-only screen to replace images on a page with a box containing the word IMAGE or a description while retaining the text.

20. Storage requirements will be huge, running to hundreds of kilobytes for a single high-resolution colour image, for example. Therefore, MMIS designers will have to consider each of the following:

21. *High Volumes* Storage Technology Such as a 'juke-box' of reading/write optical disks or write-once optical tape.

22. *Multi-user Access* Since it will be expensive and sought-after, mass storage should be shared between users and ideally between machines.

23. *Distributed Architecture* More than one machine should provide database resources. Ideally, the location of a particular piece of data should not be apparent to the user, allowing controlled replication of data to speed access.

24. Storage by Reference An item appearing in more than one composite item is stored only once while the mixed things each get a copy of a pointer to it.

25. *High Bandwidth Networks* Local-area and wide-area networks to allow multiuser access and distributed architectures.

26. *Version Control*, A user may wish to modify an existing item and record the article from which it is derived. For storage efficiency, a new version could be stored as a description of the changes made to the parent.

27. *Archiving* some technologies for mass storage are write-once. Therefore, items can remain editable on a magnetic disk until completed. Once complete, they can be stored permanently or archived. If it is ever necessary to change an archived item, it must be retrieved into an editable state and re-archived. This is another reason to provide version control.

28. *Data Compression:* Data compression reduces storage requirements and speeds transmission through networks.

Open access knowledge system

Open access is a broad international movement that seeks to grant free and available online access to academic information, such as publications and data. A publication is defined as 'open access' when there are no financial, legal or technical barriers to accessing it - that is to say when anyone can read, download, copy, distribute, print, search for and search within the information, or use it in education or in any other way within the legal agreements.

Open access is a publishing model for scholarly communication that makes research information available to readers at no cost, unlike the traditional subscription model. Readers can access knowledgeable information by paying a subscription (usually via libraries).

One of the essential advantages of open access is that it increases the visibility and reuse of academic research results. There is also criticism, and the quality aspect deserves the extra effort. The principles of open access are set out in the Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities (2003). Many international organisations have signed this declaration for academic research, including all Dutch universities and research organisations.

There are different ways of publishing open access:

The golden route:

1) Full Open Access journals: publication via publisher platforms, in fully open access journals. This route may involve a charge. The publication costs, known as ‘article processing charges (APCs), are covered by authors or institutions. Most research funders support open access and are willing to cover the costs. A list of fully open access journals accessible worldwide can be found on the DOAJ website.

2) Hybrid Journals: publication via ‘hybrid’ journals. These journals are subscription journals that allow open access to individual articles on payment of an Article Processing Charge (APC). Thanks to a series of deals between the VSNU and several academic publishers, Dutch-affiliated researchers can be published for free in thousands of hybrid journals.

The green route:

The full text of academic publications is deposited in a trusted repository, a publicly accessible database managed by a research organisation. You can find all Dutch institutional repositories via NARCIS, the Dutch portal for research information. NARCIS gives access to all the publications in Dutch repositories.

The diamond route: publication via diamond journals/platforms that do not charge author-facing publication fees (APCs). Diamond open access journals are usually funded via library subsidy models, institutions or societies.

The Hybrid route

This type of Open Access is often referred to as "Paid Open Access." Hybrid journals are subscription-based but will include individual OA articles. These journals are published through subscription fees and Author Processing Charges (APC).

The emergence of open science or open research has brought several controversial and hotly-debated topics to light.

Scholarly publishing invokes various positions and passions. For example, authors may spend hours struggling with diverse article submission systems, often converting document formatting between many journals and conference styles, and sometimes spend months waiting for peer review results. The drawn-out and often contentious societal and technological transition to Open Access and Open Science/Open Research, particularly across North America and Europe (Latin America has already widely adopted "Acceso Abierto" since before 2000), has led to increasingly entrenched positions and much debate.

The area of (open) scholarly practices increasingly sees a role for policy-makers and research funders, focusing on career incentives, research evaluation and business models for publicly funded research. Plan S and America (Open Knowledge for Latin America) caused a wave of debate in scholarly communication in 2019 and 2020.

Gender inequality still exists in the modern system of scientific publishing. Regarding citation and authorship position, gender differences favouring men can be found in many disciplines such as political science, economics and neurology, and critical care research. For instance, in urgent care research, 30.8% of 18,483 studies led by female authors are more likely to be published in lower-impact journals than male authors. Such disparity can

adversely affect the scientific career of women and underrate their scientific impacts for promotion and funding. Hence, a healthy and fair scientific community needs to mitigate gender inequality. It is suggested to help women in science by reducing systematic bias, inappropriate institutional practices or unequal domestic work. Increasing the number of female scientists and policies promoting gender equality may help close the gender gap in science. Besides, improving the visibility and representation of women in academic publishing is also essential because the under-representation of women in scholarly literature can enlarge the gendered citation gap, even in the discipline with more women than men. Open access (OA) publishing has many advantages in the present publishing system and can help female researchers increase their publications' visibility and measure impact. OA publishing is a well-advocated practice for providing better accessibility to knowledge (especially for researchers in low- and middle-income countries) and increasing transparency along with the publishing procedure. Publications' visibility can be enhanced through OA publishing due to its high accessibility by removing paywalls compared to non-OA publishing.

Additionally, authors can receive more recognition for their works because of this high visibility. OA publishing is also suggested to be advantageous in citation number compared to non-OA publishing, but this aspect is still controversial within the scientific community. The association between OA and a higher number of citations may be because higher-quality articles are self-selected for publication as OA. Considering the gender-based issues in academia and the efforts to improve gender equality, OA can be an essential factor when female researchers choose a place to publish their articles. OA publishing has increased female researchers' productivity with a proper supporting system and funding.

5.4 Web Services

WebOPAC

The online public access catalogue (OPAC), now frequently synonymous with library catalogue, is an online database of materials held by a library or group of libraries. Online records have replaced mainly the analogue card catalogues previously used in libraries.

Web OPAC is the Online Public Access Catalogue that allows users to use the library's Internet services.

The concept of Web OPACs is the recent origin. It serves as a gateway to the resources held by the respective library and the holdings of other participating libraries without local collection but going beyond further to regional, national, international levels. It allows users to interact with documents stored on computers worldwide and makes more straightforward access to catalogue data in bibliographic records. It becomes another search engine referred to as 'web cat' and 'Information gateways'. It can support telnet, HTTP., FTP, and Gopher and keep files and documents like Portable Document Format (pdf), (HTML), etc. Web OPAC

According to Online Dictionary for Library and Information Science, defined as: "An Online Public Access public catalogue (OPAC) that uses a graphical user interface (GUI) accessible via the World Wide Web, as opposed to a text-based interface accessible via telnet".

Features of WEB OPAC:

The essential elements of Web OPACs are:

1. It is accessible through the internet.

2. It is possible to search independently by Author, Keyword, Title or Year.

3. Displays complete bibliographic information as appeared on reprints.

4. Features of traditional OPACs include storing bibliographic and sometimes full-text databases; providing direct access to a library's bibliographic database employing terminal or PC; search results in readily understandable form; reference help, etc.

5. It can use hypertext links to facilities navigation through bibliographic records.

6. Linking to full text when available is there.

Advantages of WEB OPAC:

Following are the benefits of the Web OPACs:

1. It is worldwide and all the time accessible.

2. The status of any book may be known as a book issue or not. The status of an acquisition order may be available at both staff and public terminals located throughout the library.

3. users can send reprint requests immediately by e-mail.

4. There is no limitation of time and space for searching any document of their library and any networked library.

Disadvantages of the WEB OPAC:

Some of the disadvantages of web OPAC are:

I. Some web OPACs, even though the link is available on the web page or the telnet address is given, are restricted to a particular user community and requires the use of appropriate login names and passwords;

2. Some web OPACs do not provide links through authors or subjects;

3. Displays in most of the web OPACs failed to provide access to online help and;

4. Some web OPACs do not display the searched database and call number.

Web page

A web page (or webpage) is a hypertext document provided by a website and displayed to a user in a web browser. A website typically consists of many web pages linked together coherently. The name "web page" is a metaphor for paper pages bound together into a book.

The core element of a web page is one or more text files written in the Hypertext Markup Language (HTML). Many web pages also use JavaScript code for dynamic behaviour and Cascading Style Sheets (CSS) code for presentation semantics. WebAssembly executables can also be used for portions of web page behaviour. Images, videos, and other multimedia files are often embedded in web pages.

E-mail service

Electronic mail (email or e-mail) is a method of exchanging messages ("mail") between people using electronic devices. The email was thus conceived as the electronic (digital) version of, or counterpart to, mail, at a time when "mail" meant only physical mail (hence e- + mail). An email later became a ubiquitous (very widely used) communication medium, to the point that in current use, an e-mail address is often treated as a fundamental and necessary part of many processes in business, commerce, government, education, entertainment, and other spheres of daily life in most countries. Email is the medium, and each message sent in addition to that is called an email (mass/count distinction).

Email's earliest development began in the 1960s, but users could first send e-mail only to other users of the same computer. Some systems also supported a form of instant messaging, where sender and receiver needed to be online simultaneously. The history of modern Internet email services reaches back to the early ARPANET, with standards for encoding email messages published as early as 1973 (RFC 561). An email message sent in the early 1970s is similar to a primary email sent today. Ray Tomlinson is credited as the inventor of networked email; in 1971, he developed the first system to send mail between users on different hosts across the ARPANET, using the '@' sign to link the user name with a destination server. By the mid-1970s, this was the form recognized as email. At the time, though, like most computing, email mainly was just for "computer geeks" in specific environments, such as engineering and the sciences. During the 1980s and 1990s, email became common in business management, government, universities, and defence/military industries. Still, much of the public did not use it yet. Starting with the advent of web browsers in the mid-1990s, the use of email began to extend to the rest of the people, no longer something only for geeks in certain professions or industries. By the 2010s, webmail (the web-era form of an email) had become ubiquitous.

Email operates across computer networks, primarily the Internet. Today's email systems are based on a store-and-forward model. Email servers accept, forward, deliver, and store messages. Neither the users nor their computers must be online simultaneously; they need to connect, typically to a mail server or a webmail interface, to send or receive messages or download them.

Originally an ASCII text-only communications medium, Internet email was extended by Multipurpose Internet Mail Extensions (MIME) to carry text in other character sets and multimedia content attachments. International email, with internationalized email addresses using UTF-8, is standardized but not widely adopted.

Messages are exchanged between hosts using the Simple Mail Transfer Protocol with software programs called mail transfer agents (MTAs); and delivered to a mail store by mail delivery agents (MDAs, also sometimes called local delivery agents, LDAs). Accepting a message obliges an MTA to provide it [56], and when a message cannot be returned, that MTA must send a bounce message back to the sender, indicating the problem.

Users can retrieve their messages from servers using standard protocols such as POP or IMAP, or, more likely in a large corporate environment, with a proprietary protocol specific to Novell Groupwise, Lotus Notes or Microsoft Exchange Servers. Programs used by users for retrieving, reading and managing email are called mail user agents (MUAs).

When opening an email, it is marked as "read", which typically visibly distinguishes it from "unread" messages on clients' user interfaces. Email clients may allow hiding read emails from the inbox to focus on the unread.

Mail can be stored on the client, on the server, or in both places. Standard formats for mailboxes include Maildir and mbox. Several prominent email clients use their proprietary format and require conversion software to transfer email. Server-side storage is often in a proprietary format, but since access is through a standard protocol such as IMAP, moving email from one server to another can be done with any MUA supporting the protocol.

Many current email users do not run MTA, MDA or MUA programs themselves but use a web-based email platform, such as Gmail or Yahoo! Mail, that performs the same tasks. Such webmail interfaces allow users to access their mail with any standard web browser, from any computer, rather than relying on a local email client.

Types of e-mail

1. Web-based email

Many email providers have a web-based client (e.g. AOL Mail, Gmail, Outlook.com and Yahoo! Mail). This allows users to log into the email account using any compatible web browser to send and receive their email. Mail is typically not downloaded to the web client, so it can't be read without a current Internet connection.

2. POP3 email servers

The Post Office Protocol 3 (POP3) is a mail access protocol used by a client application to read messages from the mail server. Received messages are often deleted from the server. POP supports simple download-and-delete requirements for access to remote mailboxes (termed maildrop in the POP RFC's). POP3 allows you to download email messages on your local computer and read them even when you are offline.

3. IMAP email servers

The Internet Message Access Protocol (IMAP) provides features to manage a mailbox from multiple devices. Small portable devices like smartphones are increasingly used to check email while travelling and make brief replies; larger devices with better keyboard access are used to reply at greater length. IMAP shows the headers of messages, the sender and the subject, and the device needs to request to download specific messages. Usually, the mail is left in folders on the mail server.

4. MAPI email servers

Microsoft Outlook uses Messaging Application Programming Interface (MAPI) to communicate to Microsoft Exchange Server - and to a range of other email server products such as Axigen Mail Server, Kerio Connect, Scalix, Zimbra, HP OpenMail, IBM Lotus Notes, Zarafa, and Bynari where vendors have added MAPI support to allow their products to be accessed directly via Outlook.

5.5 Social Media services

Social media are interactive technologies that facilitate creating and sharing information, ideas, interests, and other forms of expression through virtual communities and networks. While challenges to the definition of social media arise[3][4] due to the variety of stand-alone and built-in social media services currently available, there are some standard features:

- Social media are interactive Web 2.0 Internet-based applications.
- User-generated content—such as text posts or comments, digital photos or videos, and data generated through all online interactions — is the lifeblood of social media.
- Users create service-specific profiles for the website or app designed and maintained by the social media organization.
- Social media helps the development of online social networks by connecting a user's profile with those of other individuals or groups.

Users usually access social media services through web-based apps on desktops or download services that offer social media functionality to their mobile devices (e.g., smartphones and tablets). As users engage with these electronic services, they create highly interactive platforms where individuals, communities, and organizations can share, co-create, discuss, participate, and modify user-generated or self-curated content posted online.

Additionally, social media are used to document memories; learn about and explore things; advertise oneself; and form friendships and grow ideas from creating blogs, podcasts, videos, and gaming sites. This changing relationship between humans and technology focuses on the emerging field of technological self-studies. Some of the most popular social media websites, with more than 100 million registered users, include Facebook (and its associated Facebook Messenger), TikTok, WeChat, Instagram, QZone, Weibo, Twitter, Tumblr, Baidu Tieba, and LinkedIn. Depending on interpretation, other popular platforms sometimes referred to as social media services include YouTube, QQ, Quora, Telegram, WhatsApp, Signal, LINE, Snapchat, Pinterest, Viber, Reddit, Discord, etc. VK, Microsoft Teams, and more. Wikis are examples of collaborative content creation.

Many social media outlets differ from traditional media (e.g., print magazines and newspapers, TV, and radio broadcasting) in many ways, including quality, reach, frequency, usability, relevancy, and permanence. Additionally, social media outlets operate in a dialogic transmission system, i.e., many sources to many receivers, while traditional media outlets operate under a monologic transmission model (i.e., one source to many receivers). For instance, a newspaper is delivered to many subscribers, and a radio station broadcasts the same programs to an entire city.

Since the dramatic expansion of the Internet, digital media or digital rhetoric can represent or identify a culture. Studying rhetoric in the digital environment has become a crucial new process for many scholars.

Observers have noted a wide range of positive and negative impacts on the use of social media. Social media can help to improve an individual's sense of connectedness with natural or online communities and can be an effective communication (or marketing) tool for corporations, entrepreneurs, non-profit organizations, advocacy groups, political parties, and governments. Observers have also seen that there has been a rise in social movements using social media as a tool for communicating and organizing in times of political unrest.

The idea that social media are defined simply by their ability to bring people together has been seen as too broad, suggesting that fundamentally different technologies like the telegraph and telephone are also social media.[25] The terminology is unclear, with some early researchers referring to social media as social networks or social networking services in the mid-2000s. A more recent paper from 2015 reviewed the prominent literature in the area and identified four standard features unique to then-current social media services:

Social media are Web 2.0 Internet-based applications.

User-generated content (UGC) is the lifeblood of the social media organism.

Users create service-specific profiles for the site or app designed and maintained by the social media organization.

Social media facilitate the development of online social networks by connecting a user's profile with those of other individuals or groups.

In 2019, Merriam-Webster defined social media as "forms of electronic communication (such as websites for social networking and microblogging) through which users create online communities to share information, ideas, personal messages, and other content (such as videos)."

While the variety of evolving stand-alone and built-in social media services makes it challenging to define them, marketing and social media experts broadly agree that social media include the following 13 types of social media:

- blogs,
- collaborative project management,
- enterprise social networking,
- business networks,
- forums,
- microblogs,
- photo sharing,
- products/services review,
- social bookmarking,
- social gaming,
- social networks,
- video sharing, and
- virtual worlds.

Mobile social media refers to social media on mobile devices such as smartphones and tablet computers. Mobile social media are useful applications of mobile marketing because the creation, exchange, and circulation of user-generated content can assist companies with marketing research, communication, and relationship development. Mobile

social media differ from others because they incorporate the user's current location (location sensitivity) or the time delay between sending and receiving messages.

Social media promotes users to share content with others and display content to enhance a particular brand or product. Social media allows people to be creative and share interesting ideas with their followers or fans. Specific social media applications such as Twitter, Facebook, and Instagram are places where users share explicit political or sports content. Many reporters and journalists produce updates and information on sports and political news. It can genuinely give users pertinent and necessary information to stay up to date on relevant news stories and topics.

Most popular social networking services

The following is a list of the most popular social networking services based on January's number of active users per Statista.

S.No	**Network Name**	**Number of Users (in millions)**	**Country of Origin**
1	Facebook	2,740	United States
2	YouTube	2,291	United States
3	WhatsApp	2,000	United States
4	Facebook Messenger	1,300	United States
5	Instagram	1,221	United States
6	WeChat	1,213	China
7	QQ	800	China
8	TikTok	689	China
9	Douyin	600	China
10	Sina Weibo	511	China

The uses of social media are certainly on the rise. Social media affects everyone from individuals, entrepreneurs, and celebrities to start-ups, small businesses, and big enterprises.

i) Facebook

Facebook is an American online social media and social networking service owned by Meta Platforms. Founded in 2004 by Mark Zuckerberg with fellow Harvard College students and roommates Eduardo Saverin, Andrew McCollum, Dustin Moskovitz, and Chris Hughes, its name comes from the face book directories often given to American university students. Membership was initially limited to Harvard students, gradually expanding to other North American universities and, since 2006, anyone over 13 years old. As of 2020, Facebook claimed 2.8 billion monthly active users and ranked seventh in global internet usage. It was the most downloaded mobile app of the 2010s.

Facebook can be accessed from devices with Internet connectivity, such as personal computers, tablets and smartphones. After registering, users can create a profile revealing information about themselves. They can post text, photos, and multimedia, shared with other users who have agreed to be their "friend" or publicly with different privacy settings. Users can also communicate directly with each other with Facebook Messenger, join common-interest groups, and receive notifications on the activities of their Facebook friends and the pages they follow.

The subject of numerous controversies, Facebook has often been criticized over issues such as user privacy (as with the Cambridge Analytica data scandal), political manipulation (as with the 2016 U.S. elections), mass surveillance,[9] psychological effects such as addiction and low self-esteem, and content such as fake news, conspiracy theories, copyright infringement, and hate speech. Commentators have accused Facebook of willingly facilitating the spread of such content and exaggerating its number of users to appeal to advertisers.

Zuckerberg built a website called "Facemash" in 2003 while attending Harvard University. The site was comparable to Hot or Not and used "photos compiled from the online facebooks of nine Houses, placing two next to each other at a time and asking users to choose the "hotter" person". Facemash attracted 450 visitors and 22,000 photo-views in its first four hours. The site was sent to several campus group listservs but was shut down a few days later by the Harvard administration. Zuckerberg faced expulsion and was charged with breaching security, violating copyrights and violating individual privacy. Ultimately, the

charges were dropped. Zuckerberg expanded on this project that semester by creating a social study tool ahead of an art history final exam. He uploaded art images, each accompanied by a comments section, to a website he shared with his classmates.

A "Facebook" student directory features photos and personal information. In 2003, Harvard had only a paper version and private online guides. Zuckerberg told The Harvard Crimson, "Everyone's been talking a lot about a universal face book within Harvard. ... I think it's kind of silly that it would take the University a couple of years to get around to it. I can do it better than they can, and I can do it in a week." In January 2004, Zuckerberg coded a new website, known as "The Facebook", inspired by a Crimson editorial about Facemash, stating, "It is clear that the technology needed to create a centralized Website is readily available ... the benefits are many." Zuckerberg met with Harvard student Eduardo Saverin, and each of them agreed to invest $1,000 in the site. On February 4, 2004, Zuckerberg launched "The Facebook", located initially at thefacebook.com.

Six days after the site launched, Harvard seniors Cameron Winklevoss, Tyler Winklevoss, and Divya Narendra accused Zuckerberg of intentionally misleading them into believing that he would help them build a social network HarvardConnection.com. Instead, they claimed that he used their ideas to create a competing product. The three complained to the Crimson, and the newspaper began an investigation. They later sued Zuckerberg, settling in 2008 for 1.2 million shares (worth $300 million at Facebook's IPO).

Membership was initially restricted to students of Harvard College. Within a month, more than half the undergraduates had registered. Dustin Moskovitz, Andrew McCollum, and Chris Hughes joined Zuckerberg to help manage the website's growth. In March 2004, Facebook expanded to Columbia, Stanford and Yale. It became available to all Ivy League colleges, Boston University, NYU, MIT, and most universities in the United States and Canada.

In mid-2004, Napster co-founder and entrepreneur Sean Parker—an informal advisor to Zuckerberg—became company president. In June 2004, the company moved to Palo Alto, California. It received its first investment later that month from PayPal co-founder Peter Thiel. In 2005, the company dropped "the" from its name after purchasing the domain name Facebook.com for US$200,000. The domain had belonged to AboutFace Corporation.

In May 2005, Accel Partners invested $12.7 million in Facebook, and Jim Breyer added $1 million of his own money. A high-school version of the site launched in September

2005. Eligibility expanded to include employees of several companies, including Apple Inc. and Microsoft.

A 2019 book titled The Real Face of Facebook in India, co-authored by the journalists Paranjoy Guha Thakurta and Cyril Sam alleged that Facebook helped enable and benefit from the rise of Narendra Modi's Hindu nationalist Bharatiya Janata Party (BJP) in India.

Ankhi Das, Facebook's policy director for India and South and Central Asia, apologized publicly in August 2020 for sharing a Facebook post that called Muslims in India a "degenerate community". She said she shared the command "to reflect my deep belief in celebrating feminism and civic participation". She is reported to have prevented action by Facebook against anti-Muslim content and supported the BJP in internal Facebook messages.

In 2020, Facebook executives overrode their employees' recommendations that the BJP politician T. Raja Singh should be banned from the site for hate speech and rhetoric that could lead to violence. Singh had said on Facebook that Rohingya Muslim immigrants should be shot and had threatened to destroy mosques. Current and former Facebook employees told The Wall Street Journal that the decision was part of a pattern of favouritism by Facebook toward the BJP as it seeks more business in India. Facebook also took no action after BJP politicians made posts accusing Muslims of intentionally spreading COVID-19, an employee said.

On August 31, 2020, the Delhi Assembly began investigating whether Facebook bore the blame for the 2020 religious riots in the city, claiming it had found Facebook "prima facie guilty of a role in the violence". On September 12, 2020, a Delhi Assembly committee said that it had asked Facebook India head, Ajit Mohan, to appear before it on September 15, leading to Facebook objecting and moving the Supreme Court of India against the decision. On September 15, Facebook skipped the Delhi Assembly panel hearing. On September 20, the Delhi Assembly panel issued a new notice asking Facebook to appear before September 23. On September 22, Facebook India vice-president and managing director Ajit Mohan moved the Supreme Court against the summons of the Delhi Assembly Committee. On September 23, the Supreme Court granted him relief and ordered a stay to the warrant, with the Central government later backing the decision. A former Facebook employee told a Delhi Assembly panel on November 13 that the violence could have been 'easily averted' if the social media giant had acted in a 'proactive and prompt manner. On December 3, the Delhi Assembly moved the Supreme Court for intervention. On February 4, 2021, the Delhi

Assembly panel issued a fresh notice to Facebook India to testify on the riots, avoiding specific information to Mohan by asking a senior, responsible officer from the company to appear before the panel. The Union government submitted in the Supreme Court that Facebook could not be made accountable before any state assembly and the committee formed was unconstitutional. On February 24, Mohan challenged summons issued by the Delhi assembly for failing to appear before it as a witness in connection with the 2020 riots in the Supreme Court, saying that the 'right to silence is a virtue in present 'noisy times' and the legislature had no authority to examine him in a law and order case. The Supreme Court reserved its judgment for the patient. On July 8, the Supreme Court refused to quash the summons and asked Facebook to appear before the Delhi assembly panel.

In February 2008, a Facebook group called "One Million Voices Against FARC" organized an event in which hundreds of thousands of Colombians marched in protest against the Revolutionary Armed Forces of Colombia (FARC). In August 2010, one of North Korea's official government websites and the country's official news agency, Uriminzokkiri, joined Facebook.

During the 2011 Egyptian protests, a man carrying a card saying "Facebook,#jan25, The Egyptian Social Network."

During the Arab Spring, many journalists claimed that Facebook played a significant role in the 2011 Egyptian revolution. On January 14, the Facebook page of "We are all Khaled Said" was started by Wael Ghoniem to invite the Egyptian people to "peaceful demonstrations" on January 25. According to Mashable, in Tunisia and Egypt, Facebook became the primary tool for connecting protesters and led the Egyptian government to ban Facebook, Twitter and other websites on January 26 then ban all mobile and Internet connections for all of Egypt on January 28. After 18 days, the uprising forced President Hosni Mubarak to resign.

In a Bahraini uprising that started on February 14, 2011, Facebook was utilized by the Bahraini regime and regime loyalists to identify, capture and prosecute citizens involved in the protests. A 20-year-old woman named Ayat Al Qurmezi was a protester using Facebook and imprisoned.

In 2011, Facebook filed paperwork with the Federal Election Commission to form a political action committee under FB PAC. In an email to The Hill, a spokesman for Facebook said: "Facebook Political Action Committee will give our employees a way to

make their voice heard in the political process by supporting candidates who share our goals of promoting the value of innovation to our economy while giving people the power to share and make the world more open and connected."

During the Syrian civil war, the YPG, a libertarian army for Rojava, recruited westerners through Facebook to fight against ISIL.[581] Dozens joined its ranks. The Facebook page's name "The Lions of Rojava" comes from a Kurdish saying which translates as "A lion is a lion, whether it's a female or a male", reflecting the organization's feminist ideology.

In recent years, Facebook's News Feed algorithms have been identified as a cause of political polarization, for which it has been criticized. Likewise, it has

Facebook first played a role in the American political process in January 2008, shortly before the New Hampshire primary. Facebook teamed up with ABC and Saint Anselm College to allow users to give live feedback about the "back to back" January 5 Republican and Democratic debates. Facebook users took part in debate groups on specific topics, voter registration and message questions.

Over a million people installed the Facebook application "US Politics on Facebook" to participate, which measured responses to specific comments made by the debating candidates. A poll by CBS News, UWIRE and The Chronicle of Higher Education claimed to illustrate how the "Facebook effect" had affected youthful voters, increasing voting rates, support of political candidates, and public involvement.

The new social media, such as Facebook and Twitter, connected hundreds of millions of people. By 2008, politicians and interest groups were experimenting with systematic use of social media to spread their message. By the 2016 election, political advertising to specific groups had become normalized. Facebook offered the most sophisticated targeting and analytics platform. ProPublica noted that their system enabled advertisers to direct their pitches to almost 2,300 people who expressed interest in the topics of "Jew hater," "How to burn Jews," or "History of 'why Jews ruin the world".

Facebook has used several initiatives to encourage its users to register to vote and vote. An experiment in 2012 involved showing Facebook users pictures of their friends who reported that they had voted; users who were shown the pictures were about 2% more likely to say that they had also voted than the control group, which was not encouraged to vote. In

2020, Facebook announced the goal of helping four million voters register in the US, saying that it had written 2.5 million by September.

The Cambridge Analytica data scandal offered another perceived attempt to influence elections. The Guardian claimed that Facebook knew about the security breach for two years but did nothing to stop it until it became public.

Facebook banned political ads to prevent the manipulation of voters in the US's November's election. However, industry experts suggested several other ways for misinformation to reach voters on social media platforms and blocking political ads will not serve as a proven solution to the problem.

ii) YouTube

YouTube is an American online video sharing and social media platform owned by Google. On February 14, 2005, it was launched by Steve Chen, Chad Hurley, and Jawed Karim. It is the second most visited website, right after Google itself. YouTube has more than one billion monthly users who collectively watch more than one billion hours of videos each day. As of May 2019, videos were being uploaded at more than 500 hours of content per minute.

In October 2006, YouTube was bought by Google for $1.65 billion. Google's ownership of YouTube has also changed its business model; it no longer generates advertisements alone. YouTube now offers paid content such as movies and exclusive content produced by YouTube. YouTube and approved creators participate in Google's AdSense program, which seeks to generate more revenue for both parties. YouTube's reported revenue for 2020 was $19.8 billion.

Since its purchase by Google, YouTube has expanded beyond the core website into mobile apps, network television, and links with other platforms. Video categories on YouTube include music videos, video clips, news, short films, feature films, documentaries, audio recordings, movie trailers, teasers, live streams, vlogs, and more. Individuals generate the most content. This includes collaborations between YouTubers and corporate sponsors. Since 2015, established media corporations such as Disney, ViacomCBS, and WarnerMedia have created and expanded their corporate YouTube channels to advertise to a larger audience.

YouTube has had an unprecedented social impact, influencing popular culture, internet trends, and creating multimillionaire celebrities. Despite all its growth and success, YouTube has been widely criticized. Criticism of YouTube includes; the website is used to facilitate the spread of misinformation, copyright issues, routine violations of its users' privacy, enabling censorship, and endangering child safety and wellbeing.

YouTube was founded by Steve Chen, Chad Hurley, and Jawed Karim. The trio were all early employees of PayPal, which left them enriched after eBay bought the company. Hurley had studied design at the Indiana University of Pennsylvania, and Chen and Karim studied computer science together at the University of Illinois at Urbana–Champaign.

According to a story that has often been repeated in the media, Hurley and Chen developed the idea for YouTube during the early months of 2005, after they had experienced difficulty sharing videos shot at a dinner party at Chen's apartment in San Francisco. Karim did not attend the party and denied that it had occurred. Still, Chen remarked that the idea that YouTube was founded after a dinner party "was probably very strengthened by marketing ideas around creating a story that was very digestible".

Karim said the inspiration for YouTube first came from the Super Bowl XXXVIII halftime show controversy when Justin Timberlake briefly exposed Janet Jackson's breast during the halftime show. Karim could not easily find video clips of the incident and the 2004 Indian Ocean Tsunami online, which led to the idea of a video sharing site. Hurley and Chen said that the original idea for YouTube was a video version of an online dating service and was influenced by the website Hot or Not. They created posts on Craigslist asking attractive women to upload videos of themselves to YouTube in exchange for a $100 reward. Difficulty finding enough dating videos led to a change of plans, with the site's founders deciding to accept uploads of any type of video.

The YouTube logo was used from its launch until 2011. Another version of this logo without their "Broadcast Yourself" slogan was used until 2015.

YouTube began as a venture capital-funded technology startup. Between November 2005 and April 2006, the company raised money from various investors, with Sequoia Capital, $11.5 million, and Artis Capital Management, $8 million, being the most significant two. YouTube's early headquarters were situated above a pizzeria and Japanese restaurant in San Mateo, California. In February 2005, the company activated www.youtube.com. The first video was uploaded on April 23, 2005. Titled Me at the zoo shows co-founder Jawed Karim

at the San Diego Zoo and can still be viewed on the site. In May, the company launched a public beta, and by November, a Nike ad featuring Ronaldinho became the first video to reach one million total views. The site launched officially on December 15, 2005, by which time the site was receiving 8 million views a day. Clips at the time were limited to 100 megabytes, as little as 30 seconds of footage.

Contrary to popular belief, YouTube was not the first video-sharing site on the Internet; Vimeo was launched in November 2004, though that site remained a side project of its developers from CollegeHumor at the time and did not grow much, either. The week of YouTube's launch, NBC-Universal's Saturday Night Live ran a skit "Lazy Sunday" by The Lonely Island. Besides helping to bolster ratings and long-term viewership for Saturday Night Live, "Lazy Sunday"'s status as an early viral video helped establish YouTube as an essential website. Unofficial uploads of the skit to YouTube drew in more than five million collective views by February 2006 before they were removed when NBCUniversal requested it two months later based on copyright concerns. Despite eventually being taken down, these duplicate uploads of the skit helped popularize YouTube's reach and led to the upload of more third-party content. The site increased and, in July 2006, the company announced that more than 65,000 new videos were being uploaded every day and that the site was receiving 100 million video views per day.

The choice of the name www.youtube.com led to problems for a similarly named website, www.utube.com. That site's owner, Universal Tube & Rollform Equipment, filed a lawsuit against YouTube in November 2006 after being regularly overloaded by people looking for YouTube. Universal Tube subsequently changed its website towww.utubeonline.com

By February 2017, one billion hours of YouTube were watched every day, and 400 hours of video were uploaded every minute. Two years later, uploads had risen to more than 500 hours per minute. During the COVID-19 pandemic, when most of the world was under stay-at-home orders, services such as YouTube significantly increased. One data firm estimated that YouTube accounted for 15% of all internet traffic, twice its pre-pandemic level. In response to EU officials requesting that such services reduce bandwidth as to make sure medical entities had sufficient bandwidth to share information, YouTube along with Netflix, stated they would reduce streaming quality for at least thirty days as to cut bandwidth use of their services by 25% to comply with the EU's request. YouTube later announced that

they would continue with this move worldwide: "We continue to work closely with governments and network operators around the globe to do our part to minimize stress on the system during this unprecedented situation."

Following a 2018 complaint alleging violations of the Children's Online Privacy Protection Act (COPPA), the company was fined $170 million by the FTC for collecting personal information from minors under the age of 13.[76] YouTube was also ordered to create systems to increase children's privacy. Following criticisms of its implementation of those systems, YouTube started treating all videos designated as "made for kids" as liable under COPPA on January 6, 2020. Joining the YouTube Kids app, the company created a supervised mode, designed more for tweens, in 2021. Additionally, to compete with TikTok, YouTube has released YouTube Shorts, allowing users to create short videos to music.

During this period, YouTube entered disputes with other tech companies. For over a year, in 2018 and 2019, there was no YouTube app available for Amazon Fire products. In 2020, Roku removed the YouTube TV app from its streaming store after the two companies could not agree.

After testing earlier in 2021, YouTube removed public display of dislike counts on videos in November 2021, claiming the reason for the removal was, based on its internal research, that concluded users often used the dislike feature as a form of cyberbullying and brigading. While some users praised the move to discourage trolls, most users felt that hiding dislikes would make it harder for viewers to recognize clickbait or unhelpful videos. Furthermore, they claim other features already existed for creators to limit bullying while not negatively impacting viewer experience. Some theorized that the removal of dislikes was influenced by YouTube Rewind 2018, universally panned and became the most disliked video on the platform. Shortly after the announcement, an open-source, third-party browser extension for Chrome and Firefox called "Return YouTube Dislike" was created to re-add the dislike counter. YouTube co-founder Jawed Karim referred to the update as "a stupid idea" and that the reason behind the change was "not a good one, and not one that will be publicly disclosed." Karim felt that the ability for users on a social platform to identify harmful content was essential, saying: "The process works, and there's a name for it: the wisdom of the crowds. The process breaks when the platform interferes with it. Then, the platform invariably declines.

YouTube has been criticized for using an algorithm that gives great prominence to videos that promote conspiracy theories, falsehoods and incendiary fringe discourse. According to an investigation by The Wall Street Journal, "YouTube's recommendations often lead users to channels that feature conspiracy theories, partisan viewpoints and misleading videos, even when those users haven't shown interest in such content. When users show a political bias in what they choose to view, YouTube typically recommends videos that echo those biases, often with more-extreme viewpoints." When users search for political or scientific terms, YouTube's search algorithms often prominence to hoaxes and conspiracy theories. After YouTube drew controversy for giving top billing to videos promoting falsehoods and conspiracy when people made breaking-news queries during the 2017 Las Vegas shooting, YouTube changed its algorithm to give greater prominence to mainstream media sources. In 2018, it was reported that YouTube was again promoting fringe content about breaking news, giving great importance to conspiracy videos about Anthony Bourdain's death.

In 2017, it was revealed that advertisements were being placed on extremist videos, including videos by rape apologists, anti-Semites, and hate preachers who received ad payouts. After firms started to stop advertising on YouTube in the wake of this reporting, YouTube apologized and said it would give firms greater control over where ads got placed.

Alex Jones, known for right-wing conspiracy theories, had built a massive audience on YouTube. YouTube drew criticism in 2018 when it removed a video from Media Matters compiling offensive statements made by Jones, stating that it violated its policies on "harassment and bullying". However, on August 6, 2018, YouTube removed Alex Jones' YouTube page following a content violation.

University of North Carolina professor Zeynep Tufekci has referred to YouTube as "The Great Radicalizer",, saying "YouTube may be one of the most powerful radicalizing instruments of the 21st century." Jonathan Albright of the Tow Center for Digital Journalism at Columbia University described YouTube as a "conspiracy ecosystem".

In January 2019, YouTube said it had introduced a new policy starting in the United States intended to stop recommending videos containing "content that could misinform users in harmful ways." YouTube gave flat earth theories, miracle cures, and 9/11 trutherism. Efforts within YouTube engineering to stop recommending borderline extremist videos falling just short of forbidden hate speech and track their popularity were rejected initially

because they could interfere with viewer engagement.[328] In late 2019, the site began implementing measures to " raise authoritative content and reduce borderline content and harmful misinformation."

Before 2019, YouTube had taken steps to remove specific videos or channels related to supremacist content that had violated its acceptable use policies but otherwise did not have site-wide policies against hate speech.

In the wake of the March 2019 Christchurch mosque attacks, YouTube and other sites like Facebook and Twitter that allowed user-submitted content drew criticism for doing little to moderate and control the spread of hate speech, which was considered a factor in the rationale for the attacks. These platforms were pressured to remove such content. Still, in an interview with The New York Times, YouTube's chief product officer Neal Mohan said that unlike content such as ISIS videos which take a particular format and thus easy to detect through computer-aided algorithms, general hate speech was more difficult to recognize and handle, and therefore could not readily take action to remove without human interaction.

YouTube joined an initiative led by France and New Zealand with other countries and tech companies in May 2019 to develop tools to be used to block online hate speech and to establish regulations, to be implemented at the national level, to be levied against technology firms that failed to take steps to remove such address. However, the United States declined to participate. Subsequently, on June 5, 2019, YouTube announced a significant change to its terms of service, "specifically prohibiting videos alleging that a group is superior to justify discrimination, segregation or exclusion based on qualities like age, gender, race, caste, religion, sexual orientation or veteran status." YouTube identified specific examples of such videos as those that "promote or glorify Nazi ideology, which is inherently discriminatory". YouTube further stated it would "remove content denying that well-documented violent events, like the Holocaust or the shooting at Sandy Hook Elementary, took place."

In June 2020, YouTube banned several channels associated with white supremacy, including those of Stefan Molyneux, David Duke, and Richard B. Spencer, asserting these channels violated their policies on hate speech. The ban occurred the same day that Reddit announced the prohibition of several hate speech sub-forums.

In a July 2019 study based on ten YouTube searches using the Tor Browser related to climate and climate change, most videos communicated views contrary to the scientific consensus on climate change.

Following the dissemination via YouTube of misinformation related to the COVID-19 pandemic that 5G communications technology was responsible for the spread of coronavirus disease 2019, which led to multiple 5G towers in the United Kingdom being attacked by arsonists, YouTube removed all such videos linking 5G and the coronavirus in this manner.

YouTube extended this policy in September 2021 to cover videos disseminating misinformation related to any vaccine, including those long approved against measles or Hepatitis B, that had received approval from local health authorities or the World Health Organization. The platform removed the accounts of anti-vaccine campaigners such as Robert F. Kennedy Jr. and Joseph Mercola. Two accounts linked to RT Deutsch, the German channel of the Russian RT network, were removed as well for breaching YouTube's policies.

Google and YouTube implemented policies in October 2021 to deny monetization or revenue to advertisers or content creators that promoted climate change denial, which "includes content referring to climate change as a hoax or a scam, claims to deny that long-term trends show the global climate is warming, and claims denying that greenhouse gas emissions or human activity contribute to climate change.

A 2019 BBC investigation of YouTube searches in ten different languages found that YouTube's algorithm promoted health misinformation, including fake cancer cures. In Brazil, YouTube has pushed pseudoscientific misinformation on health matters and elevated far-right fringe discourse and conspiracy theories.

In the Philippines, numerous channels such as "Showbiz Fanatics," "Robin Sweet Showbiz," and "PH BREAKING NEWS," each with at least 100,000 subscribers, have been proven to be spreading misinformation related to political figures ahead of the 2022 Philippine elections.

Leading into 2017, there was a significant increase in the number of videos related to children, coupled with the popularity of parents vlogging their family's activities and previous content creators moving away from content that often was criticized or demonetized into family-friendly material. In 2017, YouTube reported that watching family vloggers had increased by 90%. However, with the increase in videos featuring children, the site began to face several controversies related to child safety. During Q2 2017, the owners of the popular channel FamilyOFive, which featured themselves playing "pranks" on their children, were accused of child abuse. Their videos were eventually deleted, and two of their children were removed from their custody. A similar case happened in 2019 when the owner of the channel

Fantastic Adventures was accused of abusing their adopted children. Her videos would later be deleted.

Later that year, YouTube came under criticism for showing inappropriate videos targeted at children and often featuring popular characters in violent, sexual or otherwise disturbing situations, many of which appeared on YouTube Kids and attracted millions of views. "Elsagate" was coined on the Internet and then used by various news outlets to refer to this controversy. On November 11, 2017, YouTube announced it was strengthening site security to protect children from unsuitable content. Later that month, the company started to mass delete videos and channels that improperly used family-friendly characters. As part of a broader concern regarding child safety on YouTube, the wave of deletions also targeted media that showed children taking part in inappropriate or dangerous activities under the guidance of adults. Most notably, the company removed Toy Freaks, a channel with over 8.5 million subscribers, that featured a father and his two daughters in odd and upsetting situations. According to analytics specialist SocialBlade, it earned up to £8.7 million annually before its deletion.

Even for content that appears to be aimed at children and appears to contain only child-friendly content, YouTube's system allows for anonymity of who uploads these videos. These questions have been raised in the past, as YouTube has had to remove channels with children's content. After becoming famous, they suddenly include inappropriate content masked as children's content. Alternatively, some of the most-watched children's programming on YouTube comes from channels with no identifiable owners, raising concerns about intent and purpose. One channel that had been of concern was "Cocomelon", which provided numerous mass-produced animated videos aimed at children. Up through 2019, it had drawn up to US$10 million a month in ad revenue and was one of the largest kid-friendly channels on YouTube before 2020. Ownership of Cocomelon was unclear outside of its ties to "Treasure Studio", itself an unknown entity, raising questions as to the channel's purpose. Still, Bloomberg News had been able to confirm and interview the small team of American owners in February 2020 regarding "Cocomelon", who stated their goal for the channel was to simply entertain children, wanting to keep to themselves to avoid attention from outside investors. The anonymity of such channels raises concerns because of the lack of knowledge of what purpose they are trying to serve. According to Josh Golin of the Campaign for a Commercial-Free Childhood, the difficulty in identifying who operates these channels "adds to the lack of accountability. Educational consultant Renée Chernow-O'Leary

found the videos were designed to entertain with no intent to educate, leading both critics and parents to be concerned for their children becoming too enraptured by the content from these channels. Content creators that earnestly make kid-friendly videos have found it difficult to compete with larger channels like ChuChu TV, unable to produce content at the same rate as these large channels. Through YouTube's recommendation algorithms, they lack the same means of promoting the more extensive animated channel networks have shared.

In January 2019, YouTube officially banned videos containing "challenges that encourage acts that have an inherent risk of severe physical harm" (such as, for example, the Tide Pod Challenge) and videos featuring pranks that "make victims believe they're in physical danger" or cause emotional distress in children.

iii) Instagram

Instagram is an American photo and video sharing social networking service founded by Kevin Systrom and Mike Krieger. In April 2012, Facebook Inc. acquired the service for approximately US$1 billion in cash and stock. The app allows users to upload media edited with filters and organized by hashtags and geographical tagging. Posts can be shared publicly or with pre-approved followers. Users can browse other users' content by tags and locations and view trending content. Users can like photos and follow other users to add their content to a personal feed.

Instagram was initially distinguished by only allowing content to be framed in a square (1:1) aspect ratio with 640 pixels to match the display width of the iPhone at the time. In 2015, these restrictions were eased with an increase to 1080 pixels. The service also added messaging features, the ability to include multiple images or videos in a single post, and a 'stories' feature—similar to its main opposition Snapchat—which allows users to post photos and videos to a sequential feed, with each post accessible by others for 24 hours each. As of January 2019, the Stories feature is used by 500 million users daily.

Initially launched for iOS in October 2010, Instagram rapidly gained popularity, with one million registered users in two months, 10 million in a year, and 1 billion as of June 2018. The Android version was released in April 2012, followed by a feature-limited desktop interface in November 2012, a Fire OS app in June 2014, and Windows 10 in October 2016. As of October 2015, over 40 billion photos had been uploaded. Although praised for its influence, Instagram has been the subject of criticism, most notably for the negative impact

on teens' mental health, policy and interface changes, allegations of censorship, and illegal or improper content uploaded by users.

Instagram began development in San Francisco as Burbn, a mobile check-in app created by Kevin Systrom and Mike Krieger. Realizing that Burbn was too similar to Foursquare, Systrom and Krieger refocused their app on photo-sharing, which had become a popular feature among Burbn users. They renamed the app Instagram, a portmanteau of "instant camera" and "telegram".

On March 5, 2010, Systrom closed a $500,000 seed funding round with Baseline Ventures and Andreessen Horowitz while working on Burbn. In October, Josh Riedel joined the company as Community Manager, Shayne Sweeney joined in November as an engineer, and Jessica Zollman joined as a Community Evangelist in August 2011.

The first Instagram post was a photo of South Beach Harbor at Pier 38, posted by Mike Krieger at 5:26 PM on July 16, 2010. Systrom shared his first post, a picture of a dog and his girlfriend's foot, a few hours later at 9:24 PM. It has been wrongly attributed as the first Instagram photo due to the earlier letter of the alphabet in its URL. On October 6, 2010, the Instagram iOS app was officially released through the App Store.

In February 2011, it was reported that Instagram had raised $7 million in Series A funding from various investors, including Benchmark Capital, Jack Dorsey, Chris Sacca (through Capital fund), and Adam D'Angelo. The deal valued Instagram at around $20 million. In April 2012, Instagram raised $50 million from venture capitalists with a $500 million valuation. Joshua Kushner was the second-largest investor in Instagram's Series B fundraising round, leading his investment firm, Thrive Capital, to double its money after the sale to Facebook

The popularity of Instagram has led to a variety of third-party services designed to integrate with it, including services for creating content to post on the service and generating content from Instagram photos (including physical print-outs), analytics, and alternative clients for platforms with insufficient or no official support from Instagram (such as in the past, iPads).

In November 2015, Instagram announced that effective June 1, 2016, it would end "feed" API access to its platform to "maintain control for the community and provide a clear roadmap for developers" and "set up a more sustainable environment built around authentic

experiences on the platform", including those oriented towards content creation, publishers, and advertisers. Additionally, third-party clients have been prohibited from using the text strings "insta" or "gram" in their name. It was reported that these changes were primarily intended to discourage third-party clients from replicating the entire Instagram experience (due to increasing monetization of the service) and security reasons (such as preventing abuse by automated click farms and the hijacking of accounts). In the wake of the Cambridge Analytica scandal, Instagram began to impose further restrictions on its API in 2018.

For unlimited browsing of public Instagram profiles without creating an account and anonymous browsing of someone else's Stories, one has to use the Instagram profiles viewer. Stories are more authentic than stock photos posted as posts because users know that in 24 hours, their Stories will disappear if they don't add them as highlighted (however, users can check who saw their Story for 48 hours after it was published). For this reason, they are precious for market research.

On December 16, 2019, Facebook announced it would expand its fact-checking programs towards Instagram; by using third-party fact-checkers, organizations false information can be identified, reviewed and labelled as incorrect information. When rated as false or partly false, content is removed from the explore page and hashtag pages. Additionally, content placed as inaccurate or partially false is labelled as such. With the addition of the Facebook fact-checking program came image matching technology to find further instances of misinformation. If a piece of content is labelled false or partly false on Facebook or Instagram, duplicates of such content will also be marked as incorrect.

In April 2016, Instagram began rolling out a change to photos visible in a user's timeline, shifting from strictly chronological order to one determined by an algorithm. Instagram said the algorithm was designed to see more of the photos by users that they liked. Still, there was significant negative feedback, with many users asking their followers to turn on post notifications to make sure they see updates. The company wrote a tweet to users upset at the prospect of the change but did not back down nor provide a way to change it back, which they re-affirmed in 2020. However, in December 2021, Adam Mosseri, in a Senate hearing on child safety issues, stated that the company is developing a version of the feed that would show user posts in chronological order. He later clarified the company would introduce two modes: a classic chronological feed and an understanding of it that would let

users pick "favourite" users whose posts would be shown at the top in chronological order. At the same time, other bars would be mixed in below.

Since 2017, Instagram has employed the ability to reduce the prominence of accounts ("shadowbanning") it believes may be generating non-genuine engagement and spam (including excessive use of unneeded hashtags), preventing posts from appearing in search results and the app's Explore section. In a now-deleted Facebook post, Instagram wrote that "When developing content, we recommend focusing on your business objective or goal rather than hashtags". Instagram has since been accused of extending the practice to censor posts under vague and inconsistent circumstances, particularly in regards to sexually suggestive material.

Instagram caused the userbase to fall into outrage with the December 2018 update. They found an attempt to alter the flow of the feed from the traditional vertical scroll to emulate and piggyback the popularity of their Instagram Stories with a horizontal scroll by swiping left. Various backtracking statements were released explaining it as a bug or a test release that had been accidentally deployed to too large an audience.

In November 2020, Instagram replaced the activity feed tab with a new "Shop" tab, moving the activity feed to the top. The "new post" button was also relocated to the top and replaced with a Reels tab[282] The company states that "the Shop tab gives you a better way to connect with brands and creators and discover products you love", and the Reels tab "makes it easier for you to discover short, fun videos from creators all over the world and people just like you."[283] However, users have not responded well to the change, taking their complaints to Twitter and Reddit, and The New York Times has shunned Reels, in particular, saying, "Not only does Reels fail in every way as a TikTok clone, but it’s confusing, frustrating and impossible to navigate".

Also, in 2020, Instagram rolled out a feature titled "suggested posts", which adds posts from accounts Instagram thinks a user would like to such user's feed. The quality was met with controversy from Reddit users from The Verge, which reported that suggested posts would keep users glued to their feed, give Instagram more advertising space, and ultimately harm users' mental health. At the same time, Instagram executive Julian Gutman rebutted, stating the feature was not intended to keep users glued to their screens. Suggested posts received more controversy after Fast Company noted that the quality would be impossible to turn off.

On June 23, 2021, Instagram announced a test change to the "suggested posts" feature. The company will put suggested posts ahead of posts from people the user is following in the Instagram feed, citing positive reception as the reason for this change.

Mental health

Depression

Khodarahimi & Fathi 2017 found evidence for Instagram users displaying higher levels of depressive symptoms. Frison & Eggermont 2017 pointed out that only Instagram browsing, not Instagram liking or posting, predicts more depressive symptoms. It also provides evidence for a relation between Instagram use and depressive symptomatology in the opposite direction. A level of depressed mood has been shown to predict Instagram posting positively. Lamp et al. 2019 showed a positive relationship between depression and the number of selfies taken before posting it on Instagram.

Anxiety

Khodarahimi & Fathi 2017 observed higher anxiety levels in Instagram users than non-users, while Mackson et al. 2019 suggested beneficial effects of Instagram use on anxiety symptoms. Multiple studies pointed out small to moderate positive relationships between the time spent on Instagram and trait anxiety, physical appearance anxiety, social anxiety and attention to high insecurity-eliciting body regions. Moujaes & Verrier 2020 observed a connection between stress and online engagement with InstaMums, which relationship was influenced by social comparison orientation and self-esteem.

Stress

A paper showed that users who spend too much time on Instagram report higher levels of Instagram addiction, related to higher self-reported levels of Instagram induced stress.

Addiction

In a study focusing on the relationship between various psychological needs and Instagram addiction by students, Foroughi et al. 2021 found that the desire for recognition and entertainment were predictors of students' addition to Instagram. In addition, the study proved that Instagram addiction negatively affect academic performance. Gezgin & Michi 2020 quantified Turkish students' Instagram use's contribution to overall smartphone addiction and concluded that frequent instagraming correlates with smartphone addiction.

Suicide and self-harm

Picardo et al. 2020 examined the relationship between self-harm posts and actual self-harm behaviours offline and found such content had adverse emotional effects on some users and reported preliminary evidence of potentially harmful effects about self-harm related behaviours offline. However, causal effects cannot be claimed. At the same time, some benefits for those who engage with self-harm content online have been suggested. Instagram has published content to help users in need to get support.

Based on Facebook's leaked internal research, 13 per cent of British teenagers with suicidal thoughts could trace these thoughts to Instagram use. Amongst teenagers in the US with suicidal thoughts, this number is much smaller - 6 per cent

Notable Uses of Social Media

1) Communication

The tools used in the communication sector are a very well-known form of social media platform. These tools include blogs and websites where you are provided with the ability to create articles and blogs to interact, communicate, inform and empower your

Other uses also include social media sites such as Twitter, Facebook, and Instagram that further increase the chances of communication between individuals with the help of personal details, comments, images, video posts, and a lot more.

With the help of these platforms, individuals can build strong personal relationships. Businesses can constructively communicate with their audiences.

2) Collaboration

Most of us use many different tools that have a social aspect attached to them, and we use these tools regularly as well. Let us give you an example. Have you ever heard of Wikipedia?

It is a knowledge platform that provides people with the ability o update their views. It is an online encyclopedia and can be used and updated by anyone. Also, there is another example in the form of Google Docs that enables people to edit and share documents online.

You will also be able to download and upload files with the help of this collaborative tool, which is known as social media, as it enables multiple users to take advantage of a

singular platform. Different individuals can collaborate in the most personalized and result-driven manner to get the expected outcomes well-synchronised.

3) Opinions & Reviews

Nowadays, we provide reviews for every single thing that we see. It is almost similar to having a conversation with someone. What do you think makes this possible? Well, it is social media, of course. With the help of social media, anyone can review anything these days.

Take an example of blogs or websites. With social media, you will find reviews for any restaurant on their website, or you could also review a blog in the comment section. Doesn't that seem like a beneficial thing, people? -We bet that it does.

If you are still not convinced, then look at Amazon. The reviews and ratings there help you decide the products you want. If that is not useful, then we don't know what is. Businesses can ask people to share their feedback or testimonial on social media pages, automatically convincing more users to purchase from them.

You can start a discussion or ask your users to share their reviews or opinions on your Twitter or Facebook posts. You can launch any product or ask for feedback from your even participants on your Social Media Page so that you can offer better services next time.

4) Brand Monitoring

Now the tools for brand monitoring are not the ones that everyone knows about, but they are significant for sure. All the consumer brands and the companies that deal with the public use the brand monitoring tools to see what

This type of presence in the online world is all possible with the help of social media. These tools are the ultimate help for summarizing all the feedback and comments about any particular business.

Social media's Uses are immense in empowering you to know what people are talking about your brand, product, or service.

This will also enable you to manage your brand's reputation on the web. Even if anyone is talking negatively about your brand, you can resolve that issue immediately, so your online reputations stay intact.

5) Entertainment

We feel bad for you for those who do not know what online games are.

The gaming world was never dependent on social media platforms, but now they are. Games like Farmville and Mafia Wars are primetime games on social media sites.

Also, the entertainment industry is all dependent on social media platforms. Take the example of sites that promote entertainment. Many channels broadcast live entertainment, which is all due to social media. These sites increase the interaction between the people and keep the people entertained.

Movies and television shows are also promoted via different social media portals. Televisions shows are launched on social media sites. A variety of entertainment videos is also created by businesses to inform, entertain and engage their audiences.

6) Media Sharing

One of the most popular and well-known sites that can be used for sharing media is YouTube. With over 500 million followers, this website is already on the map due to the fantastic things to its users. Also, Vimeo is another site that helps in sharing media.

These are also the sites that help people create channels and have interactions with one another. Also, some areas can help share music as well.

Sites like Spotify and others come with specific features of sharing music, which can be all well and good for the people. With the help of social media, we now have the chance to download and upload media content with ease.

7) Paid Advertising

Uses of social media are also very effective in running paid ads on different social media portals. Social platforms like Facebook, LinkedIn, Twitter, Snapchat, Pinterest, etc., enable you to run paid ads on them.

Social Media channels already enjoy a broad audience base that you can demographically target to optimize the online presence of your brand, product, and services. You can also track the performance of your paid ad campaigns, and accordingly, you can tweak your campaign to ensure better results.

Social Media ads are also very affordable, and you will be getting better returns on your investments. Paid ads will be shown to your target audiences to help in lead generation and conversions.

Review questions

1. Define online service.
2. Explain the Electronic document delivery system.
3. What is the need for a machine translation service?
4. What are the different types of databases?
5. Expand and explain ETD.
6. What are the uses of multimedia-based information products?
7. Write a note on the Open Access Knowledge System.
8. Mention the impact of social media on mental health.
9. Mention some of the widely used social media in the world.

Reference:

1. Abraham, J. (2013). Information and communication technology (ICT) for India's rural development information systems and services. Library Progress (International), 33(1), 145–153.
2. Adebayo, D., & Fogbound, M. (n.d.). An assessment of computer and ICT skills among secondary school teachers in Ota, Ogun State. Library Philosophy and Practice, 1–7.
3. Adeyoyin, S., Okunlyaya, R., Alawiye, M., & Emmanuel, S. (2013). Information and communication technology (ICT) and national development: librarians' perspectives. Library Progress (International), 33(1), 189–201.
4. Business Driven Information Systems (2015), Paige Baltzan, Amy Phillips
5. De Vries, Reinout. E., Van den Hooff, B and de Ridder, J.A. (2006). "Explaining knowledge sharing: the role of team communication styles, job satisfaction, and performance beliefs", Communication Research, 33(2), 115-135.
6. Deepa, P. K., & Azeez, T. A. A. (2016). Use of Web-Based Information Resources and Services by Research Scholars: A Case Study of the University of Calicut. Pearl: A Journal of Library and Information Science, 10(1), 1. https://doi.org/10.5958/0975-6922.2016.00001.2
7. Dhiman, Anil K., and Yashoda Rani . Learn Information and Reference Sources and Services. New Delhi: Ess Ess Publications, 2005. Print.
8. Eisenberg, M., Johnson, D., & Berkowitz, B. (2010). Information, communications, and technology (ICT) skills curriculum based on the Big6 skills approach to information problem-solving. Library Media Connection, 28(6), 24–27.
9. Essentials of MIS (2016), Kenneth Laudon, Jane Laudon.
10. Fundamentals of Information Systems (2017), Ralph Stair, George Reynolds
11. Guha, B. Documentation and Information Services, Techniques, and Systems. Nd ed. Calcutta: World Press, 1983. Print.
12. Health Care Information Systems A Practical Approach for Health Care Management (2017), Karen A. Wager, Frances W. Lee, John P. Glaser.
13. Hoffman, E. C. (2002). Information and communications technology, virtual offices and telework. South African Journal of Information Management, 4(2). Retrieved from https://journals.co.za/content/info/4/2/AJA1560683X_311

14. Hsu, M. H., Ju, T. L., Yen, C. H., & Chang, C. M. (2007). Knowledge sharing behaviour in virtual communities: The relationship between trust, self-efficacy, and outcome expectations. International Journal of Human-Computer Studies,65(2), 153-169
15. Introduction to Information Systems for Health Information Technology (2018), Nanette B. Sayles.
16. Information Systems and Management (2019), Daniel Brody
17. Issa, A. O., Ayodele, A. E., Abubakar, U., & Aliyu, M. B. (2011). Application of information technology to library services at the federal university of technology, Akure library, Ondo State, Nigeria. Retrieved from http://digitalcommons.unl.edu/libphilprac/576/
18. Krishan Kumar. Reference Service. 5th ed. New Delhi: Vikas Publishing House, 1995. Print.
19. Management Information Systems and Workflow Automation (2017), Michael Fairley
20. Processes, Systems, and Information An Introduction to MIS (2018), Earl McKinney Jr., David Kroenke
21. Salma, J.H. & Yelwa, M. (2004). A survey of students' attitudes towards public library services: A Case Study of Central Library in the Barno State of Nigeria, International Library Movement, 26(2), 61- 69.
22. Talab, S. M. G., & Tajiferi, M. (2012). A comparative study is the impact of information and communication technology (ICT) on library staff training. Annals of Library and Information Studies, 50, 7–15.
23. Sarstedt, M., & Mooi, E. (2014). A concise guide to market research: the process, data, and methods using IBM SPSS statistics. Springer
24. Shah, R.S., & Mahmood, K. (2013). Empirical results of academic librarians' attitudes toward knowledge management in Pakistan. Library Management, 34(8/9), 619-631.
25. Sharma, J. S., and D.R.Grover. Reference Service and Sources of Information. New Delhi: Ess Ess Publications, 1987. Print.
26. Sinha, Manoj Kumar (2015). A Study on Information Needs and Information Seeking Pattern of Public Library Users of Barak Valley, South Assam. IOSR Journal Of Humanities And Social Science (IOSR-JHSS), 20(8), 13-36.

27. Talab, S. M. G., & Tajiferi, M. (2012). A comparative study is the impact of information and communication technology (ICT) on library staff training. Annals of Library and Information Studies, 50, 7–15.
28. Thompson, Anthony H. Guide to the Production and Use of Audiovisual Aids in Library and Information Science Teaching. Paris: UNESCO. (PGI-83/WS/ 17), 1983. Print
29. The Oxford Handbook of Management Information Systems Critical Perspectives and New Directions (2011), Robert D. Galliers, Wendy Currie.