USE OF ONLINE DATABASES IN SCIENCE AND TECHNOLOGY IN SELECT UNIVERSITY LIBRARIES OF DELHI: A COMPARATIVE STUDY

THESIS

SUBMITTED FOR THE AWARD OF THE DEGREE OF

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IN

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BY

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UNDER THE SUPERVISION OF

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GALGOTIAS UNIVERSITY

GREATER NOIDA (U.P.)

2017

Dedicated

To My

Loving Parents

GREATER NOIDA, G.B. NAGAR (U.P)
SCHOOL OF LIBRARY &INFORMATION SCIENCE

CERTIFICATE

*This is to certify that the thesis entitled "**Use of Online Databases in Science and Technology in Select University Libraries of Delhi: A comparative study**", submitted by **Ms. Deepmala** in partial fulfilment of the requirements for the **Submission of Thesis** in **Library and Information Science** is an authentic record of the candidate's own independent and original research work carried out by her under my supervision and guidance. The matter embodied in this project has not been submitted in part or full to any other university or institute for the award of any degree.*

(Prof. MTM Khan)
Dean

DECLARATION

I hereby declare that the research done on the topic ***"Use of Online Databases in Science and Technology in Select University Libraries of Delhi: A comparative study"*** *submitted for the award of degree of* ***Doctor of Philosophy*** *in Library and Information Science, is my original work and reflects advancement in this area. I have specified the sources of information by means of references, whenever necessary.*

To the best of my knowledge, this thesis has not been submitted previously for the award of any degree or other similar title or recognition in any university or institution.

Place: *(Deepmala)*

Date:

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Deepmala

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PREFACE

With the emergence of ICT, the generation and distribution of information has changed in the library. Though, in the 21st century, online resources started the major and fastest rising section of library collections. But due to outburst of electronic technologies diverse systems of data storage and retrieval has introduced a new term "database", which appeared as a major source for a variety of scientific and scholarly information.

In various research and academic activities, online databases made a new paradigm shift in the concept of information collection, delivery, storage, retrieval and started providing more effective and dynamic ways of knowledge sharing. It has totally changed the role of academic learning and research. Through networking and consortia, traditional working of library is now shifting to another process, thus posing a challenge for every librarian to provide services in a better way.

The library is providing online databases, both open and subscription based on the web and can be accessed through internet. Online databases are very proficiently serving the purpose of research community and play vital role in improving the research and development activities and improving the productivity of an individual. With the technological developments the choice of researchers is changing and in order to keep up with the existing research leaning, there is a need to present the seamless picture of online databases.

Keeping in view the importance of online databases, the present study has been taken up to determine the use and impact of online databases in university libraries. The study has been targeted to present a new approach to university libraries and use of online databases. It is aimed to investigate and present different aspects of online databases.

Some comprehensive studies have already been conducted on the use of electronic resources in University of Delhi (DU), Jamia Millia Islamia (JMI) and Jawaharlal Nehru University (JNU). But the present study is aimed to explore the usage level of different online databases and also to improve their use in the libraries under study.

The importance of the study lies in the fact that it presents the current picture of utility of online database. At present, most of the university libraries are actively engaged in incorporating online databases and providing the users much needed primary research

information. The study is exploring the important issues related to use of online database by researchers such as the awareness, purpose, frequency influence and problems encountered by the users while accessing online databases. The present work aims at providing valuable suggestions derived from the analysis of data. The study will help in refining the quality of online databases and also improve their utility in libraries under study. The study has been divided into five chapters.

The *First Chapter* provides an ephemeral history of growth and development of online databases around the world, its characteristics, types advantages, searching techniques, barriers and online security.

Second Chapter provides comprehensive view of the topic and helps in getting current status of research in progress in India or outside. The material is selected from current print journals, electronic journals, reports, books and conference proceedings.

Third Chapter deals with different research methods followed in the study. The study is based on survey, questionnaires and other technique such as interview, observation etc.

Fourth Chapter evaluates the performance of each university as regards to online databases and related activities. Using standard statistical methods and tools, the collected data has been tabulated and analyzed.

Fifth Chapter presents the major findings of the study and the conclusion drawn. Some suggestions and recommendation for further research have also been made.

In the last part of thesis, the bibliography and appendices have been provided. Appendix-A contains profile of university libraries under study. Appendix-B includes two sets of questionnaires administered among the librarians, faculty members and research scholars.

The researcher has published many papers based on the area of study-

a. "*Use of Electronic Databases in University Libraries: An evaluative study"*
b. *"Online Databases: A tool for scholarly communication"*
c. *"Use of E-resources in Engineering Colleges of Greater Noida(GB Nagar) Uttar Pradesh: A comparative study"*
d. *"Use of Electronic resources in Private Universities of G B Nagar, UP"*

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LIST OF ABBREVIATIONS

S. No.	Abbreviation	Full Name
1.	AACR2	Anglo American Cataloguing Code
2.	AMU	Aligarh Muslim University
3.	ASP	Active Server Pages
4.	CC	Colon Classification
5.	CD	Compact Disk
6.	CD-ROM	Compact Disk- Read Only Memory
7.	DDC	Dewey Decimal Classification
8.	DELNET	Developing Library Network
9.	DOAJ	Directory of Open Access Journals
10.	DU	University of Delhi
11.	DULS	Delhi University Library System
12.	DVD-ROM	Digital Versatile/Video Disc- Read Only Memory
13.	E-BOOKS	Electronic Books
14.	E-DATABASE	Electronic Database
15.	E-JOURNLS	Electronic Journals
16.	E-NEWSPAPER	Electronic Newspaper
17.	EIR	Electronic Information Resources
18.	EIS	Electronic Information Sources
19.	E-RESOURCES	Electronic Resources
20.	FBIS	Foreign Broadcast Information Service
21.	FM	Faculty Member
22.	FSU	Florida State University
23.	HTML	Hyper Text Markup Language
24.	HTTP	Hyper Text Transfer Protocol
25.	ICT	Information Communication Technology
26.	IEEE	Institute of Electrical and Electronics Engineers
27.	ILL	Inter Library Loan
28.	INFLIBNET	Information Library Network
29.	IR	Information Retrieval
30.	IT	Information Technology

31.	JMI	Jamia Millia Islamia
32.	JNU	Jawaharlal Nehru University
33.	LAN	Local Area Network
34.	LIS	Library Information Science
35.	MARC	Machine Readable Catalogue
36.	NLM	National Library of Medicine
37.	OPAC	Online Public Access Catalogue
38.	PDF	Portable Document Format
39.	PG	Post Graduates
40.	PH. D.	Doctor of Philosophy
41.	RS	Research Scholar
42.	SIAM	Society for Industrial and Applied Mathematics
43.	UDC	Universal Decimal Classification
44.	UG	Under Graduates
45.	UGC	University Grant Commission
46.	UGC-INFONET	University Grant Commission- Information Network
47.	UK	United Kingdom
48.	URL	Uniform Resource Locator
49.	US	United States
50.	USA	United States of America
51.	VUC	Vestfold University College
52.	WHO	World Health Organization
53.	WWW	World Wide Web

CHAPTER 1
INTRODUCTION

CHAPTER- 1
INTRODUCTION

The aim of this chapter is to provide overview and nature of research study undertaken for the audience. The objective of the chapter is to present a comprehensive explanation of online databases. The chapter begins with online databases, its definition, history, types, characteristics, searching techniques.

1.0 INTRODUCTION

New technological development with the different features of ICT, electronics and reprography became an invention that have been adopted in libraries with new concepts as well as entered in our life too. Now-a-days ICT has changed the way of accessing and utilization of information. It not only influenced all the activities of human life but also provide wide variety of ways of representing information which covers textual, numerical, visual and auditory representation. ICT deals with creation, storage, processing, retrieval as well as communication of information. Due to outburst of electronic technologies diverse systems of data storage and retrieval has introduced a new term databases. In general term a database is an organized collection of data.

An organized set of data stored in a computer called database which can be searched automatically. It is a computer based record keeping system which record and retain information in a supple manner that supports individuals to get very quick information. It comprises serviceable raw data such as physical properties, statistical/numerical data, bibliographical information or non-bibliographical information etc. It comprise of field and each field contains words and numbers which helps in searches through words in specific field. Databases are set up so that one set of software program provides accessing facility to all the data to all users.

1.1 KINDS OF DATABASE

There are mainly two types of databases:

- **Offline Databases:** A programmed service not directly connected to a network, but currently connected to the LAN of any organization is called offline databases. It is a database run on CD-ROM or intranet and not available on internet but used for storage purpose.

- **Online Databases:** Through the internet a database can be accessed from all over the world, is called online databases. It seems that it works like an online information service or online information database which provides the information with accuracy, hustle and greater-flexibility. These are the open wide-ranging stores of information to any user with a computer terminal, and a source pool which contain an abstract or certainly full text detail and provide the answers of enquirer's questions without any reference to other documentation. Using special computer programs, it can be searched and researched and allow the searcher to carry out a two way conversation or dialog with computer.

1.1.2 DEFINITION OF ONLINE DATABASE

Some of the definitions of online databases are as follows:

- According to the **Macmillan Dictionary of Information Technology** "A collection of interrelated data stored so that it may be accessed by authorized users with simple user-friendly dialogues".

- According to the **Collins Dictionary Encyclopedia** "A systematic collection of data that can be accessed immediately and manipulated by a data processing system for a specific purpose".

- According to the **Glossary of Library and Information Science** "An electronic database of either full text documents or citations and abstracts which can be searched by telephone or internet".

1.1.3 HISTORICAL BACKGROUND

Online database was developed as a resources to enable the search of bibliographic citations. In 1960's "The NASA" the first database to go online was developed by RECON (Remote console system), Lockheed Missiles and Space Company designed RECON for NASA. Through Europe Space Agency "The NASA" database is available for online search in Europe.

In 1971 by NLM (National Medical Library) Medline (Medlars Online) developed, used ORBIT software. In US, it is credibly the largest online retrieval system now in existence with over 200 users accompanying in excess of 2, 00,000 searches each year. In 1972 TYMNET the public telecommunication network utilized by NLM to access the MEDLINE, which cover the world literature of medicine.

In the same decade again 'LEXIS' a legal database of national scope was developed by Ohio State Bar Association through OBAR (Ohio Bar Automated Research a legal retrieve System) used the data central software. "The New York Time Information Bank" becomes operational, an important online database providing access to current awareness information. It contains material from the New York Times and from about 65 other newspapers and magazines, in order to provide more extensive abstracts.

In 1975 System Developments Corporation (SDC) and Lockheed Information System provide access to a wide range of important databases including Chemical Abstract Service (CHEMCOM), Engineering Index (COMPENDEX), National Technical Information Services (NTIS), Science Citation Index, ERIC (The Educational Resource Information Center) and CAIN (Machine Reedbuck Database of National Agriculture Library).

System Development Corporation (SDC) offers 50 and Lockheed Information System offers 70 different database and both are continually adding new databases to their offerings. BRS entered into the market in 1976 with 13 of the most used databases. Since then there has been tremendous growth in the number and scope of online databases as well as the introduction of CD-ROM format in the early 1980's was introduced.

There is no accurate statistics for the total number of databases in existence. The most complete compilation is provided by the Gale Directory of Online Databases (1994) which lists 5, 3000 online databases in the current edition. The USA is the largest producer of internationally available databases followed by the UK, Canada and Germany.

1.1.4 CHARACTERISTICS OF ONLINE DATABASES

- Online databases are regularly improved, reorganized, updated and deleted data, if required.
- Online database is a collaborative system and have more sophisticated interfaces.
- Online databases are retrieved information either for end user queries and reports or for processing by applications.
- Online database permits shared access of information and also provide rapid access to a broad range of information that is not possible to achieve manually.
- It is controlled the registrations of users, enforcing data security, monitoring performance, maintaining data integrity, dealing with concurrency control and recovering information if the system fails.
- Online database cover credible published and unpublished articles but not all of them are full text.
- Many databases permit searching on non-subject fields such as author, institution, document types, language and country.
- Extensive communication capacity of online database is designed to accommodate a diversity of users.
- Database service providers have their own search interface with good search and retrieval capabilities.

- A search can be conducted with one or more keywords or phrases and common search facilities include Boolean search, truncation, proximity search and field search and search can be limited by applying certain restrictors, such as language data, types of materials etc.

- Online database permits facilities for centralized control of accessing, security control and also database access services support telex communication.

- Online database also provide multimedia facility like sound, images, videos etc.

- Information in online database tends to be archival in nature, though online database can be rapidly updated.

1.1.5 TYPES OF ONLINE DATABASES

Online databases now cover a huge range of different types of information, but the majority fall into major categories given below:

- Reference Databases
- Source Databases

1.1.5.1 Reference Databases

Reference or secondary databases comprises only bibliographic reference on the subject. It comprises clues to the intellectual contents and physical character of pieces of the graphic or printed record of humanity such as journal, articles, book, research reports etc. These are fall into two categories:

- **Bibliographic Databases**

A bibliographic database is a database of bibliographic records and sometime abstracts of literature. It comprehends an organized digital collection of references to published literature including journal and newspaper articles, conference proceedings and paper reports, government and legal publications, patents, books etc. It provides very rich subject descriptions in the form of keyword, subject classification terms or

abstracts. References cite the author, title and the source may include index and an abstract that serve to identify a document. Many references also cite other forms of literature such as patents in which the invention serves as the author and primary claim serves as the abstract. Bibliographic databases describe analytics which contain very rich subject descriptions.

Examples: CA SEARCH (Produced by Chemical Abstract Services), BIOSIS, INSPEC, Medline, ERIC (Educational Resources Information Centre) database

- **Referral Databases**

It guides the user towards the address of a person of an organization. This type of databases offers references to information or data such as, names and addresses of organization, persons, institutions, other directory type of data and information system etc. These are of following types.

- **Directory Databases**

Directory databases offer the information of published directories or serve a purpose similar to that of published directories without having published equivalent. These are not full text databases although they may not represent complete text of a publication in machine readable form nor they are numeric databases although they contain numeric information. These are nor definitely bibliographic databases because they provide primary sources or source document for the users. The directory databases may lists organizations, individuals, electronic or printed publications, materials, chemical substances, computer software and audio visual material etc.

Example: Electronic Yellow Pages (by market data retrieval) TRINET Database

1.1.5.2 Source Databases

These databases comprehend the original source data in machine readable form. After concentration these database, the user should have be information i.e. required and should not need to seek information in an original source. Data are available in machine readable as well as in printed form. It can be grouped according to their content such as:

- **Full Text Databases**

A full text database or a complete text database is a database that comprises the complete text of source document such as books, dissertations, journals, magazines, newspapers or other kind of textual documents in addition to the citation and indexing found in bibliographic databases. In 1990 it became common when computer storage technology made them economic and technologically possible. Full text databases offer the apparent advantage of immediate availability of the complete text of a source document. These databases enable to search the complete text of document online by names, terms or concepts.

Example: The New York Times via NEXIS

WESTLAW (1975) a legal database by west publishing company

Britannica Online contains entire encyclopedia articles, Lexis-Nexis provides the full-text of articles from newspapers, magazines, and other publications, JSTOR Full-text periodicals covering a wide range of topics, including humanities, social sciences and natural sciences.

- **Numeric Databases**

Numeric database also variously known as fact, source and non-bibliographic databases, data files and data marks provides organized numeric data such as statistics, time series, demographic reports, corporate financial records, stocks market quotations, chemical and physical properties, chemical nomenclature and graphics structure. Most numeric databases can be manipulated interactively by the users. Numeric databases also contain transactional data (the large database called transactional databases).

Example: FOREIGN EXCHANGE DATABASE (by interactive data corporation)

FIU OASIS: Full text & Numeric database

- **Multimedia Databases**

Multimedia databases contain a mix of different media such as text, audio, video and still graphics (photographs, diagrams and illustration, graphs, charts, maps

and even representation of works of art). These databases also include textual information to describing the image, music or video etc.

- **Dictionary Databases**

Dictionary databases are parallel to directory databases in so far as each record identifies something. The purpose of some of the dictionary databases is deceptive to the user. While the dictionary databases also serve to provide the measure of control in the use of bibliographic databases.

Example: Cambridge Advanced Learner's Dictionary

- **Hybrid Databases**

This type of databases contain a mixture of textual and numeric data.

1.1.6 ADVANTAGES OF ONLINE DATABASES

- Online databases provide distinctive and inclusive and in depth information and also facilitates the fast access of information.
- These databases offer powerful method of information retrieved such as free text, controlled vocabulary searching and combining of concepts through Boolean logic.
- Online databases provide an easy and unlimited access to the information as and when needed and it can be shared by an unlimited number of users sitting at far off places and at their door step.
- Online databases have multimedia capacity as different types of database viz. conventional text and numeric data with audio, computer graphics, video or digital photographic images.
- Accuracy in presentation of information is a crucial factor of online databases.
- Full-text databases present even more flexibility, allowing the searcher to retrieve individual articles or paragraphs with in articles by searching on words or phrases from the next.

- Online databases are periodically updated by the database producers/vendors.
- Databases can easily be researched using new clues.
- In depth searches of computer held files can be carried out at a speed which no human can hope to make.
- These databases eliminates or reduces data duplication.

1.1.7 DISADVANTAGES OF ONLINE DATABASES

- Online databases are expensive in use.
- Online databases provides less opportunity for verifying all the data keyed in, from source document.
- In online databases the retrieval of duplicate items imposes a substantial and highly visible cost on the searcher.
- Online database has not been compiled retrospectively because the assessing of contents of a database is its retrospective coverage is shorter than any printed equivalent.
- Online databases are not for the general public because they are too technical.
- Lack of uniformity among standards due to presence of various classification schemes (DDC, UDC etc.), cataloguing code (AACR2, MARC etc.), subject heading lists, make it difficult to choose among them to provide information through databases.

1.1.8 STRUCTURE AND SEARCHING

In the 1970's systems databases structures and search techniques still have their roots, though with significant modification and augmentation since then. Each database contains a vast number of records. Further records are subdivided into individually recognizable and searchable fields and normally records in the same database have the same structure. Searching is in accordance with the principles of

text retrieval. Although many online hosts have introduced which have easy in use search interface.

According to William A. Katz the real difference between manual searching and online searching lies in the mechanism and the terminology of the letter. Nevertheless, one becomes skilled in searching databases online after doing a number of searches. In short, it is practice that makes one perfect in the art. Besides, user guide has brought out by each international information service which helps accomplish mastery over, what Katz call mechanics.

Online searching is particularly helpful and resorted to when

(i) Depth search is involved, and

(ii) Comprehensive search is called for.

Yet another merit of the online searching is the facility it offers of using Boolean logic which allows limiting or expanding the search as required. Because of the three logical operations symbolized by OR, AND and NOT, it is possible to co-ordinate the relevant terms by modifying the search strategy. The online search, unlike the manual search, ensures at once enhanced, quick and refined access.

1.1.9 SEARCH STRATEGIES

The most important and often the most difficult aspect of the online search is the search strategy. Search strategy includes selecting terms and synonyms which reflects the intended topic of the search then determining the relationship between those terms in order to reflect the search request adequately. Two important concept of search strategy are precision and recall. Precision is a ratio, measuring the number of relevant item retrieved to the total number of items retrieved. Recall is a measure of the number of relevant document retrieved over the number of relevant document in the file. Different techniques are available to conduct the searches effectively for the retrieval of relevant information according to users need. Such techniques are the following:

- **Keyword Search**

Keyword search is the simplest form of facility offered by a search system. A keyword search allows users to enter one or more keywords pertaining to their query. These keywords can be chosen by the user in any combination depending on the requirements and there are several search operators that can be used to combine several keywords to formulate search expression. These keywords may be an author name, title, subject etc.

- **Phase Search**

A phase is a group of words that must appear next to each other in specified order. In a phrase search the system searches for entire phrase rather than each individual keyword forming the phrase. This type of searching can be conducted only those fields that are phrase indexed. A phrase is indicated by double quotation marks.

Example: "online databases"

"Information sources and services"

- **Boolean Search**

This is very common search technique that combines search terms according to the Boolean logic AND, OR and NOT search.

AND Search- Operator AND is used to narrow the search results to two terms combined with operator AND. A Boolean AND search will retrieve all those items where all the constituent terms occur.

Example: Library AND Automation

OR Search- It is used to broaden the search results to any of the two terms combined with operator OR. It retrieves pages that include any of the terms given in query. Boolean OR search, adds more terms, to a search expression but add less restrictions to a given search expression, because the search is conducted for occurrence of single OR term irrespective of whether the other term (s) occur or not.

Example: College OR Universities

NOT Search- Boolean NOT search allow users to specify those terms that they do not want to occur in the retrieve records. It is used to execute a particular term from the search results given after NOT and it also retrieves pages that exclude a word specified after NOT. Boolean NOT searches add restrictions to a search by forcing the search system to discard those items where the NOT term (s) occur.

Example: Resource sharing NOT Networking

- **Truncation Search and Wild Cards**

Truncation is a technique that facilitates search for multiple ending of a word. It is also called stemming. Truncation is a search can be conducted for all the different forms of a word having the some common root. A number of different options available for truncation viz.

Right Truncation

Example: Class * retrieves class, classification classify, class no etc.

Left Truncation

Example: * hyl will retrieve words like methyl, ethyl etc.

Wild cards can also be used for internal truncation. Internal truncation is generally used to search the words differ by one or two letters with in a word.

Example: Wom*n retrieves woman or women

- **Proximity Search**

Proximity operators are used to specify the relative location of words in a document. These operators facilitate searching for words that must be in the same phrase, paragraph or sentence in a record and also it helps to search for words with in a certain distance of one another in database. One such operator is NEAR which means that the terms that are entered should be within a certain number of words.

Example: Automation within 2 words NEAR library

Adjacent (ADJ) use in 'followed by' which means that one term must follow the other. Adjacent (ADJ) serves the same function.

Example: Sum with in 2 words ADJ moon.

- **Field Search**

A search can be conducted on all the fields in a database or it may restricted to one on more chosen fields to produce more specific results. This technique helps to increase the relevance of search results. Specific fields and codes vary according to the search systems and databases. The general format for using suffix. Code is "Syntax: select < terms >/xx, xx…

Where xx is a basic index field code (s)"

Example: Select computer? / IT terms searched in the title (/ IT) field only.

1.1.10 DIFFICULTIES IN ACCESS ONLINE DATABASES

- **Query Language**

Each online databases system has its own query language but there are many different query languages. So that it is problematic for users to learn all of the query languages.

- **Lack of Knowledge**

About databases user do not have much knowledge and along with its content in network locations, fields of stored information collection periods, available data types, meaning of each keyword and so on. So that users cannot able to select databases appropriate for their questions.

- **Overhead of Retrieval**

It is expensive and time consuming to issues queries to all online system that may include records to satisfy the queries.

1.1.11BARRIES IN THE IMPLEMENTATION OF ONLINE DATABASES IN LIBRARIES

- **Uniformity**

Since the accessibility of the diverse criteria it became problematic to choose best one. And this cause lack of uniformity among standard. Some of the problems of uniformity are given below:

- **Classification**

As the universities are using various classification schemes i.e. DDC (Dewey Decimal Classification), CC (Colon Classification) etc. So it is difficult to find uniformity in the class number of documents.

- **Cataloguing**

For the cataloguing of document libraries are using different cataloguing schemes and the availability of various cataloguing schemes cause a lack of quality and uniformity of databases, reengineering the of cataloguing system, become big problem for the librarian.

- **Subject Headings**

Subject headings descriptors are one of the field elements in bibliographical records. The field subject heading has an important role in retrieving the desired documents from the databases. Unfortunately its systematic use is not widely practiced by many of the libraries. Some library make use of the field either by locally made standards thesaurus or by locally developed keywords. This cause a lack of uniformity among the subject headings.

- **Software**

Software packages for library applications are not well developed. Some commercial software SLIM, MAITRAYEE etc. are available on the market. Thus it has become a major problem for the librarian to select the best one or the suitable one

for the library's requirement. Each library software has its own unique features and limitations.

- **Lack of Training**

Within a library before installing databases, a proper training is necessary. Only a few agencies/ organization provide training for proper consumption of information available on online databases. But these training programmes are not satisfactory for the proper usage of online databases.

- **Lack of Skilled Manpower**

In libraries lack of skilled manpower slow down the operation process of online database and not make available the passable knowledge that the user wants. And occasionally there is conflict arises between the staff that have adequate knowledge of computer and digitalization and staff which do not have such knowledge.

- **Lack of Manual**

Lack of manual is one of the factor behind the failure of working of online database. Either as a published document online or CD-ROM, well defined instructions about the system should be needed. Another problem is that there are so many library house-keeping software packages available on the market but these are not have single guidelines for their users. Thus the lack of proper guidelines for users establishes an obstacle to the effectual application and procedure of system.

- **Lack of Advisory Services**

To solve the problems related to the proper operation of databases, librarians need assistance. But there is lack of medium or forum for the libraries undertaking automation providing excellent advice and services to the libraries whenever required. Also because of the absence or lack of manuals and the advisory services libraries often provide either absolute or inappropriate information.

1.1.12EXAMPLES OF ONLINE DATABASES

- **ACM Digital Library**

Since its beginning the *ACM Digital Library* integrates digital versions of works published by ACM. An enhanced version of the ACM Digital Library Plus an extended bibliographic database covers major components of the resource, which consists more than a quarter million citations of core works in computing. The ACM Digital Library hosts over 103,000 full text articles from ACM journals, magazines and conference proceedings and half million bibliographic records with about 250,000 links to full bibliographic information and 70,000 further links to full text resources.

- **Wiley Online**

Wiley is the international scientific, technical, medical and scholarly publishing business of John Wiley & Sons, with strengths in every major academic and professional field and partnerships with many of the world's leading societies. It delivers seamless integrated access to over 6 million articles from over 1500 journals, over 18,000 online books, and hundreds of reference works, laboratory protocols and databases. Its online service provides spontaneous navigation, improved discoverability, prolonged functionalities and a range of personalization and notifying option.

- **Science Direct**

Web based interface to the full text database of Elsevier Science Journals and Academic, Technical and Medical (ATM) literature is *Science Direct*. More than 1500 scientific, technical and medical peer-reviewed journals, over 59 million abstracts, over two million of full text scientific journal articles, an expanding suite of bibliographic databases and linking to another one million full text articles via cross reference to other publishers junctures is provided by this database.

- **Taylor & Francis**

Taylor & Francis with world-class authors, from leading scientists and researchers, to scholars and professionals deals in all areas of the Humanities, Social Sciences, Behavioural Sciences, science, Technology and Medicine sectors and known as one

of the world's leading publishers of scholars journals, books, e-books, text books and reference works. It provides local expertise and support to our editors, societies and authors, as well as personalized, effective customer service to library colleagues in institutions around the world. It publishes more than 2,200 journals and over 4,000 new books each year, with a book backlist in excess of 60,000 specialist titles.

- **Emerald Full Text**

Emerald established in 1967 by a group of senior academics formed MBC University Press a publishing house that focused on niche management discipline including strategy, change management and international marketing. Emerald publishers are the world's widest range of management journals as well as strong specialist range of engineering, applied science and technology journals.

- **Nature**

In 1865 Nature Publishing Group (NPG)s propelled a leading magazine, *Nature.* It is the world's most popular weekly scientific journal. The first Nature research journal was Genetics.

- **IEEE Explore**

Almost one third of the world's current electrical engineering and computer science literature is covered by IEEE explore. It provides the access to publications from the Institute of Electrical and Electronics Engineers (IEEE) and the Institution of Electrical Engineering. It provides the resources of more than 950,000 documents from over 12,000 publications, including 120 journals, transactions, magazines, conference proceedings, IEE standards. More than 25,000 new pages are added per month. It provides the facility of accessing to more than two million full pages, PDF images, including all original charts, graphs, diagrams, photographs and illustrative materials.

- **COMPENDEX**

The *COMPENDEX* is most comprehensive bibliographic database of engineering research, containing almost seven million reference and abstracts taken from over 5,000 engineering journals, conference proceedings and technical report. It

covers the broad areas of engineering and applied science. It includes nuclear technology, bioengineering, applied physics, aerospace etc. as well as subtopics of all these and along with other major engineering fields. From over 175 disciplines, approximately 250,000 new records are added to the database annually. It is updated weekly and would be accessible from the EI village.

- **INSPEC**

In the fields of physics, electronics and electrical engineering, computers and information technology, *INSPEC* is world's leading database. It provides citations with abstracts of the world wide literature in physics, electronics and electrical engineering and computer fields. It has 7.3 million archives where sources comprise more than 4,200 journals and more than 2,000 conference proceedings, books and reports. From EI village, INSPEC would be accessible.

- **MathScinet**

Since 1940 *MathScinet* is an inclusive database, which covers the world's mathematical literature. Through MathScinet we can web access to the bibliographic data and reviews of mathematical research literature contained in the mathematical reviews database. With the help of multiple mirror sites, it offers world-wide access to mathematical literature.

- **MEDLINE**

In the field of life sciences and biomedical information, *MEDLINE* is an international literature which covers the fields of medicine, nursing, pharmacy, dentistry, veterinary and health care. It also provide the literature of biology and biochemistry. It is compiled by the US National Library of Medicine (NLM). On the internet it is freely available and searchable via PubMed and LMN national care for Biotechnology information's Entre system.

1.1.13 ONLINE DATABASE SECURITY

A database proprietor must deliberate a setting up access to the database from the web server is one of the most important aspect of database security issues. To

access the information on the web from databases, a database administrator should follow the two primary methods that are:

- Use of static web pages

- Active dynamic web page creation

Almost different security mechanisms can be applicable on these two methods. The static web pages are simply HTML files stored on the server and on the web their creation is the modest and most flexible method of publishing data. Traditional client/server tools like ASP (Active Server Pages), Visual Basic and Java Script can generate these web pages.

From the database, many systems implementing dynamic creation of web pages. So that the corporate information security become more important.

- **Security Systems**

Database security should ensure its goal that only authorized users can perform approved activities at sanctioned time. The processing rights and responsibilities of all users for the development of effective database security system. For the application of online database security, the given three system must be follow:

Server Security

Limiting access to data stored on the server is the work of server security. To limit directory browsing by using integrated operating system security, using standard operating system techniques and using the security to restrict access are the most straight forward ways to protect sensitive database files stored on the web server in the online situation.

User Authentication Security

When the user can access individual information, authentication security act as an obstacle. Before access is granted, the user must have some valid form of identification. Logins are accomplished in two standard ways: Using an HTML form or using an HTTP security request. HTML is basically an HTML page which comprehends the username and password form fields. HTML form login security

implemented by hand. To track the users and passwords database table or other file must be kept and whether through CGI script or via another method the authentication routines must be accomplished too.

Session Security

The private data is not interrupted or obstructed with during the session after the user have provided proper documentation and then access is granted to data, is ensures by the session security. The interception of information is prevent only by encrypting all the information that flows on the network.

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CHAPTER 2
REVIEW
OF
LITERATURE

CHAPTER- 2
REVIEW OF RELATED LITERATURE

2.0 INTRODUCTION

Literature search is a very significant step of the research process. It presents a critical and evaluative account of the related literature that has been published on a chosen research topic. According to Busha and Harter (1980) literature review is "an attempt to identify, locate, and synthesize the completed research reports, articles, books, and other materials about the specific problem of the research topic". Goal of the literature review is to bring to the reader's knowledge an up-to-date and current literature on the topic under the study. Literature review is designed with a purpose of presenting an overview of work that has been done, studies and observations that have been made, arguments that have been presented facts that have been established on a given research area.

Characteristic of a good literature review is that it collects information from variety of information sources from both print and web based, and is well written without any personal biases. Cronin Ryan and Coughlan (2008) described the characteristic of a review as "the review should conclude with a concise summary of the findings that describes current knowledge and offer a rationale for conducting future research and form the basis for another goal, such as the justification for future research in the area". Literature review should be structured in such a way that enhances the flow and readability of the review. Terminology use in a literature review should be accurate and easy to understand.

Busha and Harter (1980) portrayed the functions of literature review as follows:

a) It helps to narrow and more clearly delineate the research problem.

b) It reveals overlooked conclusions and facts that ought to be taken into consideration before the initiation of a research project.

c) Suggests new approaches for the planning of investigations.

d) Uncovers the methodologies that were successfully used by the other researchers.

e) Helps in the determination of the degree to which particular problems have already been investigated.

f) Assists investigators to develop firmer understandings of theoretical implications of proposed inquires.

The literature review for the present study has been organized into different facets to present an insight into various issues and aspects pertaining to the current research investigation.

Verma, Sapna (2016) emphasized about the use of online database and awareness level of post graduate students as well as their satisfaction level towards the support provided by the Central Science Library (CSL) for accessing online database. Majority of the users are aware and doing proper utilization of online database for their research work along with to update their subject knowledge. But due to lack of information on online database, they face problems in using it. Most used database among the users is Science Direct, Springer Link and Web of Science etc. Besides that, it is the duty of library to be organized training and organized orientation programs to make the users more aware and maximum utilization about online database.

Kwadzo, Gladys (2015) described that the main purpose of this study was to know the level of awareness and usage of electronic database by the students. Majority of the respondents were aware about the database provided by the university and even they use them too. To enhance the awareness level and usage of electronic database, faculty members and library staff should promote database to the students. Faculty should mention such database which is relevant in their lectures and librarian should organize orientation program to improve awareness in students about the database. The result shows that students used very few database and many of them were not familiar. They are satisfied with the electronic database and stated the database have impacted on their learning and research activities. Most of the database used by the respondents is JSTOR, EBSCO host, Emerald, Science Direct, and AGORA. It is necessary to understand the electronic information needs of the students, through

which librarian can take decision to manage these resources and provide the better facility and quality information to them and also to create awareness about the electronic database among the students for its proper utilization.

Khan, Saima and Haridasan, Sudharma (2015) discussed the usage and purpose of using online database among the users of Faculty of Arts in Aligarh Muslim University (AMU) and University of Delhi (DU). It reveals from the study that users of DU are more aware and use online database in comparison to the users of AMU. Majority of the users use the online database for retrieving information to their teaching and research purposes. Most widely used database is Annual Reviews and J-STOR. It is found that users in both universities are not fully using online database, they actually dependent on print resources. It clears that libraries should conduct awareness programmes as well as training for staff and users both.

Musa, Hamza Ukashtu et. al. (2015) revealed that due to suitability, litheness and immediate obtain ability and up-to-datedness, electronic information resources are becoming more prevalent than traditional print resources. With the help of questionnaire- based survey method this study attempts to examine the use of electronic information resources in order to achieve their objectives by the academics. Majority of the respondents are using electronic database for mainly research activities, thesis writing, teaching, preparing writing for publication purposes. The result shows that African Journal Online (AJOL), Directory of Open Access Journal (DOAJ) and Bio Med Central were the electronic database mostly used by the academics in the university. It is found that due to slow internet connectivity and lack of information literacy skill, users are unable to take full advantages of the electronic database. So it is the duty of university library through training and retraining programmes, workshops, conferences, seminars, build more awareness on the available online database.

Aina, Rachael Folashade (2014) opined that pattern of usage of library electronic database was low. This paper studies the factor of the awareness, accessibility and use of electronic resources among academic staff. The study explores that lectures having very poor information about awareness on electronic resources. This affects the approachability and usage of electronic resources. Organized a regular training of academic staff to increase awareness on electronic resources, update their knowledge

and access effective use of library materials in both print and electronic resources in a good way. Electronic resources have the potential for enhancing student's learning with huge quantities of information in an easily accessible format.

Bhat, Iqbal and Mudhol, Mahesh (2014) explored that Electronic Information Sources (EIS) are a kind of computer-based information sources. On the internet we can find electronic resources in different forms and types, in which some are very popular and people are using according to their requirement such as, electronic journals, standards, technical specifications, reports, patents, full-text articles, trade reports, and hosts of other document sources. This paper presents the findings of a survey about the awareness and use of electronic resources by medical students available in the medical institute libraries. The subjects chosen for this study were faculty members and medical students of Sher-E-Kashmir Institute of Medical Science (SKIMS), Jammu and Kashmir, India. For evaluating study questions and data collection, the questionnaire was distributed to a random sample of 300 faculty members, MD/MS (i.e., PG) and MBBS final year (i.e., UG) students. The results of this survey are presented and discussed in this paper.

Jotwani, Daulat (2014) focused on Indian Institute of Technology (IIT) libraries at Bombay, Delhi, Guwahati, Kanpur, Kharagpur, Madras, and Roorkee and these IIT's have been subscribing to over 1000 e-journals, e-books, database and other e-resources either individually or in consortia mode and spending a substantial part of their acquisition budget. This paper attempts to study that to improve the awareness and increase the usage of these resources what type of marketing techniques being used by these libraries. For the study marketing-related data were collected through a questionnaire, personal visits, and discussions with the librarians, and also from publishers. Analysis of data discovered that e-resources in all IITs are being heavily used as the number of downloads have increased from32, 33,818 to 75, 23,371 reflecting a growth of 132 % over a period of 9 years. The IIT libraries adopt multipronged approach and use 27 marketing techniques to promote their resources. The study also presented that, usage in different years there were downward variations, which clearly indicates that these libraries shall frequently worked on the marketing strategies and techniques. Study impact on awareness and usage of e-resources. Library shall have to recognize and eliminate the blockages and for the best

utilization of these resources they have to interact with users as well as make additional efforts to create awareness among the users.

Kachaluba, Sarah Buck, Brady, Jessica and Evans, Critten, Jessica (2014) explained that quantitative and qualitative research examining humanities scholars' understandings of the advantages and disadvantages of print versus electronic information resources. It explores how humanities' faculty members at Florida State University (FSU) use print and electronic resources, as well as how they perceive these different formats. It was carried out with the goal of assisting the authors and other librarians in choosing between electronic and print formats when performing collection development responsibilities.

Mangi, Leela Dhar (2014) shows the use of e-database in State Agricultural Universities of Jammu and Kashmir University. This paper aims to define the objective of use of e-database, level of application, satisfaction and problems. It reveals that CABI, AGRIS, AGRICOLA and Vet-CDs were highly used e-database among the faculty members. They use e-database for their research, teaching purposes and to download articles. Faculty members are satisfied with the available e-database. The result shows that for the effective utilization of e-database, library should arrange awareness programs to make the users aware about it alone with Computer Literacy Programs (CLP), which will help them in using the existing database. More numbers of databases should subscribe.

Md. Sohail and Alvi, Andleeb (2014) stated that on the internet, we find a remarkable growth in the number and variety of information resources which plays essential role for scholarly scientific literature. 100 percent of students are aware of web resources even they are satisfied with web resources and frequently use the available web resources for their work. Scientific and medical research along with number of information resources is available on web. On the web, students can find wide range of information and links to other resources. They can use new technology for retrieving quick and relevant information. In the 21st century people are using web resources for their study and knowledge and it became an important part of their life. In new era, it is necessary to provide the computer and internet facilities to students, make them aware about information resources, its proper utilization for their research work as well as for the development of the country.

Rubel, Alan (2014) discussed, public and research libraries have long provided resources in electronic formats, and the tension between providing electronic resources and patron privacy is widely recognized. But assessing trade-offs between privacy and access to electronic resources remains difficult. One reason is, a conceptual problem regarding intellectual freedom. Traditionally, the LIS literature has plausibly understood privacy as a facet of intellectual freedom. However, while certain types of electronic resource use may diminish patron privacy, thereby diminishing intellectual freedom, the opportunities created by such resources also appear liberty enhancing. Adjudicating between privacy loss and enhanced opportunities on intellectual freedom grounds must therefore provide an account of intellectual freedom capable of addressing both privacy and opportunity. I will argue that intellectual freedom is a form of positive freedom, where a person's freedom is a function of the quality of her agency. Using this view as lodestar, I articulate several principles for assessing adoption of electronic resources and privacy protections.

Swamy, M. Panduranga and Kishore, Avineni (2014) described that every library is expending an immense amount of budget on online database to modify the library services as e-resources and increase the standardized collection for their users. As we all know that many online database and tools are available in different disciplines to support users for their professional work also. The present study identifies the usage of the online database by Post Graduate Diploma in Management (PGDM) students of Institute of Financial Management (IFM) and Research (IFMR), Chennai. The main purpose of study is to know the awareness level, understanding about online database and utilization and their skills while using online database. The result shows that majority of the respondent having knowledge of online database and they came to know through print manual (Hard Copy). Most of the users intensely agreed that easily, they retrieve the important data from online database for preparing class work/assignment and also preparing interview/events. But, during accessing and using online database they faced problems such as time slots are not sufficient, lack of support from the library staff and lack of awareness about how to use online database. Due to these difficulties most of the respondents strongly stated for need of training for appropriate utilization of online database and specially hands on training with library staff. So it's part of library work to provide not only more online database to

their users but also user friendly interface so that they can retrieve right information at right time with less effort in user friendly environment.

Uma, V. (2014) described that, the use of online database by the faculty members and research scholars in order of priority and ranking of database. The result shows that majority of the respondents of both universities are familiar with the use of online database. Users stated that without visiting the libraries they collect the information for their research work by electronic resources. Science Direct, SciFinder, SCOPUS, Science Online, Biological Abstracts. American Chemical Society is mostly used online database in both universities. Less used database is MathScinet, Taylor and Francis, AIP, RSC, Blackwell Synergy, J-Gate.

Anyira, Isaac Echezonam (2013) emphasized that in the 21st century, online database are using by the whole world which contains a large record of relevant information, even these online database provide wide range of up-to-date information resources for the human work. This study carried out by Microsoft Incorporated which indicated that widespread awareness of available resources on the Internet is a major factor that influences their use. This study has established that Sociology lecturers are aware of Ebsco host resources, JSTOR, NUC Virtual resources, AJOL, and HINARI and found a significant positive response about awareness and utilization of relevant resources on the internet. This study shows the impact of awareness on the utilization of database by Sociology lecturers in South, Nigeria and as a result there was positive relation between awareness and utilization of database by lecturers. With help of online access to valuable information, users can search full text journal articles, e-books and abstracts. On the other hand some lecturers to some extent having lack of knowledge in searching relevant information resources. To optimize this problem it is necessary to make awareness among lecturers about sociology resources available on the internet along with that, university library should conduct some training and retraining programs, workshops, audio-visual presentations etc. for the proper utilization of information resources.

Bosha, Toteng, Ruth, Hoskins and Fiona, Bell (2013) describes that, this paper is based on a study of Masters Dissertation carried out at the University of KwaZulu Natal which investigated the use of electronic database by undergraduate law students at the University of Botswana Library. The main aim of the study is to know that Law

students used the electronic database, which database they used and the frequency of such use, to identify students problems encountered when using the database and how the students became aware about the database. The results showed that, most of the electronic database subscribed by the library, did not used by the undergraduate Law students. The Law students basically used limited database such as, OPAC, Juta Publications and EBSCO Host. When using the database number of problems was identified by the students.

Damilola, Omoike Adenike (2013) discussed the reasons, which affects the use of electronic information resources by distance learning students. In questionnaire-based survey method, simple random sampling techniques were used for this study. From the total population of 12,500 students, the sampled respondents were taken at the Lagos and Ibadan study centers. After analyzing the collected data, it reveals that there are several factors which influence the use of electronic resources by the distance learning students and result shows the extent of use of electronic information resources was very low due to the unavailability of majority of the electronic information resources. It is, found that some measures should be taken by government to optimize the unavailability of most of the electronic information resources in the two different study centres.

Das, Prangya and Maharana, Rabindra K. (2013) stated that with the advancement of information technology in the information explosion age, electronic information resources gaining their importance in most of the areas. The main aim of the study is to know access, awareness and use of electronic information resources by research scholars of Berhampur University. This study also highlights the troubles faced by users and recommended measures to solve the issues and for its improvement. It is found that, most of respondents are aware of electronic resources and even they frequently used electronic resources such as E-journals, Internet, Online database, WWW etc. on daily basis. The main purpose of the use of library is to find specific information in the field of interest followed by to support research work and to keep up to date. Respondents mostly access few networks and consortia such as UGC-INFLIBNET, CSIR, and ERNET. In the process of using electronic resources they faced various types of problems, like incomplete information materials, shortage of library staffs, slow internet speed etc. So it is necessary that library should provide

more internet services and particularly web resources to support their research work. Library should organize orientation and training programs of electronic resources for the benefit of research scholars. Library should train their staffs for current scenario to assist the users and make the users familiar with electronic resources subscribed by the library.

Kandpal, K.N., Rawat, S. and Vithal, K.S.R. (2013) aims to measure and assess the use of e-resources by the student of NTR College of Veterinary Science, Sri Venkateswara Veterinary University, Gannavaram, Andhra Pradesh along with to know the experience of the students about the introduction of ICT at their department or library. The study shows that students of Veterinary Sciences are aware of the e-resources and use various types of e-resources, e-database, and e-journals. Most of the students visited the library daily but some of the student visited and used the services on weekly and fortnightly basis because of their busy schedule or other related works. The users feel that e-resources provided by the library fulfill their requirements to the great extent. The students appreciate the services provided by the library but at the same time they expect more advance services. But it was felt that staffs of library should be trained in terms of online resources to facilitate the existing services to the users. So authority has to not only organize a systematic training program for library staff time to time but also student orientation programs are also to be added in the regular activity of the library. Libraries have to work like a bridge between e-resources and the users to support them in accessing these resources. Now-a-days students are mainly dependents on e-resources for their required information and to keep up-to-date in their subject area. It is found from the study that day by day students are using e-resources and have positive response towards e-resources for their education and research. So, it necessary that to provide sufficient number of computers, more e-resources and other e-services in the library, so that they can utilize it for their work.

Knight, Natalee (2013) stated that the present study attempts to identify the impact of e-library on the use of library resources at Northern Caribbean University. The main objective of the study is to define continue investment in electronic resources in worthwhile for library budget and along with easy access to electronic resources through the internet. It reveals that formation of electronic resources has increased the

usage of library materials along with print resources. It is found that electronic resources play a pivotal role in enhancing library resources as well as help to users for their academic assignment and quality research papers. The study also supports to librarian not only in indication for the selection of appropriate electronic resources under the budget but also help in satisfying the desired needs of library users.

Nikam, Khaiser and Dhruva Kumar (2013) emphasized that in the academic universities and research institutes there is massive effect of E-information resources and e-journals/database on scholarly communication which results in terms of increased research productivity along with the quality. Users are using both print and electronic sources of information. Majority of the users have learnt to use e-journals effectively from their 'friends/colleagues' and using both print and electronic source of information. They stated that E-journals have made the access of scientific information convenient and easy. The respondents always desired quality information, for that they browse through recent issues to identify relevant information along with searching publishers database in full text form. The respondents mostly search relevant information for their research work and to write articles. It is found from the study that majority of the respondents identify relevant e-articles by 'browsing recent issues' and the method 'relying on alerting services'. The result shows that subscribing electronic journals by the libraries not only provide higher education in terms of good value for money but also beneficial to the scientific community.

Nisha, Faizul and Naushad Ali P. M. (2013) described the use of e-journals by the users of IIT Delhi and Delhi University. The survey was conducted through a structured questionnaire taking a random sample of 300 users (PG and PhD) from different disciplines of IIT Delhi and Delhi University libraries and the response rate was 66.66 per cent. It revealed from the study that majority of the respondents are aware of e-journals and they are using them for constructing and largely to update their present knowledge and even for gathering relevant material for their study and research purposes. They used these journals for retrieving information regarding research, publishing research papers and manuscripts, theses, assignments, presentations, conferences and seminars etc. However, the results also shows that respondents faced so many troubles while using e-journals e.g. slow downloading speed as revealed by maximum utilization of internet by IIT Delhi and Delhi

University users. Other mechanical deficits like non-availability of a particular issue, lack of training and limited access to terminals are also present while using e-journals. On basis of the problems faced by the respondents, it is necessary to take measures to enhance the use of e-journals services and fulfill the needs and requirements of users in the libraries of IIT Delhi and Delhi University.

Oyedapo, R.O. and Ojo, R.A. (2013)stated that the present study explore the influence of electronic information resources on research activities in Hezekiah Oluwasanmi Library, Obafemi Awolowo University, Ile-Ife, Nigeria. Questionnaire-based survey was used to take the ideas of the daily users i.e. researchers of the studied library. The result of the study shows availability of numerous electronic information resources and the utilization by the researchers and postgraduate students. There is a significant influence of level of availability of electronic information resources on utilization. It is found that only 6% of respondents use electronic resources which show the low usage of e-resources in the university. Accordingly, it is necessary that library should organize information literacy programs and make them aware about electronic resources available in the library and through short term course present a clear description about the benefits of e-resources for their study and research work.

Sahu, Gopabandhu, Patra, B. Bijay Kumar and Mahapatra, Rabindra Kr. (2013) discussed that the main purpose of this study to examine the use of e-resources by the research scholars of two major universities of Odisha. It is very clear that majority of the respondents in both universities are aware of the e-resources and they use it for research purposes on daily basis. The result shows that most of the students from both universities prefer their department labs for using e-resources and among all e-resources they basically use internet, www, e-journals, e-database etc. Keyword is the most popular search method for e-resources among research scholar of both universities. The study reveals that most of the research scholars faced troubles while using e-resources such as slow internet speed, long time for material downloading and difficulty in finding relevant information. But, besides all these things research scholars stated that e-resources are time saving, easy to use, more informative in comparison to print document and they are satisfied with the e-resources provided by their libraries in both universities. In existing situation it is clear that e-resources have

played an important role in searching and finding relevant information for research scholars. The use of e-resources is increasing day by day and in the age of information explosion everyone preferred electronic information, even it depends on the users that how they want to get benefit from e-information either for their work or to update their knowledge.

Sivathaasan, N. and Velnampy, T. (2013) described that in teaching and learning method electronic information resources play a significant role along with provide higher support to its users. The main objective of the present study is to explore the impact of use of e-resources on academic work of university teachers of University of Jaffna, Sri Lanka. To select the sample from all five different faculties, stratified random sampling technique was embraced. Correlation and regression model is applied to test the operational hypotheses and it is found in the results that use of e-resources has a solid positive connotation with academic performance. It is revealed from the study that the use of e-resources has an impact on academic performance at the rate of 38.8%, which is statistically substantial. This study would unconditionally assistance the users through exploring impact of use of e-resources on their academic work.

Stone, Robert W. and Baker-Eveleth, Lori (2013) revealed that technology applied to education has produced numerous changes. One of these changes is the availability of electronic textbooks. However, the adoption of electronic textbooks has been slower than anticipated. This research examines adoption of electronic textbooks through studying electronic textbook user' continuation purposes. Data for the model were collected using a survey of university students. The theoretical model was analyzed using structural equations modeling and maximum likelihood estimation applied to the sample. The psychometric properties of the measures were good. The fit of the measured theoretical model to the data was also good and all the paths in the measurement and structural models were statistically important. Satisfaction and perceived usefulness of electronic textbooks influence electronic textbook continuation.

Davarpanah, Mohammad Reza and Dadkhah, Nayereh (2012) explained the usage of electronic journals in Ferdowsi University, Iran based on e-metrics. The paper also aimed to emphasize the analysis of cost-benefit and the correlation between

the journal impact factors and the usage data. In this study experiences of Ferdowsi University library on licensing and usage of electronic resources was evaluated by providing a cost-benefit analysis based on the cost and usage statistics of electronic resources. The data sources were one-year of vendor-supplied e-resources usage data such as Ebsco, Elsevier, Proquest, Emerald, Oxford and Springer and local usage data collected from the Web Server of Ferdowsi university. Monitoring the usage of e-resources gained increasing importance for acquisition policy and budget decisions.

Dhanavandan, Esmail, Mohammed and Nagarajan, M. (2012) aimed to identify how electronic information resources are utilized by academic library users and specific trends that can be seen among faculties and students. Electronic resources are one of the emerging environment in libraries & information communication in the competitive era. The familiarity and use of electronic information resources in the libraries for rapid development is necessary and very important. Majority of the respondents satisfied with the e-resources available in the library. With the availability of more resources through the Internet with high-speed connectivity the demand for e-resources in their specific subject is increasing. Accordingly, the libraries have to evolve more scientific methods to develop a standard collection of e-resources along with print documents assessing the requirements of the user's community.

Dhanavandan, S. and Tamizhchelvan, M. (2012) describes that electronic resources provide electronic information through electronic system. It provides different file formats in network environment. Libraries have been processing towards an electronic environment and providing access to inclusive variation of resources. The technological advances created a path to replace traditional services with electronic services along with attractive versions and economically feasible for libraries. The main aim of the paper is to recognize the accessibility of e-resources and accessing mode in the engineering institutions in Tamil Nadu. From E-books, E-journals, online resources, CD-ROM e-resources anyone can acquire knowledge. It is found that most of the libraries have internet facility but nevertheless of the duration of the institutions every library should develop WEB OPAC and subject gateways. Most of the libraries subscribe to e-books and e-journals and only few libraries have online database and CD-ROM database collection.

Habiba, Umme and Chowdhury, Salma (2012) reveals that e-resources are used by majority of the users of DUL for their learning purpose. DUL provides large number of e-resources for their users and users use e-journals and e-books. During the period of using e-resources respondents basically faced few problems such as limited access to computers, limited number of titles available. For getting more benefits from the e-resources by the users, library should provide training programs by trained professionals with ICT skills. DUL should provide current issues of articles to the users. For providing better e-services libraries must collect suggestions of their users.

Kristin Olsen, Heidi (2012) emphasized that academic libraries encounter many challenges when providing services for researchers and it is evident that use of the library in information searches has reduced significantly over time and continues to decrease. However, a study in Norway in 2007, at Vestfold University College (VUC), demonstrated that there is great potential to increase faculty staff's use of library's digital resources with the right form of engagement. The findings led VUC's library to focus on its services for this particular user group. In 2009, VUC library initiated a study to investigate the possible effects of a librarian participating as a 'Research Group Librarian'. This was a three year project, funded by the Research Council of Norway. The study adopted an ethnographic approach. The research group librarian was a fully participating member of the research team throughout the project. The empirical sources for the study included semi-structured interviews with the project leader and the participating researchers, short individual interviews at the beginning of the project with each of the research group participants, several group interviews with the majority of the research team midway in the project, observation and field notes. The study demonstrated that as a member of a research group a librarian can have positive impact on the researchers' work, although, this is a minor study and insufficient to make generalizations. The findings are interesting and worth considering in the further development of academic library services for faculty staff and researchers.

Mann, Inderjeet Singh (2012) explained that the electronic information resources are gaining more and more attention of library users and becoming an integral part of every library collection. Among other characteristics of electronic information resources, full text and online access make them able to hold a pertinent place in the

library collection. They are playing a vital role in enhancing the modern research and development activities. Most of the content providers are now actively participating in this digital information resource revolution. It is important to know to what extent these electronic resources are used by the end users. The present study is an effort to know the various purposes of use of electronic information resources. The users were also asked answer the question; whether use of electronic information resources have impacted on the performance of their academic work or not.

Mohamamed Musthafa K. (2012) stated that the web resources have become an essential part of research work. This study shows the level of awareness and use of web resources by the research scholars and researchers use all the services and resources on web. The purpose of the study is to find out the use of web resources in various languages and literature for research activities. There are very few electronic resources available on languages and literature in comparison to other subjects. Many digitization projects worldwide contribute amazing amount of content on the internet. The result shows that researchers of Aligarh Muslim University use web resources for the progress of their research work, which clearly reflects that electronic information sources will always worked as necessary components for research community.

Naqvi, Tanveer Haider (2012) described that with the great advancement in technologies, Agricultural University Libraries moved from traditional to digital environment. Agricultural libraries are subscribing many e-database to fulfill the demands of users. At GBPUAT library a huge amount is invested for the subscription and management of e-database, so it becomes necessary to examine the use and influence of e-database, to define the purpose of use of e-database, level of use, level of satisfaction, problems faced in accessing e-database. The result shows that postgraduate students and research scholars highly used few e-database such as AGRIS, AGRICOLA, CAB abstract, and agriculture & natural resources for their work. The majority of the respondents got training and individual instruction in accessing e-database and majority of the research scholars were satisfied with the available database at GBPUAT library.

There are various types of electronic database available in the world such as statistical database, image database, bibliographical database and others. An electronic database helps in different ways to the users. It provides current

information along with recently published sources in which the content is revised on a regular basis and also provides information on a very specific topic usually for a limited audience. So day by day these database are gaining importance as they are more up-to-date and can be accessed anywhere without the geographical boundaries. In the information explosion age these are very useful and valuable, times saving for research and developing activities.

Prabhakaran, T. and Sankaranarayanan, D. (2012) explained that with the advancement of web-based technologies, traditional service is transforming into internet based online services. The study describes the use of web resources among the engineering faculty members of Annamalai University. Majority of the respondents are fully known about web resources and using for updating knowledge, current information and for career development. A high percentage of respondents are using e-mail services for their different purpose. Google search engine is used by the faculty members most of the time. While accessing web resources faculty members mostly faced slow speed problem and lack of connectivity along with downloading problems of articles. But besides any problem most of respondents are fully satisfied with web resources provided by the university. To keep themselves up-to-date in their respective fields faculty members are deeply dependent on web resources. So in this way role of libraries are increasing in order to make the users aware about web resources for proper utilization. It is the responsibility of library to organize various training programs for faculty members which create importance of it and develop their skills to avail the benefits from web resources for their career.

Roy, Projes, Shailendra, Kumar and Satija, M.P. (2012) discussed that the database should be selected on the basis of their retrieval aspects and the online features. The publisher of the online database cannot overlook the retrieval features in the database. Easy and simple retrieval features can fetch more subscribers for the vendors and publishers. It was supposed and consequently found precise that there is a significant difference in the retrieval features among the sciences, social sciences, and multidisciplinary database in terms of subject-based online database. It was found that from subject to subject retrieval techniques vary. It is not possible to apply all the retrieval features to a simple online database. Different search features vary in different online database. In online database it should have ease of data retrieval

features, more efficient techniques, and more use of it. There is an effectual co-relation between facilities and usability of an online database. Majority of users prefer online resources to the printed ones. However, they use only a small portion of the available information sources. Users basically use only limited number of database and seem to be unaware about other available database. Database without links to full-text database have lower use. This study may help librarians to make better decision related to the online database. The changing use- pattern will require libraries to re-examine their collection development policies, institutional programmes, and reference service to meet the information needs of their clients in the online environment.

Singh, Gurdev and Sharma, Monika (2012) emphasized that in the information age, electronic resources play a vital role in getting desired and relevant information. Faculty members are very well known about electronic resources and uses in their academic environment. Most of the faculty uses electronic resources daily for their information needs regarding academic and research information. They have positive response towards use of electronic resources. The result shows that majority of faculty members use e-mail followed by e-reference sources and CD-ROM/DVD ROMs for getting information. The main purpose of using electronic resources is for preparing lecturers followed by finding relevant information in the area of specialization and doing research work. They stated that electronic resources are time saving, easy to use, easily accessible. They preferred electronic resources due to their nature of being more informative, more useful and less expensive. They basically prefer to electronic resources in comparison to traditional resources. They faced many problems in using electronic resources such as material is too vast and difficult to use. One of the problems they come across is lack of training facilities. In that case library should provide user information literacy program and make users aware of various electronic resources. Time to time library should organize training programs to teach the faculty member about searching information from electronic resources. Number of computers should be increased in the library and also develop proper infrastructure for effective and efficient use of electronic resources.

Singh, Krishna Kumar (2012) described that today's academic libraries provide both print and electronic resources and users are getting benefit from electronic

information resources. The present study attempts to identify the awareness and utilization level of electronic information resources and its impact among users. This study is based on structured questionnaire method. It is found from the study that majority of the respondents are aware with the electronic information resources. Most of the users use Bibliographic database, plus other specific list management database and web based resources and e-journals & e-journal collection which is followed by use of e-mail, newsgroups etc. The main purpose of using electronic information resources by users are course work/study and cooperation/collaboration work. The result shows that e-journals, e-articles, online search, downloading services and database are most used electronic information resources by the respondents. The data shows that users basically take interest in Emerald Management Xtra, EBSCO Business Source Complete and Science Direct and they use google.com for their frequent search. Most of the respondents stated that EIR are user friendly interface and evidence-based research. It is reveals that users are satisfied with electronic information resources and their level of awareness and usage of electronic information resources has increased.

Tyagi, Sunil (2012) showed that majority of respondents noticed that library possessed useful online journals and database for the scientific community. The document management software play an important role to access relevant information. Users are aware about the availability of online journals. Awareness among the users about the availability of online journals was found highly satisfactory. It reveals that Electronic information sources are universal for scientific community members. As Library and Information Centre provides more online resources, so it's the duty of librarians, they should take some measures to make the users aware to these resources for their information needs. In the online environment librarian should observe collection development policies, orientation programmes and reference services to motivate the users for accepting online sources to meet their information needs. There is no doubt that the internet is an important medium between the scientific information and the users and paved the way to search latest information in their respective subject fields along with traditional information. Through internet anyone can access unlimited information in their respective disciplines.

Wu, Ming-der and Chen, Shih-chuan (2012) opined that the study explores the awareness about electronic resources by graduate students and their search techniques and usage patterns. It is found, the most of the graduate students are frequent users of electronic resources. In comparison to other disciplines, graduate students of science and technology observe electronic resources more important to their research work. Few students use the Meta search tool and very few students use alert services to retrieve updated information. This study could help librarian to understand the usage of electronic resources by graduate students.

Chauhan, Kaushal and Mahapatra, Rabindra Kumar (2011) emphasized that E-Resources has charged the libraries to support learning and research. There are many e-resources available on the internet which effects every part of research. The present study shows that electronic scholarly journals through the internet, provide academic articles free of charge for the users and users can get benefit of it for their work and collect useful details from these free online e-resources such as e-journals, e-magazines, e-newsletters, full text and abstract. During the last decade these electronic resources has drastically changed the way of searching relevant information as it is playing an important role for the academic community.

During the last decade electronic resources drastically restored the status of libraries and information centers all over the world and playing an important role in accessing. Free Electronic Resources are also playing an important role in assisting access. With the help of training and guidance, users can use free e-resources from the collection of all libraries. Now it's very easy for everyone to search information through free available online resources. The result shows that Students, Teachers, Researchers, Scholars, Philosophers and all other User Community can use these resources to fulfill their information needs.

Egberongbe, Halima Sadia (2011) described that the study discovers the usage and impact of electronic library resources at the University of Lagos in Nigeria. The study clears the appearance of information technology and its effect on collection development of library and scholarly communication. Through electronic resources advantages, Nigerian academic institutions aimed to create interface with global knowledge and the potential dependency of teachers and research scholars on

electronic resources and their ability to evaluate the quality of legitimacy of this electronic information.

Akhtar, Hussain, Khan, Mohd Asif and Nishat Fatima (2011) shows that the various aspects of uses of online resources and services provided by the institute library is revealed and explained by the study. The present study attempts to know user's awareness about ICT/Digital information, frequency and purposes of visit, linking patterns, usages of search engine, form of e-information, difficulties, value of online resources and user satisfaction. There are two things which provide the quality of information; first one is importance and the second is correctness which can be accomplished proficiently by online services through electronic information. It is found from the study that users have awareness about information technology. They always prefer Google's search engine to search their required and desired information related to their field. The result shows that a vast majority of respondents use e-journals, e-articles and e-books and side by side they are using online resources for reliable access and user friendly interface.

Md. Sohail and Ahmad, Md. Imran (2011) emphasized that in the present environment university academicians and users are using electronic journals at increased level, where UGC-INFONET is playing an important role in assisting them. In today's networked environment electronic information services are attracting the readers. Electronic publishing has created a challenge before the library and information professionals to provide detailed access of electronic information. It is not possible for any library to purchase every journal with the shrinking budget. So the best alternative is consortia and UGC-INFONET provides numerous e-journals and e-database. The advent of Internet has provided the tools to tackle the problems faced earlier mainly the physical movement of information resource which no longer is required. As a result successful consortium like INDEST and UGC Infonet: E-journal consortia have come up.

Mulla, K. R. (2011) described that the present study identify the use of electronic resources by the faculty members at the HKBK College of Engineering in Nagawara, Bangalore, India. The study explores problems faced by faculty members in accessing or using services and impact of electronic resources in comparison to traditional resources and recommendations for improving electronic resources services for

faculty. It clears that library staff supports with electronic resources skills training to faculty members.

Praveen K. Kumar (2011) emphasized that information technology changed the way of searching information and provide the users exact, comprehensive, current, updated information. The purpose of the study is to highlight the significance of electronic resources used by the students specially those electronic resources which cover by UGC-INFONET Consortia. It is necessary to know the level of knowledge about UGC-INFONET resources along with ICT based serviced provided by the library. ICT related services provide timely and cost effective service, even development of ICT supports in growth of information, improve library services along with time consciousness. It is clear from the results that electronic document do not have any absolute problems but it is necessary to provide training to users as well as staffs and conduct user orientation program for the effective utilization of electronic resources. In the present information society it is the demand of time to make the user's computer literate to use the existing resources properly.

Shailendra Kumar and Singh, Manisha (2011)aims to determine the usefulness of e-resources to the scientists of National Physical Laboratory, New Delhi, India and their skills in using various search methods and techniques to access and utilize these resources. The study further aims to investigate the level of satisfaction with the information accessed by the scientists through the available e-resources and various challenges faced by them in their field. The survey was conducted with the help of a questionnaire and personal interview. Questionnaire was distributed to a random sample of 75 scientists from different fields of physical sciences available at the time of study and the response rate was 80 per cent. The responses received from the available scientists are presented in tables and figures and data is analyzed by using simple calculation of percentage method. The findings reveal that access and use of e-information is an important component of research activities for scientists, also qualitative and quantitative developed e-collections overcome conventional resources with the characteristic of fast accessibility. Title field, simple search techniques and self-taught methods are used to access the e-information. E-journals are most preferred e-resources and scientists are very highly satisfied with the retrieved e-information. Also, research indicates that as the internet is most preferred medium of

access, there is a need to provide high bandwidth to overcome poor network connectivity. Also there is a constructive suggestion for developing an automated library system and increased electronic resources with improved library services.

Sinha, Manoj Kumar, Singha, Gauri and Sinha, Bimal (2011) explained that the present study attempts to assess the usage of electronic resources by the research scholars and teachers of North Eastern Region in the Assam University Library under the UGC-INFONET E-Journals/Digital Library Consortium of UGC/INFLIBNET. The rapid development in information communication technology has paved the way of new electronic devices and formats which gave rise to various kinds of electronic resources. It is clear from the study that there is a great impact of electronic resources upon the users of Assam University Central Library in their research work. It reveals from the study that majority of the respondents have the awareness about the UGC-INFONET Consortium, but most of the respondents stated that they are somewhat aware of UGC-INFONET Programme. Most of the respondents used electronic resources for study purposes and publishing journals. They accepted the importance of E-consortium for study purposes and research activities too, most popular electronic resources as E-Journals, E-Books, Online database used by the Assam University Library users frequently. 25 percent of respondents preferred Springer Link journals followed by 18 percent to Kluwer On-line Publication and few percentage to others, whereas 23 percent of respondents prefer all publication UGC-INFONET.

It revealed from the study that as library provides various electronic resources which are relevant for study and research work of respondents. But library should take some measures for the awareness of access to internet electronic journals and electronic resources usage. Library should organize orientation programmes and user awareness programmes for the users. Number of systems with higher configuration, library service hours should be increased. Most of the users suggested subscribing more online journals and electronic resources as they preferred it important for their work. So as a result University Library should take important actions to improve the facilities and services related to e-resources which reflect the development of library and as well as satisfied to research scholars and faculty members related to their information needs.

Shukla, Praveen and Mishra Rajani (2011) opined that present study explores the level of awareness about e-resources and how they use these resources. Majority of the respondents are aware of e-resources and they use it on daily basis and even users give preference to electronic resources mostly in comparison to print resources. The main purposes of using e-resources are research and for publishing articles while accessing e-resources respondent faced low internet connectivity most of the time. The result shows that with less effort respondents can retrieve right information at right time in their respected field. But it is the responsibility of the university that it has to provide more e-resources to their users and remove all the troubles related to access to e-resources.

Thanuskodi, S. (2011) discussed that for every library Information Technology (IT) has created a new task as it has a great impact on all over the world in every sphere. To satisfy their users' needs and for better services libraries are using IT and slowly and steadily every library have converted into digital and virtual libraries where print documents changed into e-documents such e-books, e-journals and e-magazines and it improved the comprehensive distribution of information. The present study is a step to identify the use of electronic resources by the users at Dr. T.P.M. Library, Madurai Kamaraj University. It revealed from the study that majority of the respondents were aware of different types of electronic resources. The result shows that it's a strong recommendation for the library to improve the internet speed related to access facilities and also subscribed more e-resources in the library for their users. The library has to take the suggestion of their users related to use of e-resources and troubles faced by them while accessing the e-resources. It is found that in remote areas electronic resources are easily accessible and it solves the storage problems too.

Tyagi, Sunil (2011) stated that users have awareness about the availability of electronic journals, but they use it as supplementary way to get information. There is need to make the users aware about the prospective of the electronic journals. At IIT Roorkee users are taking interest in online journals and most of the users are aware about the online journals provided by the library. Most of the respondents are using it for their different purposes. It is found that online journal collection without links from bibliographic database and without links to full text have lower use. These findings have implications for collection development, promotion of library resources,

and end-user training. Most of the users used Internet, search engines, e-print servers, author Web sites, full-text database, electronic journals, and print resources to some extent. This is a way to improve and encourage students to use maximum of electronic information resources. Effective use of electronic information sources for retrieving needed information will have a profound impact on the learning and quality of research output by the students. Convenience and full-text availability appear to play roles in selecting online resources.

Kaur, Amritpal and Randhawa, Sarwan Singh (2010) discussed that the study objects to examining the use of electronic database in three universities of British Columbia. The study deals with the various aspects of the use of database such as familiarity with database, method of learning database use skills, frequency of database use, purposes for which the database are used, success rate in finding the information, problems in finding the information, features of a good database and the most preferred database. The results of the survey provide useful information about the use of database. Some suggestions are put forth to make the database more beneficial for studies and research purposes.

Mukherjee, Bhaskar and Prashant Kumar (2010) emphasized that for higher learning in universities, UGC-Infonet Digital Library Consortium helps to access the electronic resources. UGC-Infonet electronic journals work as a tool which has a positive impact on respondents. Most of the respondents searched electronic journals through search engines like Google, Yahoo etc. Most of the users were satisfied with the existing model of UGC-Infonet Consortia for getting access to online contents. The study reveals that to know the proper usage of electronic resources, personal visits, training, workshops, inviting feedback are necessary issues that helps. More awareness programmes should be organized to increase the use of electronic resources and to make them known the benefits of electronic information as compared to traditional sources. To understand information needs of users, it is important to examine the users searching techniques, what specific electronic sources they searched in comparison to others. As the respondents are satisfied with UGC-Infonet Consortium but on the other hand they demand more electronic resources in their areas of interest. So as a result training programmes should be organized to make them known about the availability and usability of information for their work as well

as library should also develop proper infrastructure for the effective utilization of electronic resources which would be of great help to the users.

Singh, Chauhan Jai Karan et. al. (2010) stated that present study focus on the use of electronic resources among the members of the Ratan Tata Library at the University of Delhi, India. The study presents the troubles faced by the research scholars, students and the faculty members and suggestions provided by them to improve the library services related to electronic resources. The result shows that the library users have much knowledge of using electronic resources like electronic books and electronic journals and suggested to install Wi-Fi and internet for good accessibility.

Swain, Dillip K. (2010) explained the use of e-information for the effective utilization of electronic resources with some suggestions to improve the scholarly need in the business schools of Orissa. It reveals that majority of students are aware of EBSCO and Emerald Management Xtra and they conveyed their interest in the use of e-journals, e-books, e-newspapers, e-reports and e-articles. With advent of information communication technology, students have many options for getting their required information along with traditional library services. In accessing electronic information students can get many facilities like quick browsing, compound access, retrieval speed, sharing, print and down loading comprehensive information coverage, and more so. Library professionals, policy makers and administrators have to take some serious innovative measures to improve the provision of e-services through some dynamic electronic movements in the wake of providing qualitative services towards students' flourishing exposure to global electronic information. The students has to search more e-resources to fulfill their scholastic needs.

Naved Ahmad and Nishat Fatima (2009) stated that Information and communication technology (ICT) enabled products and services, and the availability of online information resources have changed the way the services academic institutions and libraries now provide to their researchers. A variety of ICT products and services researchers use for their research work as these products prove very helpful and easy in finding needed information quickly and also help the researchers to access, manage, integrate, evaluate, create and communicate information more easily. It is found that researchers are not getting proper training/guidance and assistance from the staffs/librarians. So the library should arrange and organize

training programmes related to ICT. Now researchers can have access to a variety of information and scholarly journals online. It is found that the ICT has nowadays become an important technology in academic institutions as it plays a very important role in meeting information needs of the researchers and institution as a whole.

Khan, Abdul Mannan and Zaidi, S.M. (2009) reveals that majority of the research scholars are aware of the online database accessibility and mostly use them for their research work and to update subject knowledge. They stated that with the usage of online database, the quality of research work improves. The main problem faced by research scholars in using online database are lack of information on online database subscribed by university on their subjects/researchers. It reveals from analysis that most of the research scholars search and access online database directly and by links through online database and search engines whereas links through publisher website receives low priority. It was noticed that nearly 50% research scholars are satisfied with the infrastructure to support accessing online database in the AMU campus. Although the University is a member of UGC-Infonet Consortia and INSPEC for accessing online database and journals, but it is not enough to fulfill the needs of the research scholars. Therefore, it is recommended that AMU should join Consortia's both at national and international level to share the electronic information resources and services.

Singh, R. K. Joteen, Devi, Madhuri and Raychaudhury, Arup (2009) stated that the purpose of the study to know the usage of internet based services by users of Manipur University library alone with examine the difficulties and satisfaction level of user about internet based e-resources services. Most of the users visit library for getting reading material issued/returned, accessing internet and other purposes. Majority of respondents are internet users and use internet to download their desired information from different web based resources and websites followed by to keep themselves up-to-date through websites. Lack of power supply, limitation of online full text journal articles and limitation of internet access speed are major problem as users faced while accessing to information. After examining everything as a result we can say that library should increase number of computer of latest configuration and conduct training programme for the users. Library should increase the speed of internet access and also more e-resources for download.

Soyizwapi, Lindiwe and Hoskins, Ruth (2009) investigates the utilization of electronic database by postgraduate students at the University of KwaZulu-Natal, Pietermaritzburg's Faculty of Science and Agriculture in South Africa. The results of the study, which employed a quantitative approach, showed that several problems were encountered by the students in using the electronic database, thus, the need to improve access to database for all campus and off-campus users.

Togia, Aspasia and Tsigilis, Nikolaos (2009) emphasized that in present era electronic resources are one of the valued tools for education, knowledge and research. Besides traditional resources, these electronic resources provide updated, current information and accessibility of information without the geographical boundaries. The main purpose of the present study was to observe the use of electronic resources by the graduate students of Aristotle University of Thessaloniki. Questionnaire- based survey method is used to know about the awareness of resource, occurrence of use, preferred information sources by students, major problems while accessing electronic resources, main reasons of use and so on. It is found that internet search engines are used by most of the respondents in comparison to database and full text resources. Only few respondents became familiar through library training programs. Due to lack of satisfactory searching assistances users are unable in using electronic resources. Use of electronic resources is limited by graduate students. In order to attain full utilization of electronic resources library should take some initiatives and make the respondents informed about electronic resources, organize training programs, workshops, conferences and educate them about searching skills, so that respondents can search their desired, relevant information of their respective field whether for their study or research purpose.

Atakan, Cemal et.al. (2008) stated that present paper is a comparison of two survey questionnaires carried out in 2002 and 2005. The purpose of this paper is to incorporate the calculation of the effectiveness of the digital library and the value of multidisciplinary database in terms of user preferences and use frequency by academic ranking. The services of the Library Documentation Directorate for providing electronic resources have been evaluated throughout the findings of these two questionnaires. The activities were focused on the trainings for the use of the database according to the findings of the questionnaire conducted in 2002. On the

other hand the positive results of the informative presentations and training activities carried out were observed throughout the evaluation made in 2005. The result shows that the interdisciplinary database of Science Direct, Web of Science and Ebsco host have been the most popular database used for researching and reaching full texts most widely. In the second evaluation, Ebsco host database has been the only database which did not show remarkable increase in the use rate among the other database. It has been found from the result that a great majority of the academicians in all departments within our university are informed about the electronic library and also a great majority of them are using the database. According to the evaluation made it can be motioned that the most of the academic personnel prefer the training activities to be conducted online on the internet and priority will be given to the trainings for the use of database while planning the services. In total this paper is to cover the assessment of the effectiveness of the digital library and the value of multidisciplinary database in terms of user preferences and use frequency by academic ranking.

Bharati, M.S.Z. and Zaidi, Mustafa (2008) revealed that E-journals and E-database bring new challenges before the library and information professionals to provide full text access to scholarly publications to its users. The present study has clearly indicated that, the electronic resources are highly useful for the research and academic community in the present environment. In which the UGC-INFONET has to play a significant role to assist the academic community in the provision of this unique service to the academic and research community. Journals from 25 publishers across the globe can be accessed through the UGC INFONET. The result shows that most popular database among the user community are Emerald, Fly base, Science Direct, Document Image Database and Nature while on the other hand the E-journals listed under Black Synergy, Science Direct is highly used.

Chopra, H. S. (2008) explained that in every sphere of life Information Communication Technology has made extreme changes**.** Within a span of time, the working of traditional libraries has absolutely changed due to ICT. Now the libraries particularly of universities have started making maximum use of e-resources. The services of the library have enhanced with information technology and computerization. It saves the time of the staff as well as users too.

Mashusudhan, Margam (2008) focused that present study aims to explore the requirements and needs of users and usage of UGC-Infonet Library and Information Science e-journals by research scholars and students of DLIS in particular in the University of Delhi. It is found that e-journals play an important role in research and research scholars and students need significant electronic back issues too. It reveals that library should subscribe more e-journals and provide training in using e-journals.

Manhas, Rajeev (2008) stated that the present study explores the use and role of internet and electronic resources in dental sciences colleges and hospitals affiliated to Baba Farid University of Health Sciences in Faridkot. It reveals that curriculum of dental sciences should include internet and allied technologies and more electronic journals and database should ne subscribed by libraries.

Popoola, O. (2008) describes that there was a significant difference in faculty awareness of available library information products and services. In addition, they did not have sufficient knowledge of those library products and services pertinent to their teaching and research activities. The survey also revealed that the level of knowledge of faculty staff has positive relationship with the frequency of use, consultation with the librarians, faculty status and membership of library related committees. Due to low budget allocation as well as high inflation and currency exchange rate, keeping balanced collection development has been major headache of the library management in Nigerian universities. It is equally important that library management matches the needs of users, specifically faculty staff and students to the available information products and services. It is therefore recommended that library management in Nigerian universities, specifically the south-west zone, to create faculty awareness about the available information products and services.

Singh, Pankaj Kumar, Nazim, Mohammad and Singh, N. (2008) stated that in the present era of information explosion, online journals have become the vital part of information needs. Research community claimed online journals are the most important for their work. This study attempts to determine the extent of awareness and use of online journals by the users. It reveals in the study that majority of the users are aware about the online journals and most of the time they prefer online journals in comparison to print journals basically for their research work, for studying their course work followed by to update subject knowledge. Though online journals have

become a common source among the academic and research communities, besides that they face difficulties in using online journals. Users stated that so many online journals are not available in their subject and ever coverage of online journals does not suit to their research area. Online journals save the time of users but they face lack of training. The result shows that library should organize orientation and training programmes for users for effective and proper utilization of online journals. Number of computer should be subscribed in various subjects by the library. Librarian along with their professionals have to create helpful environment to encourage users and try to aware and motivate them for using online journals related to their subjects.

Sujatha, H. R. and Mahesh, V. Mudhol (2008) explained that electronic information communication has provided wide range of resources to satisfy their information needs. This study attempts to know the use of electronic information sources by the teachers/scientist, research scholars and postgraduate students. The main purpose of the study is to identify the frequency of using EIS, methods of learning to use EIS, benefits of EIS use, problems faced in the use of EIS and the satisfaction level of users in the use of EIS. Most of the respondents use EIS mainly for research purposes. Majority of the respondents browse the internet for their subject specific information website followed by use of e-journals. Today, the internet work as bridge between the scientific information and users which provide essential unlimited resources of information. The respondents use e-mail as a cheaper alternative to telephone calls for speedy delivery. Majority of users stated that they are getting access to more information and save their time to improve their professional competency due to the use of EIS. Library should take few measures to improve the use of EIS among teachers, research scholars and postgraduate students. More number of computers should be increased and orientation training programme should organize for maximum use of electronic information sources by academics.

Upadhyay, Navin and Chakraborty, Hirak Kanti (2008) describes the use of online journals and database and their awareness among researchers of IT-BHU. Most of the academic institutions spent huge amount for building collection of currently full text journals and providing access to online database and it is important to know the use of online resources which enhance the value of these resources. The study attempts to know the use of online journals and database provided through UGC-

Infonet, INDEST by the M. Tech students, research scholars and faculty members of Institute of Technology, Banaras Hindu University. It reveals from the study that due to large subject coverage they prefer Science Direct followed by IEL online, Springer online and Taylor and Francis which are multidisciplinary online journals. But use of online database is very poor in comparison to online journals because may be researchers are not aware about the benefits of online database. Most of the respondents indicate that they find and access online journals and database through search engines.

Asefeh, A. and Nosrat, R. (2007) explained that 70% of students were awareness of digital resources and 62% were aware of offline database and 19% were only using them through Central library LAN network. They investigate the relationships between awareness and use of digital resources among students in Isfahan University of Medical Sciences. About 70% were aware of online database, accessible via Central library website and 53% have used them. Infrequent periodic orientation and lack of education on use of offline database and fewer terminals connected to the server in the Central library, due to these factor students had less use offline database. Users are faced with problems like low speed connectivity and shortage of hardware facilities.

Haneefa K. Mohamed (2007) stated the use of information communication technology based services and resources by the different category of Central and state government users in special libraries in Kerala. This is an attempt to investigate any change after using ICT satisfaction level of users, problems faced by them and the opinion and suggestions of users. Majority of users used e-mail from the library followed by WWW. Users reported that ICT based resources and services are highly significant in their research/academic work. They opined that library professionals are helpful and the existing ICT facilities in their libraries were insufficient. But on the other hand most of users were not satisfied with the present application of ICT and inadequate ICT infrastructure as their reason for dissatisfaction followed by users are not trained for ICT based information services. Due to their dissatisfaction users wanted training in database searching. They agreed for workshop/orientation program on the use of ICT based resources and services. This study helps in making the services better in special libraries for proper utilization of the resources.

Nikam, Khaiser and B. Pramodini (2007) opined that e-journals and database have been revolutionized the environment of information in terms of print documents. The paper attempts to examine the use of e-journals and database by the users of University of Mysore alone with the utilization and satisfaction levels of users. The survey indicate that majority of the resources are fully aware of UGC-Infonet and most frequently used e-journals followed by e-database and e-books. Emerald, Flybase, Science Direct, Document Image Database and Nature are the most popular resources used by the users. About 50% of the resources are a little satisfied by the use of e-journals and e-database offered by UGC-Infonet and a good number of respondents consider printed journals are very important. Majority of respondents faced lack of guidance and training while accessing e-resources. The result shows that they need guidance and training to use of the e-resources and library professionals have to assist them for the best use of e-journals and database.

Shuling, W. (2007) stated that the present study explores the use of electronic resources in Shaanxi University of Science and Technology. It reveals from the data that 80% of respondents having little awareness about electronic resources and around 50% respondents use both printed and electronic resources followed by print periodicals.

Liu, Z. (2006) discussed that there is significant impacts of appearance and propagation of electronic resources and digital libraries on the use of print resources and traditional libraries. The study discovers the extent of using print and electronic resources to which graduate students in a metropolitan university. Among different disciplines reading preferences and use of print and electronic resources vary. Graduate students seem to expect a fusion of print and electronic resources and want to fulfill their information needs through a combination of print and online resources, even though reasons for supplementing another type of resource differ. Present study discussed the conditions that affect the selection of use between digital libraries and traditional libraries.

Doraswamy, M. (2005) described the usage and acquaintance of electronic information resources by the students in V. R. Siddhartha Engineering College Library, Vijay Wada. Questionnaire-based survey method is used to collect the data. It is found that around 61% students are familiar with electronic resources and 5.63%

have never used it. A small percentage of students, i.e. 2.5% of students used CD-ROM, 33.13% internet, 38.13 % e-mail, 36.87% search engines, and 21.25% use VRSECE website 'daily' respectively. The online database are used by 25% and VRSECE catalogue' once a month. 18.75% of students use online journals rarely. 42.50% of the students use electronic information resources for communication purposes. The main problems faced while using electronic information resources were lack of training and time.

Mathew, S. and Shuja, N. K. (2005) stated that this study identifies the use of e-resources by the faculty and research scholars of Cochin University of Science and Technology. In this survey, the use of e-resources under INDEST consortium, UGC-Infonet project, and the database subscribed to in the CUSAT library. The present study explore awareness of the users, user satisfaction, use pattern of e-resources, preference for print or electronic version etc. The problems faced are stressed and possible solutions are suggested.

Ahmad, Elhafiz Ibrahim (2004) stated that use of electronic resources effectually enhance the learning and research process in every discipline. This study directed to measure the usage and awareness of UAEU users of electronic resources. It is revealed that regularity of use of electronic resources is low. However respondents were satisfied with the electronic resources. Although library provides satisfactory access to a range of electronic resources but insufficient training and lack of awareness are the major factors behind the low use of electronic resources. As the faculty members of UAEU having good computer skills but it is not sufficient for effective use of electronic resources. For the proper utilization of electronic resources, every library should organize training programs. In the UAEU low use of electronic resources by respondents due to the increasing academic teaching pressure which decrease the focus of faculty members on research. The study rejected that slow response time and difficult usability of the library website discouraged the use of electronic resources in the UAEU too.

Bar-llan, Judit, Peritz, Bluma C. and Wolman, Yecheskel (2003) emphasized on the results of a survey of senior staff of the Israeli Universities to observe usage, patterns acceptance, perceived importance and satisfaction with electronic database and electronic journals licensed through MALMAD Consortium. It is found that

individual institutions and libraries sometimes give access to additional data sources, which are also accessible through the web. The result serves as inputs for MALMAD's future policy decisions. The present study shows that access to the Web influences usage, thus we also wanted to learn about the ways faculty members access the Web, whether they were satisfied with their connectivity, and whether they needed frontal or distance instruction in order to better utilize the services. The advantages and disadvantages of electronic services identified by the Israeli academics are very similar to those in other studies. Speed, accessibility, and search ability were seen as the main advantages, while the main disadvantages were lack of access, lack of coverage, and low readability.

Cohen, Laura B. and Calsada, Matthew M. (2003) explained that academic library websites commonly provide access to web accessible research database and full text electronic journals which is core element. This study presents a case study to move from static web pages listing online database and electronic journals separately to database generated pages that provide integrated access to its combined online collection. Library should consider the inclusion of e-texts such as electronic books and websites such as those found in pathfinders and research guides. Libraries therefore should be thinking about database projects in the light of constructing unified access to the research collections. The decision to implement web-accessible projects must lie in the interface what is needed is evaluation, visual cues, presentation flexibility and enhanced information to assist users in accessing a diversity of resources under a variety of conditions.

Singh, P. (2003) emphasized that IT is gaining fast access in Libraries, Information Centres and Documentation Centres to meet their moving requirements and provide value-added and need-added services to its users. Through internet one can have direct access to computerized database via terminals or the needed information can be made available to the client, irrespective of where the information is available. Today the emphasis in the libraries is shifting from 'acquisition of documents' to 'access to information'. Now library professionals are expected to be well familiar with all these developments to meet the challenges of today. Today any reference librarian can provide a wealth of information by getting non-print form of documents such as CD-ROMs and online database. Most of the libraries today are going for computerization

and are acquiring reference sources in CD-ROMs and online forms. It is particularly important and necessary to evaluate the internet resources or information. Since anyone can publish anything on web and it is often difficult to determine authorship of web sources, therefore, the responsibility of the librarian increases manifolds to evaluate such resources still more carefully. Most important thing about internet sources is to know links given to other web pages are current as well as the qualitative in nature.

Talija, Sanna and Maula, Hanni (2003), stated that in different discipline there are major differences in the search methods used, and the use of electronic journals and database likewise varies according to field. The goal of this study is to add the development of a domain analytic approach for explaining the use and non-use of e-journals and database. They identify and define factors to account for disciplinary differences in e-journal use, outline hypotheses to be tested more thoroughly in future research, and test them initially on a limited data set. The study explores scholars' use of networked resources in four different disciplines: nursing science, literature/cultural studies, history and ecological environmental science. It is found that e-journals and database are likely to be used most heavily in fields in which directed searching is the dominant search method and topical relevance the primary relevance type, and less in fields in which browsing and chaining are the dominant search methods and paradigmatic relevance the primary relevance type.

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CHAPTER 3
RESEARCH METHODOLOGY

CHAPTER- 3
RESEARCH METHODOLOGY

The aim of this chapter is to bring audience an overview of research methodology adopted to conduct the study and also records methods, techniques and tools used for collection of data from the sample of the population.

3.0 INTRODUCTION

In this era of development, research is treated as a resource of development and improvement, which refers to a search for knowledge. Research discovers new facts, interpret theories and laws, represent acute and comprehensive investigation, retrieve current laws and theories in the context of newly revealed truths and apply for concrete determination.

Research is systematic quest for knowledge that is characterized by disciplined enquiry. Efficient and effective approach to expand knowledge is the conduct of special planned and structured investigations. **(Busha & Harter, 1980)**[1]

Research as the systematic and objective analysis and recording of controlled observations that may lead to the development of generalization, principles or theories resulting in prediction and possibly ultimate control of events. **(Best & Khan, 1959)**[2]

Research in all fields in human activities means continued search for knowledge, understanding and developing of new ideas, and expanding the horizons and frontiers of the existing knowledge. This had been a constant and continuous process in the universe of knowledge. **(Khan, 1994)**[3]

3.1 RESEARCH DESIGN

Research design is conceptual structure within which research is conducted, it constitutes the blue print for the collection, measurement and analysis of data. Research design can be defined as "the arrangements of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose with economy in procedure". **(Mouton, 1990)**[4]

The main aim of research design is to plan and structure a given research project in such a manner that the eventual validity of the research findings is maximized. The existence of the variety of research methods, paradigms, preferences and differences in phenomena suggests that it is erroneous to assume that a single correct research methodology is appropriate for all studies exist.

The survey method was selected as the most appropriate design tool to obtain a large sample which depend on a questionnaire implement. Survey is used by academic library research to collect data and it identify user needs and priorities and define user's interests opinions, attitudes and characteristics/demographics as well as user priorities in finding information. **(Verhoeven, 1990)**[5]

With the help of survey method using a structured questionnaire reveals demographic information about the respondents' usage pattern of online databases and their access.

3.2 RESEARCH METHODOLOGY

Research methodology is a scientific approach to solve the research problem undertaken for the study. This is a science of studying different tools and techniques available and to be adopted for collecting desired information for the solution of problem identified by the researcher. Survey research is characterized by the selection of random samples from large and small population to obtain empirical knowledge of contemporary nature. This knowledge allows generalization to be made about characteristics, opinions, beliefs, attitudes and so on of the entire population being studies. The methods of survey research allow investigators to gather information about target population without undertaking a complete enumeration. **(Busha & Harter, 1980)**[6]

Research methodology is the most important element in the context of a particular research study, which aim to pay towards the development of awareness and knowledge, as well as defines and enlightens the methodology used for the study.

- **Scientific Method:** In the wordings of Karl Pearson Scientific methods is the pursuit of truth as determined by logical considerations. The ideal of science is to achieve a systematic interrelation of facts. Scientific Methods attempts to

achieve this ideal by experimentation, observation, logical arguments from accepted postulated and a combination of these three in varying proportions. **(Kothari, 1994)**[7]

- **Historical Method:** Historical methods of research is the systematic collection and objective evaluation of data related to past occurrences in order to test hypothesis concerning causes, effects, or trends of those events which may help to explain present events and anticipate future events. **(Gay, 1981)**[8]

- **Experimental Method:** Experimental method differ from other research approaches through is greater control over objects of its study. The researcher strives to isolate and control every relevant condition which determines the events investigated, so as to observe the effects when the conditions are manipulated. Chemical experiments in the laboratory are the purest form of this type of research. **(Walliman, 2005)**[9]

- **Descriptive Method:** It studies the relationship or circumstances that occur practices, beliefs, point of views or attitudes towards the going process which produce effects that are being felt or trends that are developing. More simply it is all about describing people who take part in the study.

- **Case Study Method:** Case Study research method as an empirical inquiry that investigates a contemporary phenomenon within its real life context, when the boundaries between phenomenon and context are not clearly evident; and in which multiple sources of evidence are use. **(Yin, 1984)**[10]

- **Survey Method:** A organized gathering of data at a particular time from a relatively large number of cases and is not related with the appearances of the individual. It determine the regularity of occurrence of a particular event.

3.3 OBJECTIVES OF THE STUDY

The objectives of the study is to analyze dependency of the research scholars on online databases and perceived impact of it on their academic output and the problems faced by them while using online databases along with suggestions to

improve the existing conditions. The study has been designed with a view to achieving the following objectives:

- The main aim of the study is to find out the existing situation of different types of online databases, facilities and services of University Libraries and their utilization by the users.
- To identify the extent of awareness and usage of online databases by the faculty members and research scholars.
- To find out the most frequently used databases by the users.
- To identify the searching techniques/methods used to retrieve the information from online databases.
- To determine the impediments faced by the users while accessing and using the online databases in the library.
- To know the satisfaction level of the users as regards to the infrastructure facilities and training provided to access the databases.
- To trace out the impact of online databases on the research work of the universities.
- To estimate the productivity and quality of information retrieved through online databases.

3.3.1 Hypotheses

Hypothesis is a predicative statement, capable of being tested by scientific methods, that relates an independent variable to some dependent variable. The word hypothesis is derived from two words "hypo" which means under and "tithenas" means to place. Hypothesis is in a sense a type of supposition or assumption.

"Ordinarily, hypothesis simply means a mere assumption or some supposition to be proved or disproved. But for a researcher, hypothesis is a formal question that he intends to resolve. Thus hypothesis may be defined as a proposition on a set of propositions set forth as an explanation for the occurrence of some specified group of

phenomena either asserted merely as a provisional conjecture to guide some investigation or accepted as highly probable in the light of established facts. Quite often a research hypothesis is a predicative statement, capable of being tested by scientific methods that relates an independent variable to some dependent variable". **(Kothari, 1994)[11]**

An imperative and necessary tools of a scientific study is hypotheses. No scientific study can be completed without hypothesis. Hypotheses works like an instrument, which can be tested and proved to be true and false. It helps in making the way for solution of the problem. For the purpose of the present study the following hypotheses were formulated so as to make the present study more scientific, purposive and unequivocal.

Hypothesis 1

The maximum number of users have considerable awareness about online databases and using it in their fields.

Hypothesis 2

Online databases are the preferred means of electronic resources used in the institutions.

Hypothesis 3

There is exists a significant difference in adopting searching techniques/methods while using various types of online databases by different levels of users.

Hypothesis 4

Users are not fully satisfied in accessing databases and also for not providing adequate training.

Hypothesis 5

The online databases have an enormous impact on research conducted in universities.

Through questionnaire, interview and observation the above hypotheses were tested through raising question in collection of data and it was found that facets which were comprised in the hypotheses have sound relation directly to achieve objectives of the study.

3.3.2 Statement of the Research Problem

To accomplish the aims and objectives of the study, there is a prerequisite of clear and distinct statement of the problem. The problem selected for the present study entitled **"*Use of Online Databases in Science and Technology in Select University Libraries of Delhi: A comparative study*".** The problem has been selected by the investigator to understand the use and impact of online databases in university libraries. The faculty members and research scholars have realized the advantages of online databases and seem to have accepted them as the primary medium for their research work. At present most of the university libraries are actively engaged in incorporating online databases and providing faster access to online databases to meet the academic community's expectations. It is essential to know how far the users are making use of it. Hence a need is feel to investigate the use and to examine problems related to the retrieval of required information and make suggestions for effective and efficient use of online databases.

3.3.3 Definition of Terms

The words Use, Online Database, University Library, DU, JMI, JNU, Delhi, Comparative and Study are defined separately as follows:

Use:

As per *Collins English Dictionary* 'Use' is "to put into service or action, employ for a given purpose. **(Black et.al. 2009)**[12]

According to *Oxford Dictionary and Thesaurus* 'Use' is defined as "the came to act or serve for purpose, bring into service a treat in a specified way." **(Wehmiere, 2003)**[13]

Online:

Controlled by or connected to a computer or to the internet **(Wehmiere, 2003)**[14]

Using a computer to communicate with other computers, or of or about a computer that is connected to another computer. **(Procter, 1996)**[15]

Database:

An organize set of data that is stored in a computer and can be looked at and used in various base. **(Wehmiere, 2003)**[16]

A large amount of information stored in a computer system in such a way that it can be easily looked at or changed. **(Walter, 2005)**[17]

University:

A university is an institution of higher education and research which grants academic degree in various subjects and typically provides undergraduate education and post graduate education. **(Wikipedia, 2015)**[18]

Library:

A place, building, room or rooms set apart for the keeping and use of collection of books. **(Wehmiere, 2003)**[19]

A library is a collection of sources of information and similar resources, made accessible to a defined community for reference or borrowing. **(Wikipedia, 2015)**[20]

University of Delhi (DU):

The University of Delhi is the premier university of the country and is known for its high standards in teaching and research and attracts eminent scholars to its faculty.The University has grown into one of the largest universities in India.

Jamia Millia Islamia (JMI):

Jamia Millia Islamia, an institution originally established at Aligarh in United Provinces, India in 1920 became a Central University by an act of the Indian Parliament in 1988. A central university located in New Delhi offering integrated education from nursery to research in specialized areas, is a saga of dedication, conviction and vision of a people who worked against all odds and saw it growing step by step.

Jawaharlal Nehru University (JNU):

JNU is located in New Delhi, one of the premier university of India, named after the Indian Prime Minister Jawaharlal Nehru. The very Nehruvian objectives embedded in the founding of the University, national integration, social justice, secularism, the democratic way of life, international understanding and scientific approach to the problems of society had built into it constant and energetic endeavor to renew knowledge through self-questioning.

Delhi:

Delhi is the capital of India, locally known as Dilli and also by National Capital Territory of Delhi, where the libraries under the study i.e. DU, JMI and JNU are situated. In India Delhi is largest metropolis by area and the second-largest metropolis by population.

Comparative:

According to Cambridge Advanced Learner's Dictionary the term 'Comparative' is defined as "the form of an adjective or adverb that expresses a difference in amount, in number, in degree or quality; comparing different things" **(Walter, 2005)**[21]

Study:

As indicated by Collins English Dictionary 'Study' means "to investigate or examine by observation and research" **(Black, 2009)**[22]

3.3.4 Need and Importance of the Study

There is a big challenge emerge for libraries and users both due to the exponential growth of electronic information in the universe of knowledge. Online databases service is an organized way, value added in nature and time saving for an individual. It became very essential for libraries as well as for users to have an awareness about the access and use of online databases. Use of online databases plays essential role in improving the research and development activities and improving the productivity of an individual. Online databases keep up-to-date- with the existing

activities in the specific fields and related areas, save the time and speedy to access. To access the required online databases various search and retrieval techniques are present which helps in gaining knowledge. The need of the present study may be summarized through the following points:

- To provide easy access to the users to volumes of information in the libraries.
- To review the present scenario in university libraries as regards different means of promotion and maximizing the use of online databases.
- To provide access for the end-users to library resources.
- To determine the feasibility of online databases in university libraries.
- To evaluate the impact of online databases and services so as to add new dimensions to it.
- To develop awareness about online databases.
- To avail maximum benefits from online databases.

3.3.5 Scope and Significance of the Study

An important part of the collection in the libraries is online databases. These are either uploaded on the library website and need some mechanical support to consult, or disseminate via internet. Since long time online databases have become a fundamental part of libraries and measured as essential properties of the collection of any library. For optimum utilization of these resources there is need have proper organization of online databases becomes very important. In order to have the optimal use of these online databases, is a need to relate the organization of online databases to their user. The most effective means of evaluating the online databases is user survey and its use in a particular organization.

The problem selected for the present study entitled "Use of Online Databases in Science and Technology in Select University Libraries of Delhi: A comparative study", deals with the use and impact of online databases in university libraries. The faculty members, research scholars have realized the advantage of online databases and seem to have accepted them as the primary medium for their research work. At present most of the university libraries are actively engaged in incorporating online

database and providing the users much needed primary research information. University libraries are providing faster access to online database to meet the academic community's expectations. It is essential to know how far the users are making use of it. Hence a need is feel to investigate the use and to examine problems related to the retrieval of required information and make suggestions for effective and efficient use of online databases. The present study has been targeted to give a new approach to university libraries and use of online databases.

The survey will also try to identify the usage level of different online databases and various difficulties encountered by the users while accessing online databases on website. At last some noteworthy points is laid down by the study in the form of suggestions derivative from the analysis of data which help in refining the quality of online databases and also improve the use of online databases in studied libraries and also in other university libraries of the country.

3.3.6 Limitations of the Study

Following are the major limitations of the study:

- The geographical coverage is limited to Delhi only.
- The investigator has selected only three universities i.e. University of Delhi, Jamia Millia Islamia and Jawaharlal Nehru University.
- The present study consist only the users i.e. Faculty members and Research scholars of online databases in all select university libraries.
- The study is concerned with online databases in science & technology disciplines only.
- As the study is conducted exclusively in science & technology field, the conclusions drawn may not be universally applicable to other fields of studied universities in or outside India.

3.3.7 Organization of the Study

The study has been divided into five chapters including introduction and conclusion. At the end of the work bibliography and annexure are also included.

Chapter I- Introduction

The introductory chapter provides an ephemeral history of growth and development of online databases around the world. It outlines its characteristics, types, advantages and disadvantages, searching techniques, barriers and online security.

Chapter II- Review of Related Literature

Review of related literature provides comprehensive knowledge about the topic and helps in getting current status of research in progress in India or outside. A wide assessment of around 80 related literature has been piloted on the topic. The materials are selected from current print journals, electronic journals, reports, books and conference/seminar proceedings.

Chapter III- Research Methodology

This chapter deals with different methods followed in the study. The study is based on survey, questionnaire and other technique such as interview, observation etc. It sets the objectives, hypotheses, scope, limitations of the study. It includes survey population, pilot study and references.

Chapter IV- Data Analysis and Interpretation

Using standard statistical methods the collected data has been tabulate and analyzed. This chapter evaluated the performance of each university about online databases and related activities. The chapter has been divided into two parts. Part A deals with the response provided by the librarians of all university library. Part B includes the responses given by the faculty members and research scholars of under Study University.

Chapter V- Conclusion, Findings and Suggestions

This chapter covers findings, suggestions, conclusion of the study. Areas for further research have also been suggested.

Bibliography And Appendices

The last part of thesis contains a detailed bibliography of more than 200 research literature on various aspects of online databases. The bibliography is prepared according to APA style.

Appendix- A

The appendix covers the questionnaires for librarians.

Appendix- B

The appendix covers the questionnaires for users.

Appendix- C

The appendix covers the profile of university libraries.

Appendix- D

The appendix covers the paper published by the researcher.

3.4 METHODOLOGY ADOPTED

In scientific investigation methodology has its own inference and significance. In scientific investigation proper design, use of standardized tools and tests adequate sample buy using sampling technique is necessary. There are several methods of collection of data, which can divided into two, quantitative method which included verification, questionnaire and interview method and second qualitative methods comprises of focus, observation and case study method. The survey method was considered most applicable for this study. There are various techniques available for collecting data such as Questionnaire method, Interview method, Observation method, Interview method by telephone. For the collection of data investigator used questionnaire, observation and interview method. The study focuses on the use of online databases in science and technology among the faculty members and research scholars in the select university libraries of Delhi. The questionnaire comprised important points from the research question and was distributed.

3.4.1 Pilot Survey

In order to test the validity of the questionnaires, investigator did pilot survey to confirm whether the questionnaires was meaningful and questions are relevant for the purpose of the study. So the investigator distributed 60 questionnaires among the users of the three under study libraries. The pilot study helped in changing the questionnaire which assisted in collecting accurate and complete data.

3.4.2 Research Sample

At present, the university library have a fair amount of registered members. So it is not possible to make survey of such vast user's community. So samples were selected by using stratified random sampling method. The questionnaires were distributed personally among librarian and users and around 25% of the total population has been taken as sample size of library users.

University Library Wise Sample Distribution

3.4.2.1 University of Delhi, New Delhi

A sample of 200 questionnaires were distributed among the faculty members of University of Delhi (DU) and total 167 questionnaires were returned back, out of which 17 questionnaires were rejected because of incomplete responses from the respondents. Thus total 150 complete fill questionnaires were selected by investigator for analysis.

Similarly a sample of 200 questionnaires were distributed among the research scholars of DU and total 170 questionnaires were returned, out of which 20 questionnaires were rejected due to incomplete information and finally only 150 questionnaires were selected for analysis.

3.4.2.2 Jamia Millia Islamia University, New Delhi

A sample of 200 questionnaires were distributed among the faculty members of Jamia Millia Islamia University (JMI) and total 165 questionnaires were returned, out of which 15 questionnaires were rejected due to incomplete information and finally only 150 questionnaires were selected for analysis.

Again a sample of 200 questionnaires were distributed among the research scholars of JMI University and total 185 questionnaires were returned back, out of which 35 questionnaires were rejected because of lacking of information and finally 150 questionnaires were selected for analysis.

3.4.2.3 Jawaharlal Nehru University

A sample of 100 questionnaires were distributed among the faculty members of Jawaharlal Nehru University (JNU) and total 94 questionnaires were returned back, out of which 6 questionnaires were rejected because of incomplete information and finally 80 questionnaires were selected for analysis.

Similarly a sample of 200 questionnaires were distributed among the research scholars of JNU and total 175 questionnaires were returned back, out of which 25 questionnaires were rejected due to incomplete information and finally 150 questionnaires were selected for analysis.

3.4.2.4 Total Number of Sample Size and Distribution

A total number of 500 questionnaires were distributed among the faculty members under studied libraries, out of which total 426 questionnaires were received back, out of which investigator finally selected 380 responses from the users and 46 questionnaires were rejected due to incomplete information.

Similarly a total number of 600 questionnaires were distributed among the research scholars in all these libraries, out of which 530 questionnaires were received back, out of which investigator finally selected 450 questionnaires from the respondents and 80 questionnaires were rejected because of incomplete information.

University	**Questionnaires**							
	Faculty Members				**Research Scholars**			
	Distributed	Received	Selected	Rejected	Distributed	Received	Selected	Rejected
DU	200	167	150	17	200	170	150	20
JMI	200	165	150	15	200	185	150	35
JNU	100	94	80	14	200	175	150	25
Total	500 (100%)	426 (85.2%)	380 (76%)	46 (9.2%)	600 (100%)	530 (88.33%)	450 (75%)	80 (13.33%)

Lastly three questionnaires were distributed to the librarians of three libraries and all the questionnaires were received back and selected for the analysis of data.

3.4.3 Tools and Techniques used for the study

In survey research commonly with the help of questionnaire which is a series of pre-determined questions, data is acquired. In any research questionnaire is most standard tool for data collection. For qualitative and quantitative research, in present study questionnaire, including observation and interview method have used as tools for data collection. These questions give a knowledge about the awareness about online databases, use of online database and library services, information needs of users, their problems, satisfaction etc. Keeping in mind the objectives of the study, two sets of questionnaires were designed (Annexure- i and Annexure- ii), first set for the librarians and second set for the user's community.

3.4.3.1 Questionnaires to Librarians

Under the study, by visiting the library, researcher approached directly to administered questionnaire to librarian and handed over to collected relevant information. Investigator personally not only accompanied an interview with the librarians but also consulted the library staffs to clear some doubts and asked few things related to the library. The questionnaire consists various aspects of online databases which is present in the following table:

Table 3.4 Parts of Librarian Questionnaire

S. No.	Broad Areas of Questions	No. of Questions
1.	The Institute	5
2.	Budget	2
3.	Library Software and Network	2
4.	Online Database Services	10
5.	Policies Related to Online Database	6
6.	Users Training	1
7.	Influence of Online Database	3

3.4.3.2 Questionnaire to Users

For collecting data, the investigator personally visited all three libraries and advanced to seek the permission of librarians to allocate the questionnaires among the faculty members and research scholars. Questionnaires were personally distributed by the investigator among the users in the three respective libraries, comprising open ended, closed ended and multiple choice questions. The questionnaire covered the various aspects concerned with online databases and services which is shown in the table.

Table 3.4 Parts of Users Questionnaire

S. No.	Broad Areas of Questions	No. of Questions
1.	Use of Library Services	6
2.	Frequency and Use of Online Databases	13
3.	Awareness about Online Databases	4
4.	Influence on Academic	4
5.	Challenges and Satisfaction	4

The response rate from the users i.e. Faculty members and research scholars in all the three university libraries of Delhi i.e. DU, JMI and JNU, are to be found 84.2%, 87.5% and 89.6% which signifies satisfactory sample for present study.

3.4.3.3 Interview Technique

In the present study, besides questionnaire technique, interview technique is also adopted. Personal talks and discussion with the librarian helped in collecting the information related to online database.

3.4.3.4 Observation Technique

In the present study investigator observed overall activities, library functions and services offered to the users. It helped in understanding the utilization of online databases and their opinions and reactions while accessing it.

3.4.4 Resources of Data

To study the use of online databases the following primary sources were used to collect the data:

1. Journals/Periodicals
2. Brochures
3. Library's Websites
4. Annual Reports
5. Responses received from the librarians and users

The secondary and tertiary sources also consulted to collect data, is listed below:

1. Reference Books
2. Dictionaries
3. Encyclopedias
4. Directories

3.5 DATA ANALYSIS AND INTERPRETATION

The present research work is based on survey method. Two sets of questionnaires were prepared, administered and analyzed qualitatively by the investigator. The data collected through users were structured, analyzed, coordinated, associated, tabulated and interpreted by using tables, graphs, percentages, multiple statistical techniques.

3.6 CONCLUSION

The chapter describes the detail of the used methodology to conduct the study in detail under the topics of research design, research sample, data collection procedure, analysis of data. Questionnaires were distributed to the faculty members and research scholars under study for collection of data. The questions were easy and simple. To proceed the study, two sets of questionnaires, one for librarians (Appendix-i) and second for users (Appendix-ii) were designed for collection the data.

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CHAPTER 4
DATA ANALYSIS AND INTERPRETATION

CHAPTER- 4
DATA ANALYSIS AND INTERPRETATION

This chapter contains the analysis of responses received from the Users and Librarians of Select University Libraries of Delhi. The analysis of questionnaires has been carried out with the help of graphs, tables, textual presentations etc. Despite of having significant difference in tabular form, the investigator took keen interest to prove the difference by applying statistical tools also.

The aim of this study is to analyze the use of online databases among the university libraries users in Science and Technology, the topic of the present study being **"*Use of Online Databases in Science and Technology in Select University Libraries of Delhi: A comparative study*"**. The topic covers three prominent university libraries located in Delhi i.e., University of Delhi, Jamia Millia Islamia (University) and Jawaharlal Nehru University.

For the present study two sets of questionnaires were designed to collect the necessary responses from the users. First set of questionnaire was designed for Librarians, which consists of two parts. Part A gathers general information about the library, its infrastructure, library statistics etc. Part B deals with the online databases status, criteria of selection, collection development policy and other essential aspects related to online databases. It includes 29 open ended and closed ended questions referring to different aspects of libraries and online databases service.

Second set of questionnaire i.e. Part C is concerned the user's responses about the online databases, their awareness, purpose, frequency of using, satisfaction level, and training need. It includes 30 open ended and closed ended questions related to different aspects of libraries and online databases.

PART – A (LIBRARIAN'S POINT OF VIEW)

The Institute

Table 4.1.1 Year of Establishment of Libraries

Libraries	DU	JMI	JNU
Establishment	1922	1920	1971

DU: University of Delhi, JMI: Jamia Millia Islamia, JNU: Jawaharlal Nehru University

Table 4.1.1 shows that University of Delhi Library was established in 1922, followed by Jamia Millia Islamia University, established in 1920 and Jawaharlal Nehru University Library in 1971. It reveals that JMI is the oldest university library of select libraries.

Table 4.1.2 Library Staff

Designation	Strength		
	DU	JMI	JNU
University Librarian	1	1	1
Deputy Librarians	8	1	3
Archivists	-	1	-
Assistant Librarians	29	6	13
Information Scientists/Officers/Documentation Officer	5	1	-
Professional Assistants	62	12	26
Curators (Assistant Conservationist)	-	1	-
Semi Professional Assistants	88	9	21
Library Assistants	-	2	-
Technical Assistants	-	-	1
Library Clerks	-	-	-
Library Attendants	121	19	25
Others	-	8	20
Total	**314**	**61**	**110**

Table 4.1.2 shows the staff profile of select libraries. It is clear from the table that DU has maximum no. of staff, i.e. 314 followed by JNU and JMI in that order.

4.1.3 Library Collection

Items	Print			Electronic		
	DU	JMI	JNU	DU	JMI	JNU
Books	17,89,119	5,40,000	5,80,965	1,30,102	45,765	1,00,110
Current Journals	1563	410	775	43,965	7,110	20,750
Bound Journals	3,66,000	22,200	1,08,752	-	-	-
Online Databases	-	-	-	49	40	50

Other Items

Table 4.1.3 presents that DU has the highest collection, i.e. 17 Lac, whereas JMI and JNU have 5 Lac. JNU has highest online database collection, i.e. 50, followed by DU with 49 and JMI has 40 online databases.

4.1.4 Library Users in Science & Technology

Category of Users	Strength		
	DU	JMI	JNU
Faculty Members	510	450	310
Research Scholars	490	550	845

Table 4.1.4 reveals that DU has highest number of faculty members, followed by JMI, faculty members and JNU has only 310 faculty members. On the other hand JNU has highest number of research scholars, i.e. 845, followed by JMI with 550 registered research scholars and DU has 490 research scholars.

It is clear from the table that DU has highest number of faculty members, whereas JNU has highest number of research scholars.

Budget

4.1.5 Library Budget

Budget	Name of Library		
	DU (in Rs)	JMI (in Rs)	JNU (in Rs)
Annual Budget	4.75 crore	3.50 crore	4 crore

Table 4.1.5 shows the current annual budget (2015-16) of all three libraries. DU has highest annual budget, i.e., 4.75 crore followed by JNU, i.e., 4 crore and JMI has lowest annual budget, i.e., 3.50 crore.

Library Software and Network

4.1.6 Member of Library Networks

Networks	Name of Library		
	DU	JMI	JNU
DELNET	✓	✓	✓
INFLIBNET	✓	✓	✓

Table 4.1.6 clearly presents that all selected libraries are members of DELNET and INFLIBNET, the prominent library networks.

4.1.7 Library Software

Name of University Library	DU	JMI	JNU
Software Used	Troodon	Libsys 7	VTLS- Virtua

Table 4.1.7 shows that all select libraries are using different library software. DU is using Troodon software, JMI is using Libsys 7 and JNU is using VTLS-Virtua library software.

PART- B (ONLINE DATABASES)

Online Database Services

Table 4.2.1 Separate Online Databases Centre

Name of University Library	DU	JMI	JNU
Yes	✓	✓	-
No	-	-	✓

Table 4.2.1 clearly indicates that DU and JMI library has separate online databases centre, while JNU does not have any.

Table 4.2.2 Number of Terminals to access Online Databases

Name of University Library	DU	JMI	JNU
Terminals	300	100	200

Table 4.2.2 reveals that DU library has 300 terminals to access online databases by users, followed by JNU with 200 terminals while JMI has 100 terminals.

Table 4.2.3 Working Hours for Online Database Centre

Hours	Name of Libraries		
	DU	JMI	JNU
Below 6 hours	-	-	-
6-8 hours	-	-	-
8-10 hours	-	-	-
Above10 hours	✓	✓	✓

Table 4.2.3 shows that in all select libraries, working hours for online databases centre is more than 10 hours.

Table 4.2.4 Number of Library Professionals in Online Database Centre

Name of University Library	DU	JMI	JNU
Professionals	8	3	5

Table 5.2.4 clearly indicates that in DU 8 professionals have been looking after the online databases centre followed by JNU with 5 professionals, whereas JMI is having 3 professionals to help the users in online databases centre.

Table 4.2.5 Online Databases accessed through UGC-INFONET

Online Databases	Name of Libraries		
	DU	JMI	JNU
E-Journals	7832	7000	8271
Full Text Databases	18	18	22
Bibliographic Databases	2	6	3
Others	2	1	1

Table 4.2.5 reveals that more than 7000 E-journals accessed through UGC-INFONET in all select university libraries, (led by JNU), whereas 18 full text databases in DU and JMI and 22 full text databases in JNU and a very few Bibliographic Databases in select university libraries

Table 4.2.6 Member of Library Consortia

Name of University Library	DU	JMI	JNU
Library Consortia	UGC – infonet	UGC infonet	UGC infonet
	INDEST	INDEST	INDEST

Table 4.2.6 shows that DU, JMI and JNU library all are the members of UGC infonet and INDEST Library Consortia.

4.2.7 Collection of Online Databases

Online Databases	2011			2012			2013			2014			2015		
	DU	JMI	JNU	DU	JMI	JNU	DU	JMI	JNU	DU	JMI	JNU	DU	JMI	JNU
Open access	58	16	14	58	16	14	58	18	16	52	20	18	48	20	20
Through UGC-INFONET	20	24	22	20	24	22	21	24	22	22	24	22	24	24	22
Through other consortia	3	3	2	3	3	2	4	3	3	3	6	2	6	3	4
Through subscription	12	6	15	15	6	20	18	6	23	23	10	27	-	10	30

Table 4.2.7 indicates the year wise collection of electronic/ online databases in all select university libraries, which shows minor variations.

Table 4.2.8 Medium of Online Database Services

Medium	Name of Libraries		
	DU	JMI	JNU
CD-ROM Network	-	-	-
Internet via their website	✓	✓	✓
Commercial Online service Vendors	✓	-	✓
Others	-	Through LAN & Remote Login	-

Table 4.2.shows that DU and JNU library both provide online databases services through internet via their website and commercial online service vendors, whereas JMI library provide online databases services through internet and LAN and remote login.

Table 4.2.9 Bibliographic Databases

Full Text Databases	Name of Libraries		
	DU	JMI	JNU
ACM Digital	✓	✓	✓
American Chemical Society	✓	✓	✓
American Institute of Physics	✓	✓	✓
American Physical Society	✓	✓	✓
American Society for civil engineers	-	✓	-
American Society for Mechanical engineers	-	✓	✓
American Society for Microbiology	✓	-	✓
Bentham Science	**Deleted**	-	✓
Cambridge University Press	**Back Files**	✓	✓
EBSCO	-	✓	✓
Emerald Insight	-	✓	✓
Elsevier Science	✓	-	✓
IEEE	✓	✓	✓
Indian Institute of Physics	✓	✓	✓
Nature	✓	✓	✓
Oxford University Press	✓	✓	✓
Portland Press	✓	✓	✓
Project Euclid	✓	✓	✓
Project Muse	✓	✓	✓
Proquest	✓	-	✓
Royal Society of Chemistry	✓	✓	✓
Science Direct	✓	✓	✓
SIAM	✓	✓	✓
Springer Link	✓	✓	✓
Taylor & Francis	✓	✓	✓
Wiley Inter Science	✓	✓	✓
Wiley Online	✓	✓	✓
Bibliographic Databases			
ISID	✓	✓	✓

JCCC	-	✓	✓
LISA	✓	-	-
LISTA	✓	-	✓
MathSciNet	✓	✓	✓
SciFinder Scholar	✓	✓	✓
SCOPUS	✓	✓	✓
Web of Science	✓	✓	✓

Table 4.2.9 shows the list of full text and bibliographic Online databases, which are being accessed by faculty members and research scholars in the library. It is also evident from the table that the similar online databases are accessed by all library users.

Policies Related To Online Databases

Table 4.2.10 Criteria for selecting Online Databases

Criteria	Name of Libraries		
	DU	JMI	JNU
Cost Effectiveness	✓	✓	✓
Subject Relevance	✓	✓	✓
Quantity to meet user's needs	✓	✓	✓
Currency of Information	✓	✓	✓
Authenticity of Information	✓	✓	✓
Back Issues Facility	✓	✓	✓
After Sale Maintenance	✓	-	✓
Period of Access	✓	✓	✓
Added Value	✓	✓	✓
Distributed Access	✓	✓	✓
Legal Issues	✓	✓	✓
Ease of Accessibility	✓	✓	✓

Table 4.2.10 shows that all select university libraries support these criteria for selection of online databases, but JMI library does not take after- sale maintenance criteria.

Table 4.2.11 Criteria for Selection of Online Databases (User's Point of view)

Criteria	Name of Libraries		
	DU	JMI	JNU
User recommendations	✓	✓	✓
LIST services	✓	✓	-
Surfing electronic information research website	-	-	✓
Consulting other libraries	-	-	✓
Scanning catalogue	-	✓	✓
News group	-	✓	-
Free Online Trial Access	✓	✓	✓

Table 4.2.11 shows that as regards user's point of view for selection of online databases all selected libraries basically prefer "User recommendation" and "Free Online Trail Access". But on the other hand DU and JMI library prefer "LIST Services" too.

Table 4.2.12 Collection Development Policy for Online Databases

Policy	Name of Libraries		
	DU	JMI	JNU
Selection Responsibility	✓	✓	✓
Need Assessment & Users requirement	✓	✓	✓
Short and Long Term Objectives	✓	✓	✓
Acquisition Procedures	✓	✓	✓
Selection Criteria	✓	✓	✓
Security, Authentication	✓	✓	✓
Balance Between Print & Electronic collections	✓	✓	-
Coordination of Libraries Resources	✓	✓	✓

Table 4.2.12 reveals that all select university libraries adopt the tabulated policies for online databases.

Table 4.2.13 Criteria for Weeding Policy of Online Databases

Criteria	Name of Libraries		
	DU	JMI	JNU
Availability of online databases for longer period	✓	✓	-
More comprehensive coverage offered by others	-	-	✓
Difficult to preserve the online databases	-	-	-
User's opinion for continuation or cancellation of subscribed online databases	✓	✓	✓

Table 4.2.13 shows that all selected university libraries agree on "User's opinion for continuation or cancellation of subscribed online databases" as weeding policy of online databases. On the other hand DU and JMI library also prefer "Availability of online databases for longer period" as weeding policy but JNU library select "More comprehensive coverage offered by others" as weeding policy of online databases.

Influence of Online Databases

Table 4.2.14 User's Level of Satisfaction

Item Used	Highly Satisfied			Satisfied			Less Satisfied			Dissatisfied		
	DU	JMI	JNU	DU	JMI	JNU	DU	JMI	JNU	DU	JMI	JNU
Bibliographic	-	✓	✓	✓	-	-	-	-	-	-	-	-
Full Text	✓	-	✓	-	✓	-	-	-	-	-	-	-
Abstract	-	-	✓	✓	✓	-	-	-	-	-	-	-
Graphic	-	-	✓	-	✓	-	✓	-	-	-	-	-

It is clear from table 4.2.14 library users of DU are satisfied with Bibliographic Databases but JMI and JNU library users are highly satisfied with Bibliographic Databases. On the other hand, DU and JNU library users are highly satisfied with Full text databases, followed by JMI library where users are only satisfied with Full text databases.

Table 4.2.15 Measures to Promote Online Databases

Measures	Name of Libraries		
	DU	JMI	JNU
Provide links from home page	✓	✓	✓
Conduct orientation programme for users	✓	✓	✓
E-mail/Internet mailing link	✓	✓	✓

Table 4.2.15 reveals that to promote online databases, all select university libraries take these measures.

Table 4.2.16 Advantages of Online Databases

Advantages	Name of Libraries		
	DU	JMI	JNU
Users being satisfied with the library activities	✓	✓	✓
Users visit library frequently	✓	-	-
Users feel comfortable in locating resources in the library	✓	✓	✓
Users are more and more demanding	✓	-	✓
Users are more quality conscious	✓	✓	✓
Users have become more time conscious	✓	✓	✓
Usage of the library resources increased	✓	✓	✓

Table 4.2.16 reveals that all select university libraries nearly support the tabular option as the advantages of using online databases.

PART – C (USER'S POINT OF VIEW)

This part of analysis covers the responses received from the users of University of Delhi (DU), Jamia Millia Islamia (JMI), (University) and Jawaharlal Nehru University (JNU) relating to the various aspects of online databases.

4.3 Sample Population

The distribution of sample size of users for the total population in the select university libraries is presented below in the Table- 4.3.1. The investigator has selected a sample of about 30% of the total population randomly.

4.3.1 UNIVERSITY WISE DISTRIBUTION OF QUESTIONNAIRES

Categories	Number of Respondents								
	Delhi University (DU)			Jamia Millia Islamia(JMI)			Jawaharlal Nehru University (JNU)		
	FM N=150	RS N=150		FM N=150	RS N=150		FM N=80	RS N=150	
Total Strength	510	490		450	550		310	845	
Questionnaires distributed	200	200		200	200		100	200	
Responses received	167 (83.5)	170 (85)		165 (82.5)	185 (92.5)		94 (94)	175 (87.5)	
Total response rate	84.2%			87.5%			89.6%		
Questionnaires analyzed (selected)	150 (89.8)	150 (88.2)		150 (90.9)	150 (81)		80 (85.1)	150 (85.7)	

FM = Faculty Members, RS = Research Scholars

*N= Number

The Table 4.3.1 shows the distribution of questionnaires among the population and representation of each category of users of select university libraries. It is rather challenging to collect the large samples. Therefore sampling method is used to select sample from faculty members and research scholars of Central Library, Delhi University, Zakir Husain Library, Jamia Millia Islamia University and Central Library, Jawaharlal Nehru University. As stated above, a total of 400 questionnaires were distributed among the users of DU and JMI and 300 questionnaires were distributed among the users of JNU. Out of the total distributed questionnaires, 337

filled in questionnaires were received from DU, 350 from JMI and 269 from JNU. From the total received questionnaires, 63 questionnaires from DU, 50 questionnaires from JMI and 31 questionnaires from JNU were rejected due to incomplete responses. So in the given table the total response rate of users respectively is 84.3%, 87.5%, 89.6% in DU, JMI and JNU respectively.

A sample of 200 questionnaires were distributed among the faculty members of DU, out of which 167, i.e., 83.5% questionnaires were returned, filled up out of which 17, questionnaires were rejected due to incomplete information. Finally the investigator selected 150, i.e., 75% of the complete filled in questionnaires for the analysis. Similarly a sample of 200 questionnaires were distributed among the research scholars of DU, out of which 170, i.e., 85% questionnaires were returned, filled up of which 20, questionnaire were rejected due to incomplete information. Therefore, investigator selected 150 complete filled in questionnaires i.e., 75% of the total, for analysis.

Another sample of 200 questionnaires were circulated among the faculty members of JMI, out of which 165, i.e., 82.5% questionnaires were returned filled up, out of which 15 questionnaires were rejected because of incomplete information. Therefore, the investigator selected 150, i.e., 75% of the complete filled in questionnaires for the analysis. A sample of 200 questionnaires were distributed among the research scholars of JMI, out of which 185, i.e., 92.5% questionnaires were returned back filled up, out of which 35, questionnaires were rejected because of incomplete information. Finally, the investigator selected 150, i.e., 75% questionnaires for the analysis.

A sample of 100 questionnaires were administered among the faculty members of JNU, out of which 94, i.e. 94% questionnaires were returned back filled up, out of which 14, questionnaires were rejected due to incomplete information. Therefore, investigator selected 80, i.e., (80%) out of complete filled in questionnaires for the analysis. Another set of 200 questionnaires were distributed among the research scholars of JNU, of which 175, i.e., (87.5%) questionnaires were received back, of which 25, questionnaires were rejected due to incomplete information. Therefore, investigator selected 150, filled in questionnaires i.e. 75% of the total for the analysis.

A total number of 500 questionnaires were distributed among the faculty members of the select universities, of which 426 i.e. 85.2% questionnaires were received back, out of which investigator finally selected 380 of the total i.e. 76% responses from the users and the rest questionnaires were rejected due to incomplete information.

Similarly, a total number of 600 questionnaires were distributers among the research scholars in all these universities, out of which 530 (88.3%) questionnaires were received back, out of which investigator finally selected 450 (75%) of the total questionnaires from the respondents and the rest 80 questionnaires were rejected because of incomplete information.

Use of Library Services

Table 4.3.2 Frequency of visiting the library

Frequency	Number of Respondents								
	DU			**JMI**			**JNU**		
	FM N=150	RS N= 150	**Total N= 300**	FM N=150	RS N=150	**Total N=300**	FM N=80	RS N=150	**Total N= 230**
Daily	70 (46.66%)	40 (26.66%)	**110 (36.66%)**	30 (20%)	80 (53.33%)	**110 (36.67%)**	15 (18.75%)	43 (28.66%)	**58 (25.22%)**
Weekly	45 (30%)	80 (53.33%)	**125 (41.67%)**	80 (53.33%)	39 (26%)	**119 (39.67%)**	50 (62.5%)	87 (58%)	**137 (59.57%)**
Monthly	25 (16.67%)	23 (15.34%)	**48 (32.00%)**	30 (20%)	25 (16.67%)	**55 (18.33%)**	11 (13.75%)	15 (10%)	**26 (11.30%)**
Occasionally	10 (6.67%)	7 (4.67%)	**17 (5.67%)**	10 (6.67%)	6 (4%)	**16 (5.33%)**	4 (5%)	5 (3.34%)	**9 (3.91%)**
Mean	37.5	37.5	**75**	37.5	37.5	**75**	20	37.5	**57.5**
SD	22.50	27.17	**44.21**	25.86	27.18	**41.95**	17.76	31.79	**39.75**

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU=Jawaharlal Nehru University

*FM= Faculty Members, RS=Research Scholars

*N= Number

Table 4.3.2 shows that 46.66% faculty members and 26.66% research scholars of DU, 20% faculty members and 53.33% research scholars in JMI while 18.75% faculty members and 53.75% research scholars of JNU visit library daily. Nikam and Dhruva (2013) and Dhanavandan, Esmail and Nagarajan (2012) revealed in their studies that a high percentage of respondents visit the library daily.

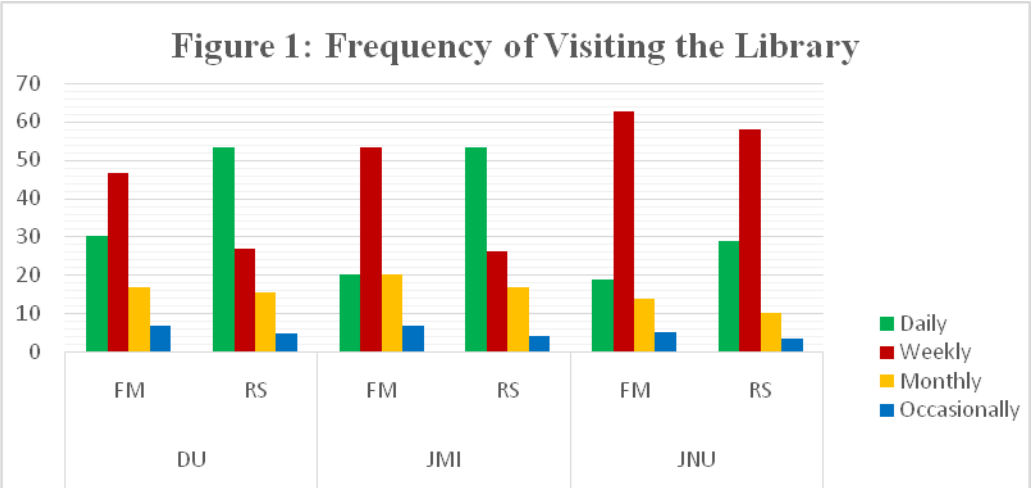
It is clear from the table that 30% faculty members and 53.33% research scholars in DU, 53.33% faculty members and 26% research scholars in JMI while 58% faculty members and 62.5% research scholars in JNU visit the library weekly. Das and Maharana (2013) and also with Kandpal, Rawat and Vithal (2013) who also stated that majority of the faculty members and research scholars visit the library weekly.

The Table also shows that 16.67% faculty members and 15.34% research scholars in DU, 20% faculty members and 16.66% research scholars in JMI while 10% faculty members and 13.75% research scholars in JNU visit the once in a month.

Also from the table it is (visible) that 6.67% faculty members and 4.67% research scholars in DU, 6.67% faculty members and 4% research scholars in JMI while 3.34% faculty members and 5% research scholars in JNU visit the library occasionally.

Statistical Inference

It is observed from table 4.3.2 that maximum number of researchers i.e. 125, 119, 137 from DU, JMI, JNU declared, their frequency of visiting the library is weekly which was found to be fairly above their corresponding mean value of 75 (SD=44.21), 75 (SD=41.95) and 57.5 (SD= 39.75) respectively. Furthermore, least numbers of respondents visit the library monthly and occasionally which was placed at the lowest point from their corresponding mean values.



Discussion

It is clearly visible from the figure number 1 that in the select universities under the study frequency of visiting the library of researchers is weekly. Besides this, good percentage of respondents visit the library daily.

Table 4.3.3 Purpose of Using Library

Purpose	Respondents								
	DU			JMI			JNU		
	FM N=150	RS N=150	**Total N= 300**	FM N=150	RS N=150	**Total N= 300**	FM N=80	RS N=150	**Total N= 230**
Borrowing books	97 (64.66%)	80 (53.33%)	**177 (59%)**	90 (60%)	77 (51.33%)	**167 (55.67%)**	50 (62.5%)	83 (55.33%)	**133 (57.83%)**
Consulting print Periodicals/Journals	59 (39.33%)	57 (38%)	**116 (38.67%)**	57 (38%)	54 (36%)	**111 (37.00%)**	33 (41.25%)	47 (31.33%)	**80 (34.78%)**
Consulting online databases	51 (34%)	66 (44%)	**117 (39.00%)**	43 (28.66%)	60 (40%)	**103 (34.33%)**	27 (33.75%)	55 (36.66%)	**82 (35.65%)**
Consulting other resources	20 (13.33%)	20 (13.33%)	**40 (13.33%)**	17 (11.33%)	22 (14.66%)	**39 (13.00%)**	11 (13.75%)	19 (12.66%)	**30 (13.04%)**
Mean	56.75	55.75	**112.5**	51.75	53.25	**105**	30.5	51.00	**81.25**
SD	27.42	22.20	**48.60**	26.33	19.91	**45.38**	13.95	22.80	**36.42**

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia (University), JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

Table 4.3.3 shows that 64.66% faculty members and 53.33% research scholars in DU 60% faculty members and 51.33% research scholars in JMI while 62.5% faculty members and 55.33% research scholars in JNU use library for the purpose of borrowing books. Das and Maharana (2013) in a study conducted among the research scholars of Berhampur University found that majority of them use the library for borrowing books purpose.

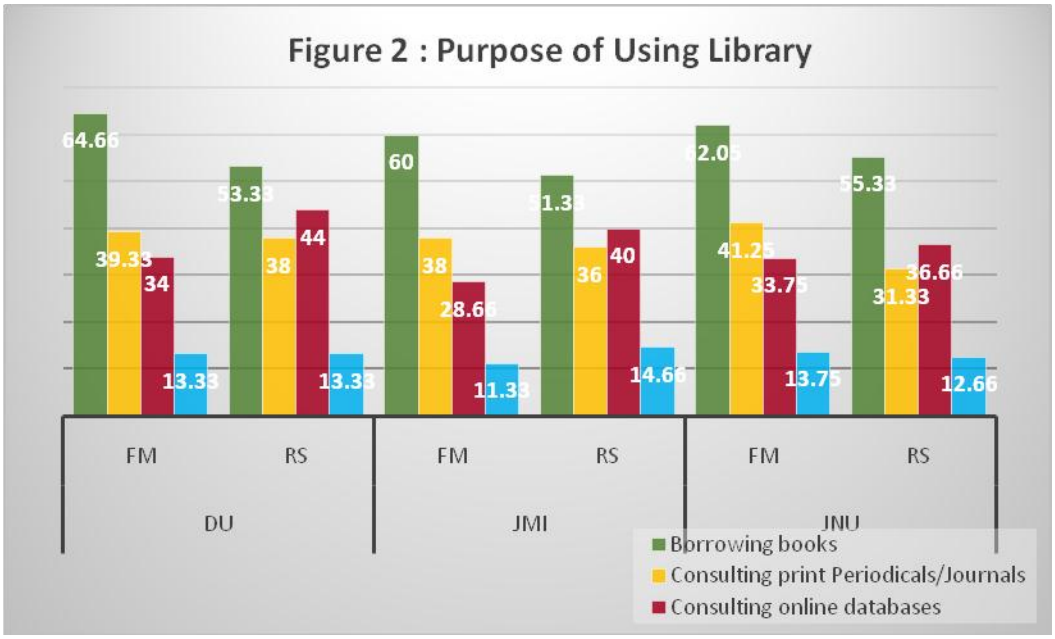
The table also shows that 39.33% faculty members and 38% research scholars in DU, 38% faculty members and 36% research scholars in JMI while 41.25% faculty members and 31.33% research scholars in JNU use library to consult periodicals/journals. Similarly, the study of Khan and Sudharma (2015) who also revealed in their study that a high percentage of respondents use the library for borrowing books purpose and for consulting periodicals/ journals purpose.

It is clear from the table that 34% faculty members and 44% research scholars in DU, 28.66% faculty members and 40% research scholars in JMI, while 33.75% faculty members and 36.66% research scholars in JNU use library for consulting online databases.

It is also visible from the table that 13.33% faculty members in DU, 11.33% in JMI and 13.75% in JNU use library for consulting other resources. While 13.33% research scholars in DU, 14.66% in JMI and 12.66% in JNU use library for consulting other resources.

Statistical Inference

Table 4.3.3 shows that majority of the respondents i.e. (177) in DU, (167) in JMI, (133) in JNU accepted borrowing books as major purpose of using library, their corresponding mean values are 112.5 (SD= 48.60), 105 (SD= 45.38), 81.25 (SD= 36.42) respectively. Moreover, few responses were obtained for consulting other resources in all the select universities under the study.



Discussion

It has been found from the table that purpose of using library among the users of select universities under the study is nearly similar. They use the library for borrowing books, consulting journals and online databases.

Table 4.3.4 Familiarity with resources

Sources	Respondents								
	DU			JMI			JNU		
	FM N=150	RS N=150	**Total N= 300**	FM N=150	RS N=150	**Total N= 300**	FM N=80	RS N=150	**Total N= 230**
Print sources	150 (100%)	150 (100%)	**300 (100%)**	150 (100%)	150 (100%)	**300 (100%)**	80 (100%)	150 (100%)	**230 (100%)**
Online sources	150 (100%)	135 (90%)	**285 (95%)**	150 (100%)	130 (86.66%)	**280 (93.33%)**	80 (100%)	127 (84.66%)	**207 (90%)**
Mean	150	142.5	**292.5**	150	140	**290**	80	138.5	**218.5**
SD	0.00	7.50	**7.50**	0.00	10.00	**10.00**	0.00	11.50	**11.50**

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

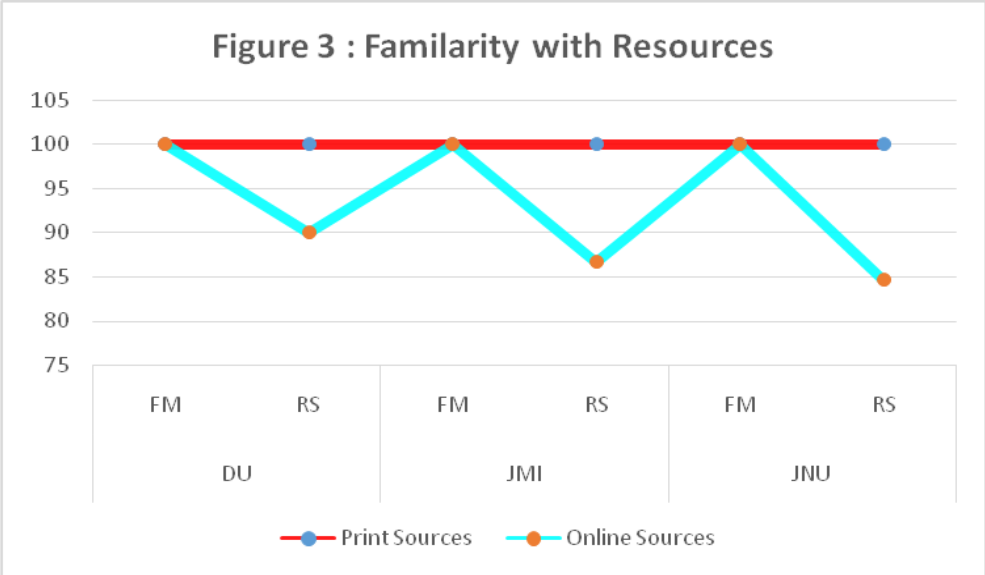
Table 4.3.4 reveals that in DU, JMI and JNU 100% faculty members are having awareness about both types of resources i.e., print and electronic sources. This finding

correlates with the study of Khan and Sudharma (2015) and Nikam and Dhruva (2013) found that highest percentage of respondents are familiar with print and online sources.

On the other hand in DU, JMI, and JNU 100% research scholars are aware about print resources. But 90% research scholars in DU, 86.66% in JMI while 84.66% only in JNU are aware about online resources. Similarly, Tyagi (2012) and Shukla and Mishra (2011) also revealed in their studies that majority of the users are familiar with print and online sources as it is easy in access and user friendliness.

Statistical Inference

It reveals form the Table 4.3.4 that highest number of researchers i.e. 300, 300, 230 respondents from DU, JMI, JNU declared familiarity with both resources whether print or online and also identified print sources as most familiar resources, which was found to be fairly above their corresponding mean values of 292.5 (SD= 7.50), 290 (SD=10.00), 218.5 (SD=11.50).



Discussion

Thus, the analysis reveals that majority of faculty members and research scholars are familiar with both print and online resources.

Table 4.3.5 Awareness about Online Databases

Awareness	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Yes (%)	150 (100%)	139 (92.6%)	150 (100%)	141 (94%)	80 (100%)	144 (96%)
No (%)	-	20 (7.4%)	-	9 (6%)	-	6 (4%)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

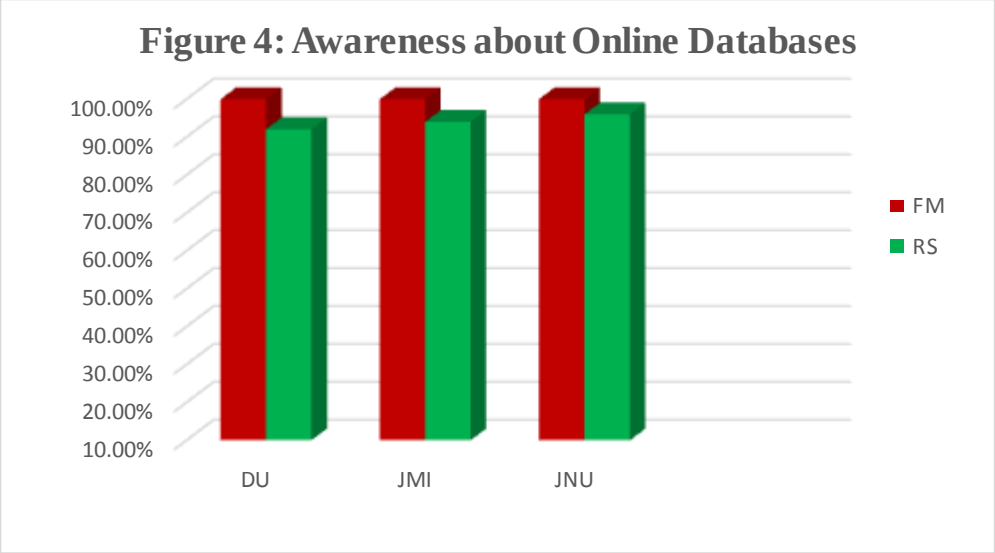
*N= Number

Table 4.3.5 shows that 100% faculty members in DU, JMI and JNU are aware of online databases subscribed by university library. On the other hand 92.6% research scholars in DU, 94% in JMI while 96% in JNU are having awareness about online databases subscribed by university library. This findings correlates with the study of Verma (2016) and also with Mangi (2014) who stated that majority of the respondents are having awareness about online databases subscribed by university library.

This findings correlated with the study of Swamy and Kishore (2014) and Das and Maharana also revealed in their studies that high percentage of respondents are aware about online databases.

Similarly, the study of Kandpal, Rawat and Vithal (2013) found that the majority of them having awareness about online databases subscribed by university library.

Analysis of the table reveals that all the faculty members and nearly all research scholars are also aware about online databases.



4.3.6 Adequate Training by Library for Online Databases

Response	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Yes	125 (83.33%)	110 (73.33%)	120 (80%)	125 (83.33%)	50 (62.5%)	110 (73.33%)
No	25 (16.67%)	40 (26.67%)	30 (20%)	25 (16.67%)	30 (37.5%)	40 (26.67%)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

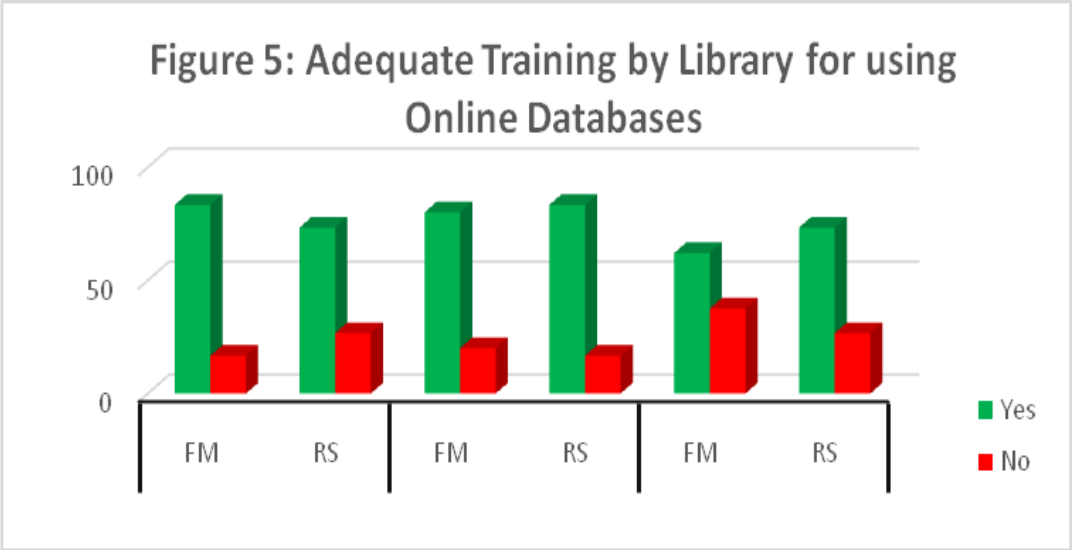
With the increasing number of online databases, a variety of access points are available to access them. More experience and skills are required to explore and utilize them. In order to access the need of training, a question was raised about online databases to the users. The table shows that 83.33% faculty members and 73.33% research scholars in DU get adequate training for using online databases, while in JMI 72.66% faculty members and 16.67% research scholars get sufficient training by

library. On the other hand 62.5% faculty members and 73.33% research scholars found acceptable training by the library for using online databases. This findings correlated with the study of Mangi (2014) and Swamy and Kishore (2014) revealed in their studies that a good percentage of respondents found acceptable training by the library for using online databases. Similarly, Naqvi (2012) and Md Sohail and Ahmad (2011) also stated that satisfactory training is provided by library for using online databases.

This findings correlates with the study of Atakan, Dogan and Arslantekin (2008) that majority of the respondents have received adequate training by library for using online databases for their different purposes.

The table further shows that a thing percentage of respondents with 16.67% faculty members and 26.6% research scholars in DU, 20% faculty members and 16.67% research scholars in JMI and 37.5% faculty members and 26.67% research scholars in JNU are not satisfied with the training by the library for using online databases.

Thus, in brief the data reveals that majority of the faculty members and research scholars in all select university libraries receive adequate training by library for using online databases for different purposes.



Frequency and Use of Online Databases

Table 4.3.7 Periodicity of Using Online Databases Services

Periodicity	Respondents								
	DU			**JMI**			**JNU**		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
Less than 6 months	7 (4.66%)	5 (3.34%)	**12 (4%)**	7 (4.67%)	7 (4.67%)	**14 (4.67%)**	5 (6%)	4 (2.67%)	**9 (3.91%)**
6 months- 1 year	18 (12%)	20 (13.34%)	**38 (12.67%)**	10 (6.67%)	24 (16%)	**34 (11.33%)**	7 (8%)	15 (10%)	**22 (9.57%)**
1-2 years	20 (13.33%)	35 (23.33%)	**55 (18.33%)**	27 (18%)	35 (23.33%)	**62 (20.67%)**	11 (16%)	43 (28.66%)	**54 (23.48%)**
2-4 years	45 (30%)	40 (26.66%)	**85 (28.33%)**	41 (27.33%)	39 (26%)	**80 (26.66%)**	22 (30%)	35 (23.34%)	**57 (24.78%)**
More than 4 years	60 (40%)	50 (33.33%)	**110 (36.67%)**	65 (43.33%)	45 (30%)	**110 (36.67%)**	35 (40%)	53 (35.33%)	**88 (38.26%)**
Mean	30	30	**60**	30	30	**60**	16	30	**46**
SD	11.60	12.04	**23.61**	13.63	10.63	**23.63**	6.35	13.42	**19.72**

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

Table 4.3.7 examines that 4.6% faculty members in DU and JMI, while 6% faculty members in JNU, whereas 3.33% research scholars in DU, 4.67% research scholars in JMI while 2.67% in JNU have been using online databases services since less than 6 months.

It is also clear that 12% faculty members in DU, 6.67% in JMI while 8% in JNU while 13.34% research scholars in DU, 16% in JMI and 10% in JNU have been using online databases services since 6 months- 1 year.

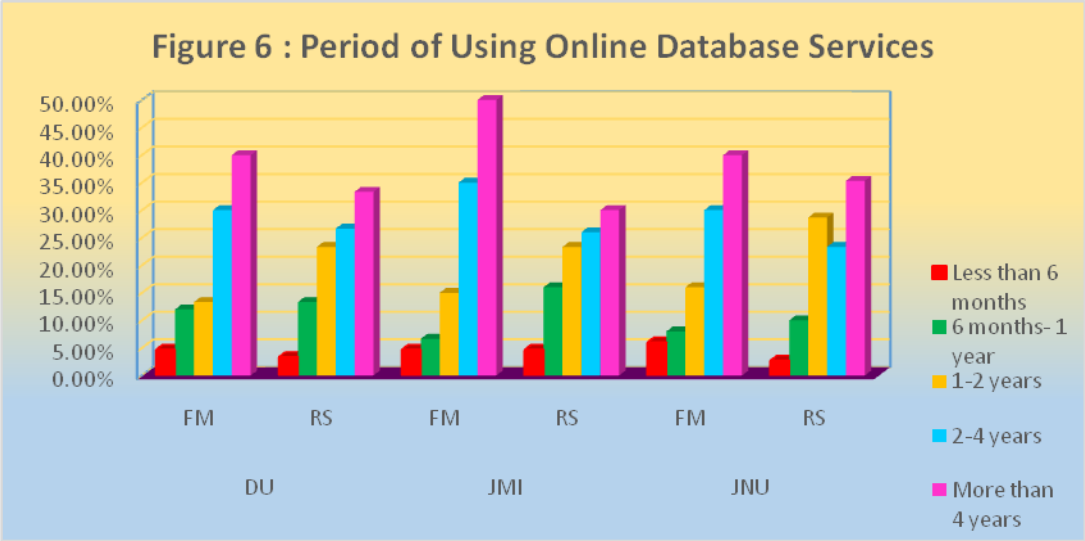
It is noted that 13.33% faculty members in DU, 15% in JMI and 16% in JNU where as 23.33% research scholars in DU and JMI while in JNU 28.66% research scholars have been using online databases services since 1-2 years.

Table 4.3.7 further shows that 30% faculty members in DU and JNU, 35% in JMI Similarly 26.66% research scholars in DU, 26% in JMI, 23.34% in JNU have been using online databases services since 2-4 years. This finding correlates with the study of Prabhakaran and Sankaranarayanan (2012) and Swain (2010) in a study found that majority of respondents have been using online database services since 2-4 years.

The data, moreover, shows that in DU 40% faculty members, in JMI 50% while in JNU 40while 33.33% research scholars in DU, 30% in JMI, 35.33% in JNU have been using online databases services since more than 4 years. Similarly, Dhanavandan, Esmail and Nagarajan (2012) that a good percentage of respondents have been using online database services since more than 4 years.

Statistical Inference

Table 4.3.7 examines that maximum number of responses i.e. 110, 110, 88 respondents from DU, JMI and JNU were received for the option of more than 4 years which was found to be fairly above their corresponding mean values of 60 (SD= 23.61), 60 (SD= 23.63), 46 (SD= 19.72). Moreover, a good number of responses received for option 2-4 years and least number of responses were received for the option of less than 6 months.



Discussion

So, it is clear from the figure 6 that most of the respondents in all these libraries have been using online databases services since more than 4 years.

Table 4.3.8 Frequency of Using Online Databases

Frequency	Number of Respondents								
	DU			**JMI**			**JNU**		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
Daily	10 (6.67%)	30 (20%)	**40 (13.33%)**	10 (6.66%)	30 (20%)	**40 (13.33 %)**	9 (11.25%)	27 (18%)	**36 (15.65%)**
2-3 times a week	55 (36.67%)	50 (33.34%)	**105 (35%)**	55 (36.66%)	40 (26.66%)	**95 (31.67 %)**	8 (10%)	55 (36.66%)	**63 (27.39%)**
2-3 times a month	79 (52.66%)	45(30%)	**124 (41.34%)**	74 (49.35%)	55 (36.67%)	**129 (43%)**	50 (62.5%)	60 (40%)	**110 (47.82%)**
Once in a month	6 (4%)	25 (16.66%)	**31 (10.33%)**	11 (7.33%)	25 (16.67%)	**36 (12%)**	13 (16.25%)	8 (5.33%)	**21 (9.13%)**
Mean	37.5	37.5	**75**	37.5	37.5	**75**	20	37.5	**57.5**
SD	16.29	7.28	**23.04**	16.29	3.95	**20.15**	8.14	10.20	**11.1**

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

The frequency of usage of online databases by the users allows a correlation with the degree of use. To know the frequency of use of online databases by the users of the libraries, various options, were given the data collected in table show that 52.66% faculty members and 30% research scholars in DU, 49.35% faculty members and 36.67% research scholars in JMI, while 62.5% faculty members and 40% research scholars in JNU use online databases 2-3 times a month. This finding correlates with the study of Md. Sohail and Alvi (2014) who found that majority of the users use online database 2-3 times a month. Dhanavandan, Esmail and Nagarajan (2012) and Habiba and Chowdhury (2012) also revealed that respondents use online databases 2-3 times a month.

It is clear from the table that 36.67% faculty members and 33.34% research scholars in DU 36.66% faculty members and 26.66% research scholars in JMI while 10% faculty members and 36.66% faculty members in JNU use online databases 2-3

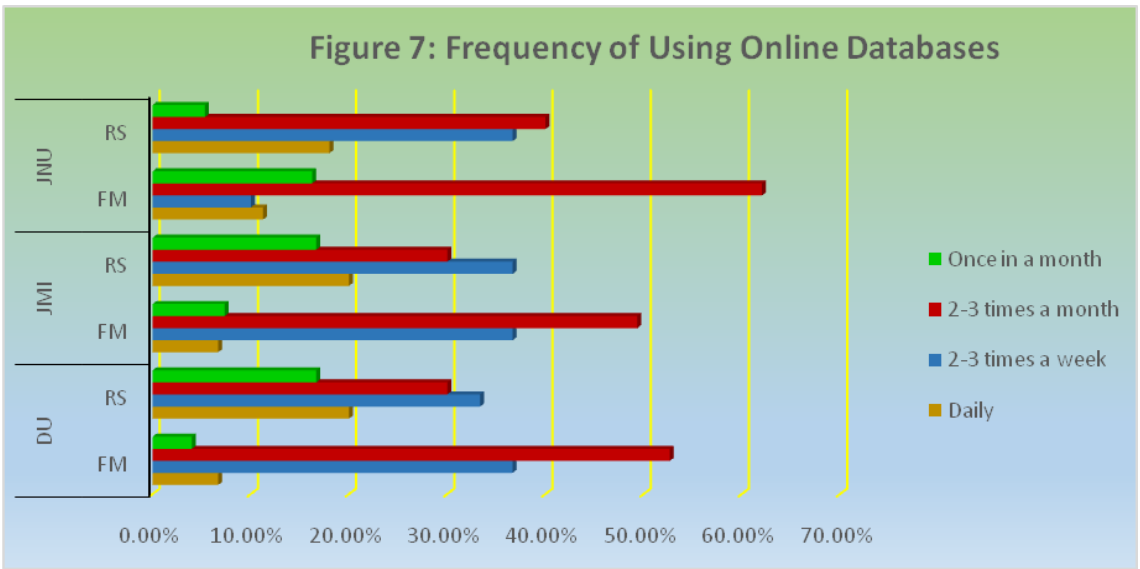
times a week. Similarly, Hussain, Khan and Nishat (2011) and Shukla and Mishra (2011) in their study found that respondents prefer online databases 2-3 times a week.

It also reveals from the table that 6.67% faculty members and 20% research scholars in DU and JMI, and, 11.25% faculty members and 18% research scholars in JNU, use online databases daily.

The data show that 4% faculty members and 16.66% research scholars in DU, 7.33% faculty members and 16.67% research scholars in JMI and 16.25% faculty members and 5.33% research scholars in JNU use library once in a month.

Statistical Inference

It is observed from the table 4.3.8 that majority of respondents i.e. 124, 129, 110 from DU, JMI and JNU declared their frequency of using online databases is 2-3 times in a month and their corresponding mean values were 75 (SD= 23.04), 75 (SD= 20.15) and 57.5 (SD= 11.1) respectively. Furthermore, least number of responses were received for the option once in a month.



Discussion

Thus, the data related to three universities in figure 7 shows that most of the respondents use online databases 2-3 times in a month. Besides this, table number 4.3.8 also shows that respondents accepted frequency of using online databases 2-3 times in a week too.

Table 4.3.9 Sources of Online Databases

Sources	Respondents								
	DU			**JMI**			**JNU**		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
Teacher/ Research Supervisor	2 (1.33%)	80 (53.33%)	**82 (27.33)**	4 (2.66%)	65 (43.33%)	69 (23.00%)	3 (3.75%)	65 (43.33%)	68 (29.57%)
Library Website	95 (63.33%)	65 (43.33%)	**160 (53.33%)**	79 (52.66%)	89 (59.33%)	**168 (56.00%)**	70 (87.5%)	80 (53.33%)	**150 (65.22%)**
Friends	40 (26.66%)	39 (26%)	**79 (26.33%)**	33 (22%)	35 (23.33%)	**68 (22.67%)**	25 (31.25%)	47 (31.33%)	**72 (31.30%)**
Display section for material	70 (46.66%)	45 (30%)	**115 (38.33%)**	59 (39.33%)	39 (26%)	**98 (32.67%)**	37 (46.25%)	33 (22%)	**70 (30.43%)**
Library Circulars	80 (53.33%)	13 (8.66%)	**93 (31.00%)**	70 (46.66%)	15(10%)	**85 (28.33%)**	15 (18.75%)	21 (14%)	**36 (15.65%)**
Mean	57.4	48.4	**107.4**	49.0	48.6	**97.6**	30	49.2	**79.2**
SD	33.03	22.92	**32.83**	27.28	25.71	**36.9**	22.93	21.26	**37.79**

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

To the question regarding the sources that keep them abreast of the online databases, the respondents have given many options to select, where multiple responses were permitted in the question. The table shows that 63.33% faculty members and 59.33% research scholars in DU 52.66% faculty members and 59.33% research scholars in JMI while. 87.5% faculty members and 53.33% research scholars in JNU keep themselves abreast of the online databases through library website. This finding correlates with the study of Swamy and Kishore (2014) and Shukla and Mishra (2011) who stated that respondents keep themselves informed of the online databases through library website.

It is evident from the table that 53.33% faculty members and 8.66% research scholars in DU 46.66% faculty members and 18% research scholars in JMI where as 18.75% faculty members and 14% faculty members in JNU keep themselves abreast about online databases by library circulars. Similarly, Nikam and Pramodini (2007) in a study conducted among the academic community found that majority of them preferred library circular to keep themselves informed of the online databases.

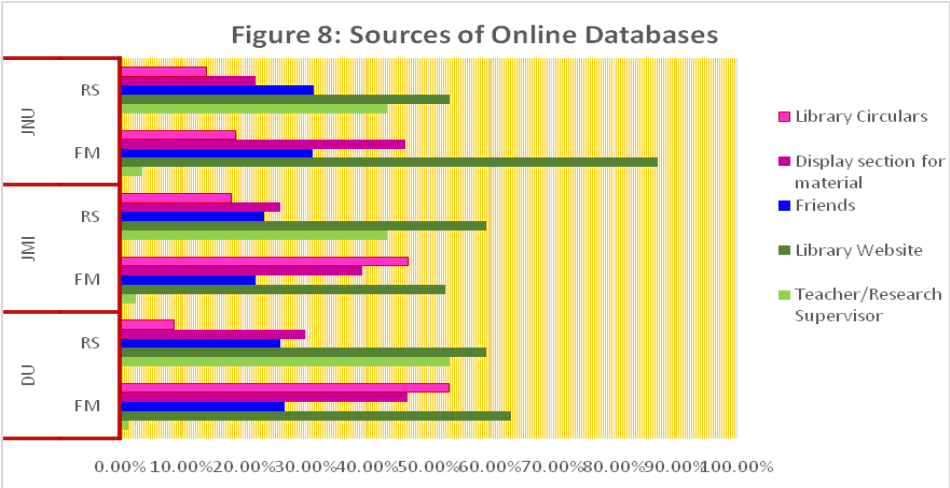
It is also revealed from the table that 46.66% faculty members and 30% research scholars in DU, 39.33% faculty members and 26% research scholars in JMI, while 46.25% faculty members and 22% research scholars prefer display section for updated information of online databases.

The table shows that 26.66% faculty members and 26% research scholars in DU 22% faculty members and 23.33% research scholars in JMI whereas 31.25% faculty members and 31.33% research scholars in JNU are kept informed of online databases by friends.

The table reveals that 1.33% faculty members and 53.33% research scholars DU, 2.66% faculty members and 43.33% research scholars in JMI while, 3.75% faculty members and 43.33% research scholars in JNU prefer teacher/research supervisor to keep them informed about online databases. This finding correlates with the study of Swamy and Kishore (2014) and Shukla and Mishra (2011) who stated that respondents keep themselves informed of the online databases through teacher/research supervisor.

Statistical Inference

It is evident from the table 4.3.9 that maximum number of responses i.e. 160, 168, 150 respondents from DU, JMI and JNU were received for the option library website as a source of online databases and their corresponding mean values are 107.4 (SD= 32.83), 97.6 (SD= 36.9) and 79.2 (SD= 37.79) respectively. Furthermore, least number of responses were received for friends as a source of online databases.



Discussion

It is revealed from the analysis that majority of the respondents keep themselves informed of the online databases through library website. Besides this, table 4.3.9 also shows that faculty members exhibited more preference for display section for material. On the other hand research scholars also felt that teachers/ research supervisor help them in knowing source of online databases.

Table 4.3.10 Place (Venue) of access Online Databases

Place	Respondents								
	DU			JMI			JNU		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
University Library	21 (14%)	15 (10%)	**36 (12%)**	17 (11.33%)	21 (14%)	**38 (12.67%)**	15 (18.75%)	11 (7.33%)	**26 (11.30%)**
Computer Centre	70 (46.66%)	90 (60%)	**160 (53.33%)**	83 (55.33%)	89 (59.33%)	**172 (57.33%)**	55 (68.75%)	69 (46%)	**124 (53.91%)**
Department	112 (74.66%)	85 (56.66%)	**197 (65.67%)**	120 (80%)	82 (54.66%)	**202 (67.33%)**	75 (93.75%)	93 (62%)	**168 (73.04%)**
Hostel	-	25 (16.66%)	**25 (8.33%)**	-	14 (9.33%)	**14 (4.67%)**	-	12 (8%)	**12 (5.22%)**
Home	3 (2%)	2 (1.33%)	**5 (1.67%)**	2 (1.33%)	2 (1.33%)	**4 (1.33%)**	1 (1.25%)	2 (1.33%)	**3 (1.00)**
Mean	41.2	43.2	**84.6**	44.4	41.6	**86.00**	29.2	37.4	**66.67**
SD	43.38	13.77	**78.19**	48.42	36.42	**83.14**	30.37	36.57	**66.71**

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

Table 4.3.10 clearly shows that 74.66% faculty members and 56.66% research scholars in DU, 80% faculty members and 54.66% research scholars in JMI while 93.75% faculty members and 62% research scholars in JNU access online databases in their respective departments. This finding correlates with the study of Md. Sohail and Alvi (2014) who stated that majority of the respondents access online databases from department.

It is clear from the table that 46.66% faculty members and 60% research scholars in DU 55.33% faculty members and 59.33% research scholars in JMI whereas, 68.75% faculty members and 46% research scholars in JNU access online databases in computer centres. Prabhakaran and Sankaranarayanan (2012) and Hussain, Khan and Nishat (2011) also revealed in their studies that a high percentage of users access online databases from computer centre. Similarly, Shukla and Mishra (2011) in a study found that majority of the user's preferred department and computer centre to access online databases

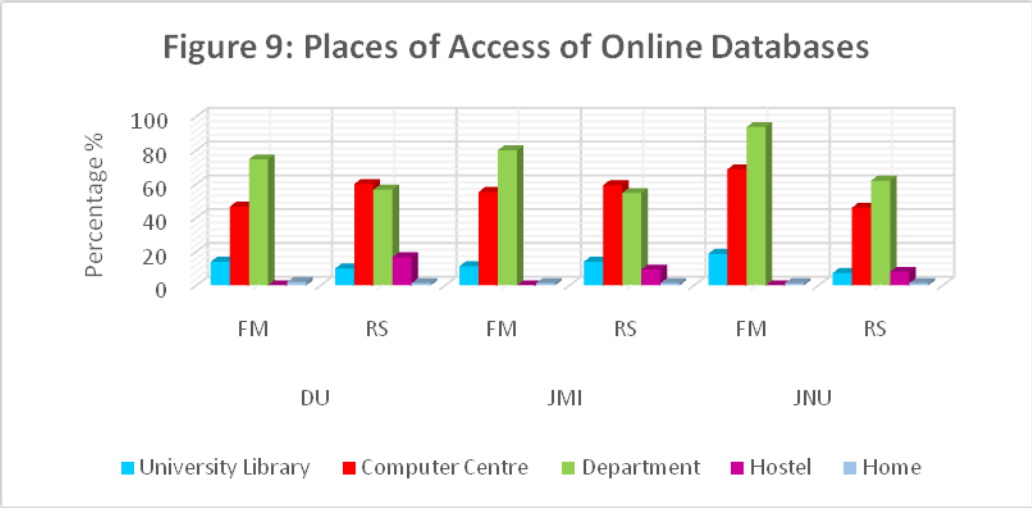
It is further obtained from the table that 14% faculty members and 10% research scholars in DU, 11.33% faculty members and 14% research scholars in JMI, while 18.75% faculty members and 7.33% research scholars in JNU access online databases in university library.

It is interesting to while that only 16.66% research scholars in DU, 9.33% research scholars in JMI and 8% research scholars in JNU access online databases in their hostels.

The table also reveals that 2% faculty members and 1.33% research scholars in DU 1.33% faculty members and research scholars in JMI while 1.25% faculty members and 1.33% research scholars in JNU access online databases at home.

Statistical Inference

It is observed from table 4.3.10 that majority of responses were expected for the option department i.e. 197, 202, 168 from DU, JMI and JNU as a place for accessing online databases. While, their corresponding mean values were 84.6 (SD= 78.19), 86.00 (SD= 83.14), 66.67 (SD= 66.71) respectively. Furthermore, least numbers of responses were received for home as a place for accessing online databases**.**



Discussion

It is clearly visible from figure 9 that department is a common place for accessing online databases among all respondents. On the other hand table 4.3.10 also shows that researchers presented preference to computer centre for accessing online databases.

Table 4.3.11 Purpose of using Online Databases

Purpose	Respondents								
	DU			JMI			JNU		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
For study/teaching work	101 (67.33%)	10 (6.66%)	**111 (37%)**	112 (74.66%)	13 (8.66%)	**125 (41.67%)**	75 (93.75%)	17 (11.33%)	**82 (35.66%)**
For research work	3 (2%)	135 (90%)	**138 (46%)**	2 (1.33%)	122 (81.33%)	**124 (41.33%)**	4(5%)	130 (86.66%)	**134 (58.26%)**
To update knowledge	89 (59.33%)	95 (63.33%)	**184 (61.33%)**	81 (54%)	81 (54%)	**162 (54%)**	55 (68.75%)	100 (66.66%)	**155 (67.39%)**
For career development	66 (44%)	79 (52.66%)	**145 (48.33%)**	65 (43.33%)	79 (52.66%)	**144 (48%)**	70 (87.5%)	67 (44.66%)	**137 (59.57%)**
To support other academic work	25 (16.66%)	5 (3.33%)	**30 (10%)**	19 (12.66%)	8 (5.33%)	**27 (9%)**	11 (13.75%)	10 (6.66%)	**21 (9.31%)**
Mean	56.8	64.8	**121.6**	55.8	60.6	**116.4**	43.0	64.8	**105.8**
SD	37.31	50.24	**51.4**	41.32	43.72	**46.83**	29.80	46.44	**48.88**

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

In this reference, the data collected in table 5.3.9 shows that 67.33% faculty members in DU, 74.66% in JMI and 93.75% in JNU. Whereas, 6.66% research scholars in DU, 8.66% in JMI and 11.33% in JNU use online databases for study/teaching purposes. This finding correlates with the study of Khan Sudharma (2015) and Musa, Ahmad, Ycenura and Hamisu (2015) who found that most of the respondents use online databases for study/teaching purpose.

It is also clear that 59.33% faculty members in DU, 54% in JMI and 68.75% in JNU while 63.33% research scholars in DU, 54% in JMI and 66.66% in JNU use online database to update their knowledge. Mangi (2014) and Md. Sohail and Alvi (2014) also revealed in their studies that a high percentage of respondents use online database for study/teaching purpose, to update knowledge.

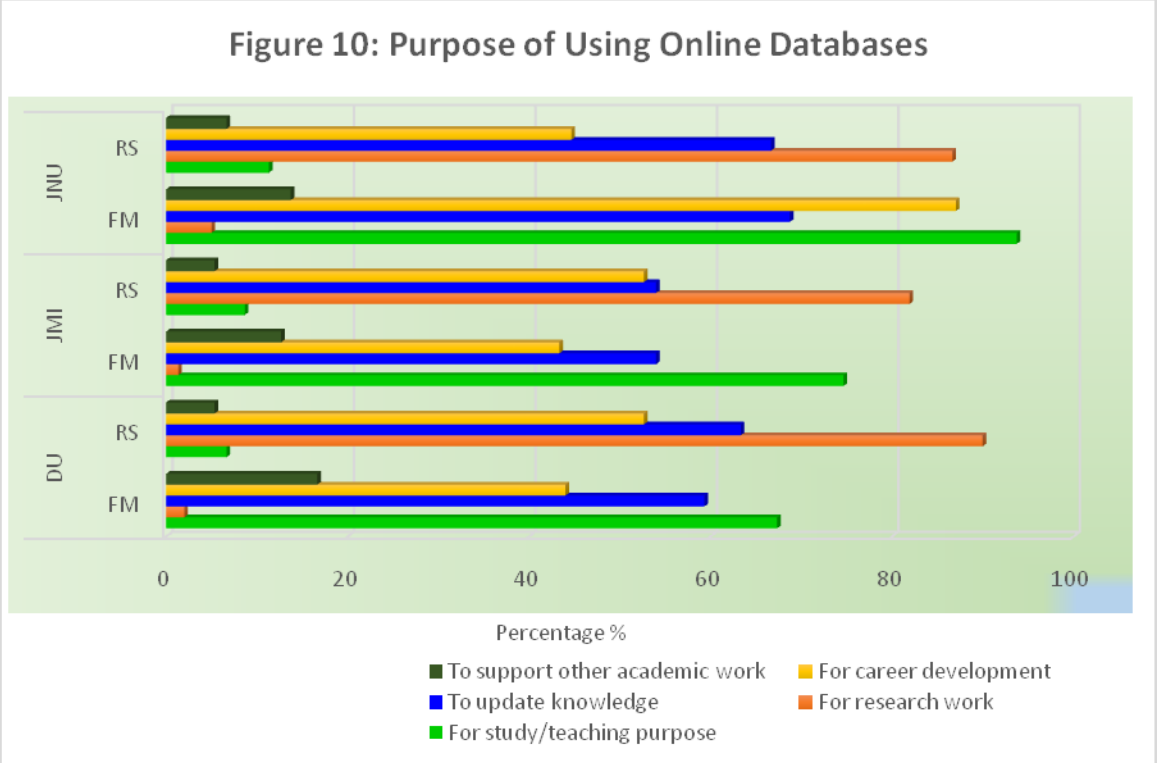
It is also noted that 44% faculty members and 52.66% research scholars in DU, 43.33% faculty members and 52.66% research scholars in JMI while 87.5% faculty members and 44.66% research scholars in JNU prefer online databases for career development purpose.

The table further reveals that, 16.66% faculty members in DU, 12.66% in JMI and 13.75% in JNU whereas 5.33% research scholars in DU and JMI and 6.66% in JNU use online databases to support other academic work.

The table, moreover, shows that 2% faculty members in DU, 1.33% in JMI and 5% in JNU while 90% research scholars in DU, 81.33% in JMI and 86.66% in JNU use online databases for research work. Similarly, Swamy and Kishore (2014), in a study found that majority of the users use online database for research work.

Statistical Inference

The data collected in table numbers 4.3.11 shows that maximum number of respondents accepted they use online databases for the purpose of updating knowledge i.e. 184, 162, 155 responses from DU, JMI and JNU which was found to be fairly above their corresponding mean values of 121.6 (SD= 51.4), 116.4 (SD= 46.83), 105.8 (SD= 48.88). Moreover, the least number of responses were obtained for the purpose to support other academic work.



Discussion

The table reflects that the users have various purposes of using online databases. The table moreover shows that respondents use online databases to update knowledge. Besides this, table 4.3.11 also shows that faculty members exhibited more preference for study/ teaching work. Research scholars also use online databases for research work.

4.3.12 Frequency of Using Online Databases

Online Databases	Faculty Members														
	DU					JMI					JNU				
	MF	F	SF	R	N	MF	F	SF	R	N	MF	F	SF	R	N
ACM Digital	1 (0.66%)	5 (3.33%)	10 (6.66%)	2 (1.33%)	1 (0.66%)	25 (16.66%)	5 (3.33%)	10 (6.66%)	2 (1.33%)	1 (0.66%)	31 (38.75%)	1 (1.25%)	20 (25%)	1 (1.25%)	1 (1.25%)
American Chemical Society	1 (0.66%)	10 (6.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	1 (0.66)	10 (6.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	2 (2.50)	4 (5%)	8 (10%)	2 (2.50%)	1 (1.25%)
American Institute of Physics	25 (16.66%)	12 (8%)	8 (5.33%)	2 (1.33%)	2 (1.33%)	25 (16.66%)	12 (8%)	8 (5.33%)	2 (1.33%)	2 (1.33%)	31 (38.75%)	1(1.25%)	11 (13.75%)	1 (1.25%)	1 (1.25)
American Physical Society	27 (18%)	10 (6.66%)	6 (4%)	1 (0.66%)	2 (1.33%)	27 (18%)	10 (6.66%)	6 (4%)	1(0.66%)	2 (1.33%)	2 (2.50%)	11 (13.75%)	1 (1.25%)	5 (6.25%)	1 (1.25%)
American Society for Civil Engineers	2 (1.33%)	1 (0.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	2 (1.33%)	1 (0.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	2 (2.50%)	1 (1.25%)	2 (2.50%)	4 (5%)	1 (1.25%)
American Society for Mechanical Engineers	6 (4%)	2 (1.33%)	1 (0.66%)	2 (1.33%)	1 (0.66%)	1 (0.66%)	6 (4%)	8 (5.33%)	1 (0.66%)	1 (0.66%)	6 (7.5%)	2 (2.50%)	6 (7.5%)	8 (10%)	-1.25%
American Society for Microbiology	12 (8%)	8 (5.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	8 (5.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	20 (25%)	1 (1.25%)	8 (10%)	2 (2.50%)	4 (5%)
Annual Reviews	87 (58%)	10 (6.66%)	15 (10%)	2 (1.33%)	3 (2%)	87 (58%)	10 (6.66%)	1 (0.66%)	2 (1.33%)	1 (0.66%)	5 (6.25%)	6 (7.5%)	8 (10%)	2 (2.50%)	1 (1.25%)
Bentham Science	2 (1.33%)	4 (2.66%)	1 (0.66%)	1 (0.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	1 (0.66%)	4 (2.66%)	2 (1.33%)	2 (2.50%)	11 (13.75%)	2 (2.50%)	2 (2.50%)	1 (1.25%)
Cambridge University Press	5 (3.33%)	2 (1.33%)	2 (1.33%)	4 (2.66%)	1 (0.66%)	119 (79.33%)	10 (6.66%)	4 (2.66%)	8 (5.33%)	1 (0.66%)	55 (68.75%)	5 (6.25%)	5 (6.25%)	1 (1.25%)	1 (1.25%)
Elsevier Science	5 (3.33%)	4 (2.66%)	6 (4%)	2 (1.33%)	1 (0.66%)	8 (5.33%)	5(3.33%)	4 (2.66%)	1 (0.66%)	1(0.66%)	60 (75%)	4 (5%)	13 (16.25%)	5 (6.25%)	5 (6.25%)
IEEE	2 (1.33%)	10 (6.66%)	2 (1.33%)	4 (2.66%)	1 (0.66%)	1(0.66%)	1 (0.66%)	9 (6%)	2 (1.33%)	1 (0.66%)	4 (5%)	4 (5%)	8 (10%)	1 (1.25%)	1 (1.25%)
Indian Journals	70 (46.66%)	15 (10%)	10 (6.66%)	6 (4%)	3 (2%)	119 (79.33%)	10 (6.66%)	2 (1.33%)	5 (3.3%)	1 (0.66%)	61 (76.25%)	9 (11.25%)	2 (2.50%)	2 (2.50%)	5 (6.25%)
Institute of	17	9 (6%)	8	1	2	21 (14%)	21 (14%)	1	2	1	1	13	2	5	1

Physics	(11.33%)		(5.33%)	(0.66%)	(1.33%)			(0.66%)	(1.33%)	(0.66%)	(1.25%)	(16.25%)	(2.50%)	(6.25%)	(1.25%)
J-STOR	130 (86.66%)	20 (13.33%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	95 (63.33%)	6 (4%)	2 (1.33%)	1 (0.66%)	1 (0.66%)	29 (36.25%)	4 (5%)	5 (6.25%)	2 (2.50%)	2 (2.50%)
Nature	67 (44.66%)	20 (13.33%)	10 (6.66%)	1 (0.66%)	3 (2%)	95 (63.33%)	6 (4%)	2 (1.33%)	4 (2.66%)	1 (0.66%)	15 (18.75%)	5 (6.25%)	5 (6.25%)	4 (5%)	1 (1.25%)
Oxford University Press	119 (79.33%)	21 (14%)	1 (0.66%)	1 (0.66%)	31 (20.66%)	70 (46.66%)	4 (2.66%)	10 (6.66%)	2 (1.33%)	1 (0.66%)	27 (54%)	9 (11.25%)	4 (5%)	1 (1.25%)	2 (2.50%)
Portland Press	2 (1.33%)	5 (3.33%)	2 (1.33%)	4 (2.66%)	1 (0.66%)	5 (3.33%)	9 (6%)	2 (1.33%)	1 (0.66%)	1 (0.66%)	20 (25%)	2 (2.50%)	8 (10%)	2 (2.50%)	1 (1.25%)
Project Euclid	5 (3.33%)	2 (1.33%)	4 (2.66%)	2(1.33%)	1 (0.66%)	89 (59.33%)	2 (1.33%)	10 (6.66%)	2 (1.33%)	1 (0.66%)	1 (1.25%)	1 (1.25%)	20 (25%)	2 (2.50%)	1 (1.25%)
Project Muse	87 (58%)	10 (6.66%)	5 (3.33%)	1 (0.66%)	2 (1.33%)	89 (59.33%)	4 (2.66%)-	10 (6.66%)	4 (2.66%)	2 (1.33%)	2 (2.50%)	31 (38.75%)	2 92.50%)	5 (6.25%)	1 (1.25%)
Royal Society of Chemistry	20 (13.33%)	1 (0.66%)	10 (6.66%)	1 (0.66%)	2 (1.33%)	10 (6.66%)	8 (5.33%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	29 (36.25%)	5 (6.25%)	15 (18.75%)	1 (1.25%)	1 (1.25%)
Science Direct	112 (74.66%)	25 (16.66%)	8 (5.33%)	2 (1.33%)	1 (0.66%)	67 (44.66%)	21 (14%)	4 (2.66%)	10 (6.66%)	1 (0.66%)	75 (93.75%)	1 (1.25%)	4 (5%)	2 (2.50%)	1 (1.25%)
SIAM	95 (63.33%)	10 (6.66%)	6 (4%)	4 (2.66%)	2 (1.33%)	4 (2.66%)	7 (4.66%)	9 (6%)	2 (1.33%)	2 (1.33%)	2 (2.50%)	5 (6.25%)	43 (53.75%)	1 (1.25%)	1 (1.25%)
Springer Link	140 (93.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	135 (90%)	8 (5.33%)	5 (3.33%)	2 (1.33%)	2 (1.33%)	69 (87.05%)	11 (13.75%)	5 (6.25%)	4 (5%)	4 (5%)
Taylor & Francis	135 (90%)	8 (5.33%)	5 (3.33%)	2 (1.33%)	1 (0.66%)	140 (93.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	69 (87.05%)	5 (6.25%)	9 (11.25%)	4 (5%)	1 (1.25%)
Wiley Inter Science	1 (0.66%)	4 (2.66%)	4 (2.66%)	1 (0.66%)	1 (0.66%)	112 (74.66%)	2 (1.33%)	20 (13.33%)	2 (1.33%)	1 (0.66%)	8 (10%)	4 (5%)	1 (1.25%)	1 (1.25)	1 (1.25%)
Wiley Online	105 (70%)	25 (16.66%)	20 (13.33%)	4 (2.66%)	2 (1.33%)	2 (1.33%)	2 (1.33%)	25 (16.66%)	4 (2.66%)	2 (`1.33%)	9 (11.25%)	4 (5%)	2 (2.50%)	2 (2.50%)	1 (1.25%)

(MF- Most Frequently**, F**- Frequently**, SF**- Somewhat Frequently**, R**-Rarely**, N**-Never**)**

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

It is observed from the table that libraries provide various online databases to the users for better dissemination of information. However, an effort has been made to know the frequency of using online databases the data presented in the table, reveals that Out of 150 responses in DU, 140 (93.33%) faculty members use Springer link online database most frequently, 135 (90%) use Taylor & Francis, 130 (86.66%) use J-STOR, 119 (79.33%) use Oxford University Press 112 (74.66%) use Science Direct most frequently, and 25 (16.66%) use Wiley Online.This finding correlates with the study of Verma (2016) and Khan and Sudharma (2015) who found that respondents are using various online databases i.e. Science Direct, Taylor & Francis, Springer Link most frequently and few online databases frequently. Similarly, Md. Sohail and Alvi (2014) in a study found that majority of the users use Science Direct, Taylor & Francis, Springer Link, Wiley Online most frequently and few online databases frequently.

Out of 150 responses in JMI, 140 (93.33%) and 135 (90%) use Springer Link and Taylor & Francis most frequently,119 (79.33%) and 112 (74.66%) use Cambridge University Press, Indian Journals and Wiley Inter Science most frequently, while 21 (14%) use Cambridge University Press, Institute of Physics and Science Direct frequently.

Out of 80 responses in JNU, 75 (93.75%), 70 (87.05%) use Science Direct and Springer Link, Taylor & Francis most frequently, 60 (75%) use Elsevier Science and 61 (76.25%) Indian Journals use most frequently, followed by 31 (38.75%) ACM Digital and American Institute of Physics most frequently.

Online Databases	Research Scholars														
	DU					JMI					JNU				
	MF	F	SF	R	N	MF	F	SF	R	N	MF	F	SF	R	N
ACM Digital	1 (0.66%)	5 (3.33%)	10 (6.66%)	1 (0.66%)	1 (0.66%)	25 (16.66%)	12	8 (5.33%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	5 (3.33%)	10 (6.66%)	2 (1.33%)	1 (0.66%)
American Chemical Society	2 (1.33%)	10 (6.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	2 (1.33%)	5 (3.33%)	10 (6.66%)	1 (0.66%)	1 (0.66%)	1 (0.66%)	10 (6.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)
American Institute of Physics	25 (16.66%)	12 8%)	8 (5.33%)	2 (1.33%)	2 (1.33%)	2 (1.33%)	10 (6.66%)	2 (1.33%)	2 (1.33%)	1	25 (16.66%)	12 (8%)	8 (5.33%)	2 (1.33%)	2 (1.33%)
American Physical Society	27 (18%)	10 (6.66%)	6 (4%)	1 (0.66%)	2 (1.33%)	25 (16.66%)	12 (8%)	8 (5.33%)	2 (1.33%)	2 (1.33%)	27 (18%)	10 (6.66%)	6 (4%)	1 (0.66%)	2 (1.33%)
American Society for Civil Engineers	2 (1.33%)	6 (4%)	1 (0.66%)	2 (1.33%)	1 (0.66%)	27 18%)	10 (6.66%)	6 (4%)	1 (0.66%)	2 (1.33%)	5 (3.33%)	4 (2.66%)	2(1.33%)	2 (1.33%)	1 (0.66%)
American Society for Mechanical Engineers	1 (0.66%)	1 (0.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	5 (3.33%)	1 (0.66%)	2 (1.33%)	1 (0.66%)	1 (0.66%)	4 (2.66%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)
American Society for Microbiology	12 (8%)	8 (5.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	4 (2.66%)	1 (0.66%)	2 (1.33%)	12 (8%)	8 (5.33%)	6 (4%)	2 (1.33%)	2 (1.33%)
Annual Reviews	87 (58%)	10 (6.66%)	15 (10%)	2 (1.33%)	3 (2%)	12 (8%)	8 (5.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	87 (58%)	10 (6.66%)	15 (10%)	2 (1.33%)	3 (2%)
Bentham Science	4 (2.66%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	87 (58%)	10 (6.66%)	15 (10%)	2 (1.33%)	3 (2%)	5 (3.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)
Cambridge University Press	4 (2.66%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	5 (3.33%)	2 (1.33%)	2 (1.33%)	3 (2%)	3 (2%)	6 (4%)	5 (3.33%)	2 (1.33%)	2 (1.33%)	1 (0.66%)
Elsevier Science	15 (10%)	10 (6.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	12 (8%)	2 (1.33%)	2 (1.33%)	5 (3.33%)	2 (1.33%)	3 (2%)	2 (1.33%)	6 (4%)	1 (0.66%)	2 (1.33%)
IEEE	3 (2%)	2 (1.33%)	21 (14%)	2 (1.33%)	2(1.33%)	10 (6.66%)	5 (3.33%)	2 (1.33%)	1 (0.66%)	1 (0.66%)	1 (0.66%)	10 (6.66%)	2 (1.33%)	2 (1.33%)	1 (0.66%)
Indian Journals	89 (59.33%)	10 (6.66%)	10 (6.66%)	2 (1.33%)	3 (2%)	2 (1.33%)	10 (6.66%)	1 (0.66%)	2 (1.33%)	2 (1.33%)	70 (46.66%)	15 (10%)	10 (6.66%)	6 (4%)	3 (2%)
Institute of Physics	21 (14%)	2 (1.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	70 (46.66%)	15 (10%)	10 (6.66%)	6 (4%)	3 (2%)	17 (11.33%)	9 (6%)	8 (5.33%)	2 (1.33%)	2 (1.33%)
J-STOR	140	6 (4%)	2	2	1 (066%)	17	9 (6%)	8	2	2	130	20	3 (2%)	3 (2%)	2

	(93.33%)		(1.33%)	(1.33%)		(11.33%)		(5.33%)	(1.33%)	(1.33%)	(86.66%)	(13.33%)			(1.33%)
Nature	67 (44.66%)	20 (13.33%)	3 (2%)	4 (2.66%)	2 (1.33%)	130 (86.66%)	20 (13.33%)	4 (2.66%)	4 (2.66%)	3 (2%)	67 (44.66%)	20 (13.33%)	10 (6.66%)	4 (2.66%)	3 (2%)
Oxford University Press	95 (63.33%)	10 (6.66%)	6 (4%)	2 (1.33%)	2 (1.33%)	67 (44.66%)	20 (13.33%)	10 (6.66%)	2 (1.33%)	3 (2%)	119 (79.33%)	21 (14%)	4 (2.66%)	4 (2.66%)	31
Portland Press	67 (44.66%)	20 (13.33%)	10 (6.66%)	4 (2.66%)	2 (1.33%)	119 (79.33%)	21 (14%)	8 (5.33%)	2 (1.33%)	31 (20.66%)	10 (6.66%)	4 (2.66%)	2 (1.33%)	4 (2.66%)	3 (2%)
Project Euclid	8 (5.33%)	3 (2%)	5 (3.33%)	2 (1.33%)	1 (0.66%)	10 (6.66%)	3 (2%)	3 (2%)	2 (1.33%)	2 (1.33%)	3 (2%)	3 (2%)	10 (6.66%)	3 (2%)	2 (1.33%)
Project Muse	2 (1.33%)	5 (3.33%)	2 (1.33%)	3 (2%)	3 (2%)	87 (58%)	10 (6.66%)	5 (3.33%)	3 (2%)	2 (1.33%)	87 (58%)	10 (6.66%)	5 (3.33%)	3 (2%)	2 (1.33%)
Royal Society of Chemistry	21 (14%)	3 (2%)	2 (1.33%)	3 (2%)	2 (1.33%)	20 (13.33%)	3 (2%)	10 (6.66%)	2 (1.33%)	2 (1.33%)	20 (13.33%)	3 (2%)	10 (6.66%)	2 (1.33%)	2 (1.33%)
Science Direct	119 (79.33%)	21 (14%)	3 (2%)	2 (1.33%)	3 (2%)	112 (74.66%)	25 (16.66%)	8 (5.33%)	3 (2%)	3 (2%)	112 (74.66%)	25 (16.66%)	8 (5.33%)	3 (2%)	1 (0.66%)
SIAM	8 (5.33%)	9 (6%)	7 (4.66%)	4 (2.66%)	1 (0.66%)	95 (63.33%)	10 (6.66%)	6 (4%)	4 (2.66%)	2 (1.33%)	95 (63.33%)	10 (6.66%)	6 (4%)	4 (2.66%)	2 (1.33%)
Springer Link	135 (90%)	21 (14%)	1 (0.66%)	2 (1.33%)	1 (0.66%)	140 (93.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)	140 (93.33%)	6 (4%)	2 (1.33%)	2 (1.33%)	1 (0.66%)
Taylor & Francis	112 (74.66%)	20 (13.33%)	10 (6.66%)	1 (0.66%)	1 (0.66%)	135 (90%)	8 (5.33%)	5 (3.33%)	2 (1.33%)	1 (0.66%)	135 (90%)	8 (5.33%)	5 (3.33%)	2 (1.33%)	1 (0.66%)
Wiley Inter Science	8 (5.33%)	3 (2%)	4 (2.66%)	3 (2%)	1 (0.66%)	3 (2%)	4 (2.66%)	4 (2.66%)	2 (1.33%)	1 (0.66%)	2 (1.33%)	4 (2.66%)	4 (2.66%)	2 (1.33%)	1 (0.66%)
Wiley Online	105 (70%)	25 (16.66%)	20 (13.33%)	1 (0.66%)	2 (1.33%)	105 (70%)	25 (16.66%)	20 (13.33%)	2 (1.33%)	1 (0.66%)	105 (70%)	25 (16.66%)	20 (13.33%)	1 (0.66%)	1 (0.66%)

(MF- Most Frequently**, F**- Frequently**, SF**- Somewhat Frequently**, R**-Rarely**, N**-Never**)**

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

Similarly out of 150 responses in DU, 140 (93.33%) use J-STOR and 135 (90%) use Springer Link, 119 (79.33%) use Science Direct and 105 (70%) use Wiley Online, followed by 87 (58%) use Annual reviews.

Out of 150 responses in JMI, 140 (93.33%) use Springer Link and 135 (90%) use Taylor & Francis most frequently, while 119 (79.33%) use Portland Press and 112 (74.66%) use Science Direct, 130 (86.66) use Nature most frequently, whereas 25(16.66%) use ACM Digital, American Institute of Physics most frequently while Science Direct and Wiley Online, frequently.This finding correlates with the study of Verma (2016) and Khan and Sudharma (2015) who found that respondents are using various online databases i.e. Science Direct, Taylor & Francis, Springer Link most frequently and few online databases frequently. This finding correlates with the study of Musa, Ahmad, Maryam and Hamisu (2015) and Mangi (2014) also revealed in that a high percentage of respondents are using online databases most frequently.

Out of 150 responses in JNU, 140 (93.33%) use Springer Link and 135 (90%) use Taylor & Francis most frequently, while 130 (86.66%) use J-STOR and 119 (79.33%) use Oxford University Press while 112 (74.66%) use Science Direct online databases, most frequently.

It is clear from the above analysis that faculty members and research scholars use Science Direct and Taylor & Francis, most frequently, and other databases frequently.

Table 4.3.13 Material search from the Online Databases

Material	Respondents					
	DU		**JMI**		**JNU**	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Books	50 (33.33%)	70 (46.66%)	35 (23.33%)	40 (26.66%)	20 (25%)	60 (40%)
Journals articles	112 (74.66%)	125 (83.33%)	120 (80%)	135 (90%)	75 (93.75%)	140 (93.33%)
Conference Papers	70 (46.66%)	55 (36.66%)	51 (34%)	67 (44.66%)	31 (38.75%)	67 (44.66%)
Theses/ Dissertations	2 (1.33%)	83 (55.33%)	3 (2%)	90 (60%)	1 (1.25%)	95 (63.33%)
Case Studies	15 (10%)	30 (20%)	25 (16.66%)	25 (16.66%)	9 (11.25%)	57 (38%)
Patents	10 (6.66%)	9 (6%)	7 (4.66%)	13 (8.66%)	8 (10%)	15 (10%)

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

It is observed from the table that libraries provide the information resources to the users for better dissemination of information Different type of material are available through online databases. Though, an effort has been made to know the type of material searched by the users from the online databases, the table shows that 74.66% faculty members and 83.33% research scholars in DU 80% faculty members and 90% research scholars in JMI while, 93.75% faculty members and 93.33% research scholars in JNU search journal articles from the online databases. This finding correlates with the study of Nikam and Dhruva (2013) stated that majority of respondents mostly searched journals articles through online databases.

The collected data further show that 46.66% faculty members and 36.66% research scholars in DU 34% faculty members and 44.66% research scholars in JMI and 38.75% faculty members and 44.66% research scholars in JNU search conference papers from online databases. Similarly, this finding correlates with the study of

Nikam and Dhruva (2013) stated that majority of respondents mostly searched conference papers through online databases.

The data, moreover, show that 33.33% faculty members and 46.66% research scholars in DU, 23.33% faculty members and 26.66% research scholars in JMI while 25% faculty members and 40% research scholars in JNU search books through online databases.Similarly, Swain (2010) and Popoola (2008) also revealed in their study that through online databases, users searched books as these are easy to locate and nature of information requirements.

It reveals that in DU 10% faculty members and 20% research scholars,16.66% faculty members and research scholars in JMI While 11.25% faculty members and 38% research scholars in JNU search case studies through online databases.

The table shows that 6.66% faculty members in DU, 4.66% in JMI and 10% in JNU search patents from online databases, while 6% research scholars in DU, 8.66% in JMI and 10% in JNU, search patents from online databases.

The table clearly shows that 1.33% faculty members in DU, 2% in JMI and 1.25% in JNU whereas 55.33% research scholars in DU, 60% in JMI and 63.33% in JNU search theses/dissertations from the online databases.

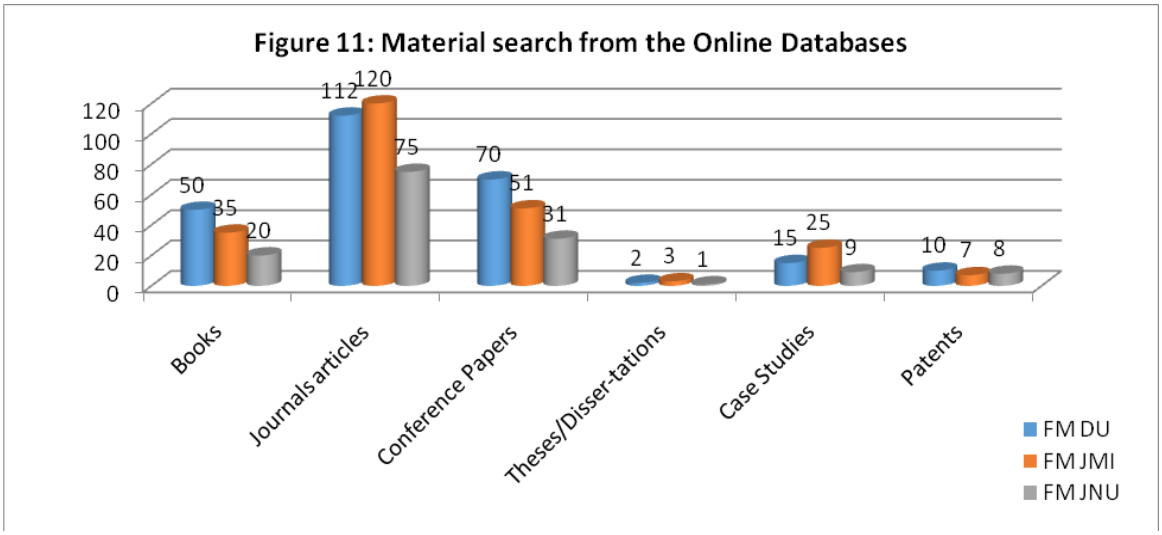
One Way ANOVA Test- The response regarding the material search from the online databases among the respondents in table 4.3.13 reveals that some variation is observed in the material search from the online databases for Journal articles. Results reveal that higher percentage of faculty members in JNU (93.75%) admit that they search journal articles from the online databases, whereas a contrast is observed among the faculty members of DU and JMI where the percentage of faculty members is slightly lower i.e. 74.6% in DU and 80% in JMI.

On the other hand, higher percentage of research scholars in JNU (93.33%) and in JMI (90%) search journal articles from the online databases, whereas in DU, 83.33% research scholars search journal articles from online databases, which is slightly lower as compared to JNU & JMI.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	1275.444	2	637.722	.435	.655
	Within Groups	21997.667	15	1466.511		
	Total	23273.111	17			
RS	Between Groups	441.333	2	220.667	.120	.888
	Within Groups	27542.667	15	1836.178		
	Total	27984.000	17			

In order to determine, if there is any significant difference in material search from the online databases, by faculty members and research scholars of the universities under study one way ANOVA Test was applied, which reveals that the obtained p-value .655 for faculty members and .888 is more than the significant level of 0.05 i.e. (p>0.05) which indicates that there is no significant difference among the faculty members and the research scholars separately of these universities. It concludes that the faculty members and research scholars search journal articles from the online databases.



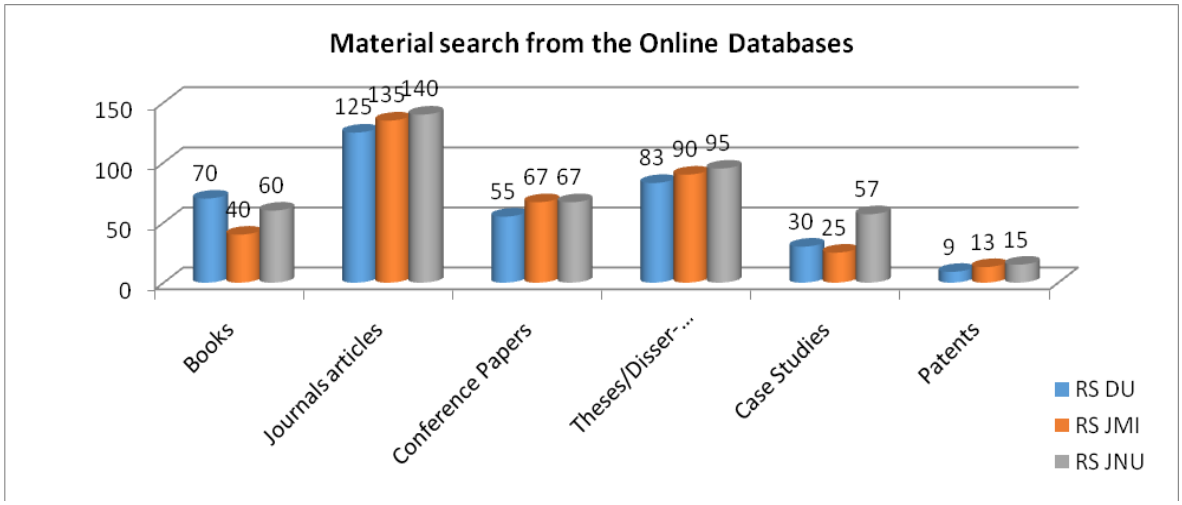


Table 4.3.14 Preferred Search Methods

Methods	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Basic Search	89 (59.33%)	125 (83.33%)	95 (63.33%)	95 (63.33%)	61 (76.25%)	135 (90%)
Advanced Search	105 (70%)	90 (60%)	110 (73.33%)	99 (66%)	69 (86.25%)	87 (58%)
Expert Search	10 (6.66%)	8 (5.33%)	10 (6.66%)	15 (10%)	13 (16.25%)	12 (8%)
Citation Locator	25 (16.66%)	15 (10%)	10 (6.66%)	17 (11.33%)	31 (38.75%)	15 (10%)

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

With reference in the query regarding the preferred search methods to search relevant information, the respondents have given many options to select, as multiple responses were permitted in the question. The table 4.3.14 clearly reveals that 70% faculty members and 60% research scholars in DU, 73.33% faculty members and 66% research scholars in JMI and 86.25% faculty members and 58% research scholars in preferred advanced search mostly of the time. This finding correlates with the study of

Verma (2016) found that highest percentage of respondents preferred advanced search method for online databases.

Similarly, Basic search method is used by 59.33% faculty members and 83.33% research scholars in DU 63.33% faculty members and research scholars in JMI while 76.25% faculty members and 90% research scholars in JNU most of the time. Similarly, Khan and Sudharma (2015) who stated that majority of the respondents preferred basic and advanced search as their search method for online databases.

However, table also revealed that 16.66% faculty members and 10% research scholars in DU, 51.33% faculty members and 54% research scholars in JMI while 38.75% faculty members and 10% research scholars in JNU use citation locator method most of the time.

The data from table 4.3.14 reveals that expert search is used as search method in DU by 6.66% faculty members and 5.33% research scholars, 14% faculty members and 15.33% research scholars in JMI and 16.25% faculty members and 8% research scholars in JNU.

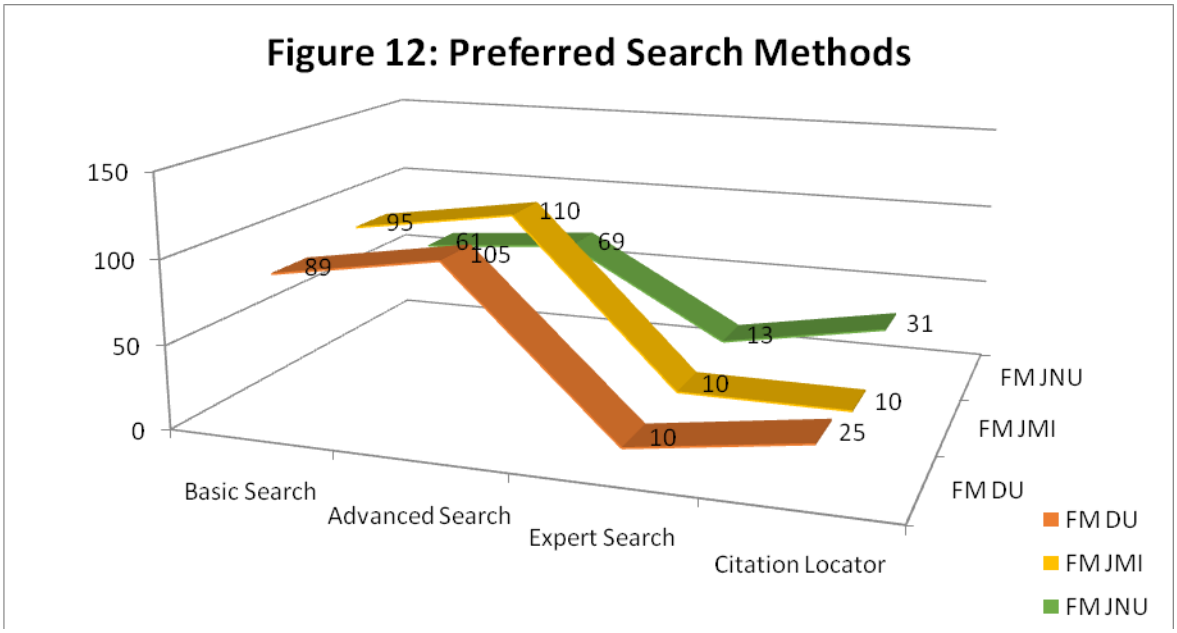
One Way ANOVA Test- It is evident from the table 4.3.14 that advanced search is the most preferred search method adopted by the faculty members. Advanced search obtained the highest number of responses in all the select universities under the study i.e. 70% in DU and 73.33% in JMI. But the percentage of faculty members in JNU (86.25%) was much higher in comparison to both the other universities.

On the other hand the research scholars prefer basic search method. 90% in JNU and 83.33% in DU responses were received in its favour, while a lower percentage of 63.33% research scholars in JMI research scholars prefer basic search.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	470.167	2	235.083	.122	.886
	Within Groups	17272.500	9	1919.167		
	Total	17742.667	11			
RS	Between Groups	66.167	2	33.083	.011	.989
	Within Groups	27086.750	9	3009.639		
	Total	27152.917	11			

On applying ANOVA Test for checking the presence of any significant difference among the researchers of DU, JMI and JNU in preferred search methods, it clearly indicates that p-value for faculty members is .886 and .989 for research scholars, which is more than the significant level of 0.05 i.e. (p>0.05) and thus specifies that there is no significant difference among the respondents of DU, JMI and JNU. Therefore, it shows that faculty members and research scholars prefer advanced and basic search methods.



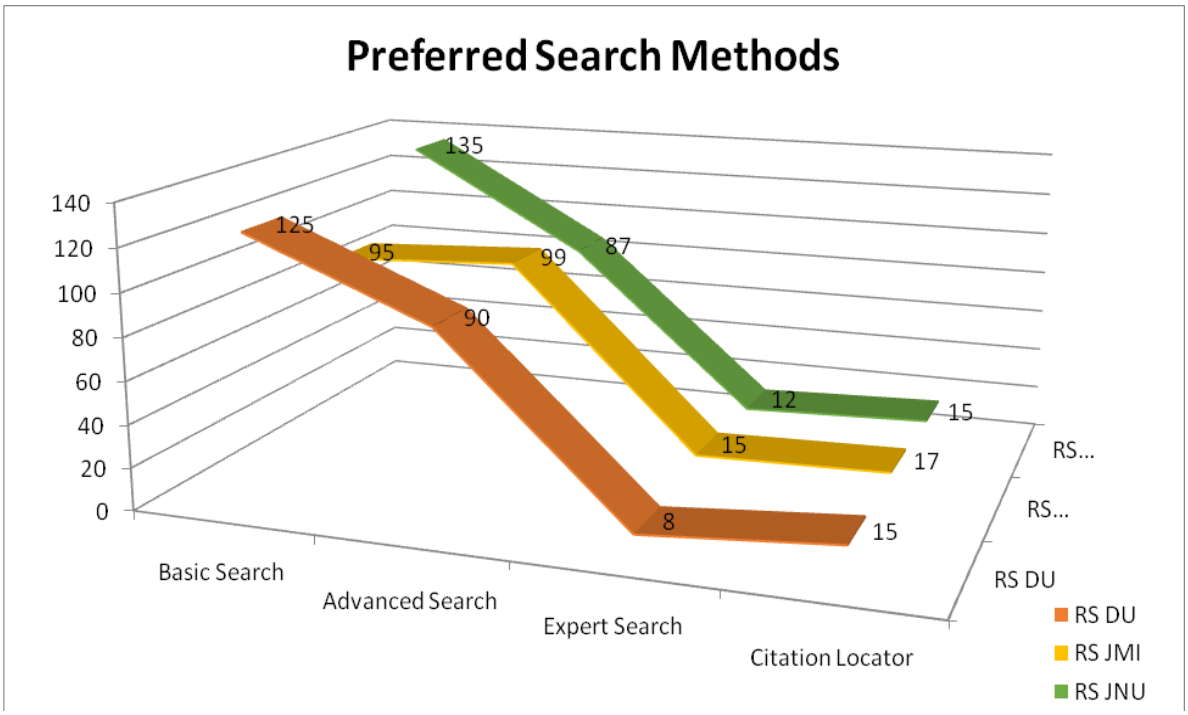


Table 4.3.15 Preferred Search Technique

Technique	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Boolean Operator	112 (74.66%)	130 (86.66%)	125 (83.33%)	125 (83.33%)	70 (87.05%)	135 (90%)
Truncation Search	45 (30%)	45 (30%)	33 (22%)	57 (38%)	29 (36.25%)	45 (30%)
Phase Search	25 (16.66%)	19 (12.66%)	21 (14%)	23 (15.33%)	15 (18.75%)	29 (19.33%)
Proximity Search	70 (46.66%)	77 (51.33%)	77 (51.33%)	81 (54%)	43 (53.75%)	79 (52.66%)

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

The table 4.3.15 clearly reveals that Boolean operator is used as common search technique by 74.66% faculty members and 86.66% research scholars in DU, 83.33% faculty members and research scholars in JMI and 87.5% faculty members and 90% research scholars use in JNU. This finding correlates with the study of Roy, Shailendra and Satija (2012) who stated that Boolean operator is the most preferred search techniques by the respondents for finding the information.

Similarly, proximity search is used as search technique by 46.66% faculty members and 51.33% research scholars in DU; 51.33% faculty members and 54% research scholars in JMI and 53.75% faculty members and 52.66% research scholars in JNU. Husain, Khan and Nishat (2011) also revealed in their studies that good percentage of respondents preferred proximity search as search techniques.

The, table also identified that truncation search is used as searching technique by 30% faculty members and research scholars in DU; 22% faculty members and 38% research scholars in JMI and 36.25% faculty members and 30% research scholars in JNU. Similarly Shailendra and Singh (2011) found that majority of the respondents preferred Boolean operator and proximity search as their search technique and very few prefer Truncation finding the information of their need.

The data from table 4.3.15 reveals that phase search is used as searching technique with a considerable percentage 16.66% faculty members and 12.66% research scholars in DU; 14% faculty members and 15.33% research scholars in JMI and 18.75% faculty members and 19.33% research scholars in JNU.

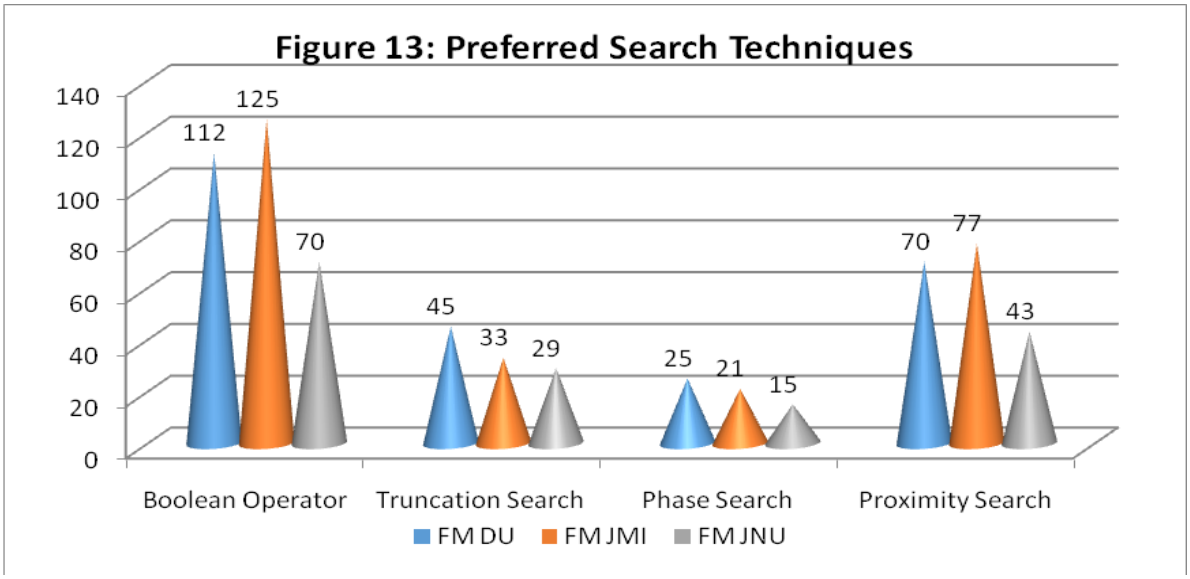
One Way ANOVA Test- In table 4.3.15, responses regarding the preferred search technique for online databases identify a bit of that variation is observed in the responses. Higher percentage of faculty members in JNU (87.05%) and in JMI (83.33%) prefer Boolean operator as search technique, whereas a contrast was observed in DU where 74.66% faculty members too prefer Boolean operators, but the percentage is slightly lower.

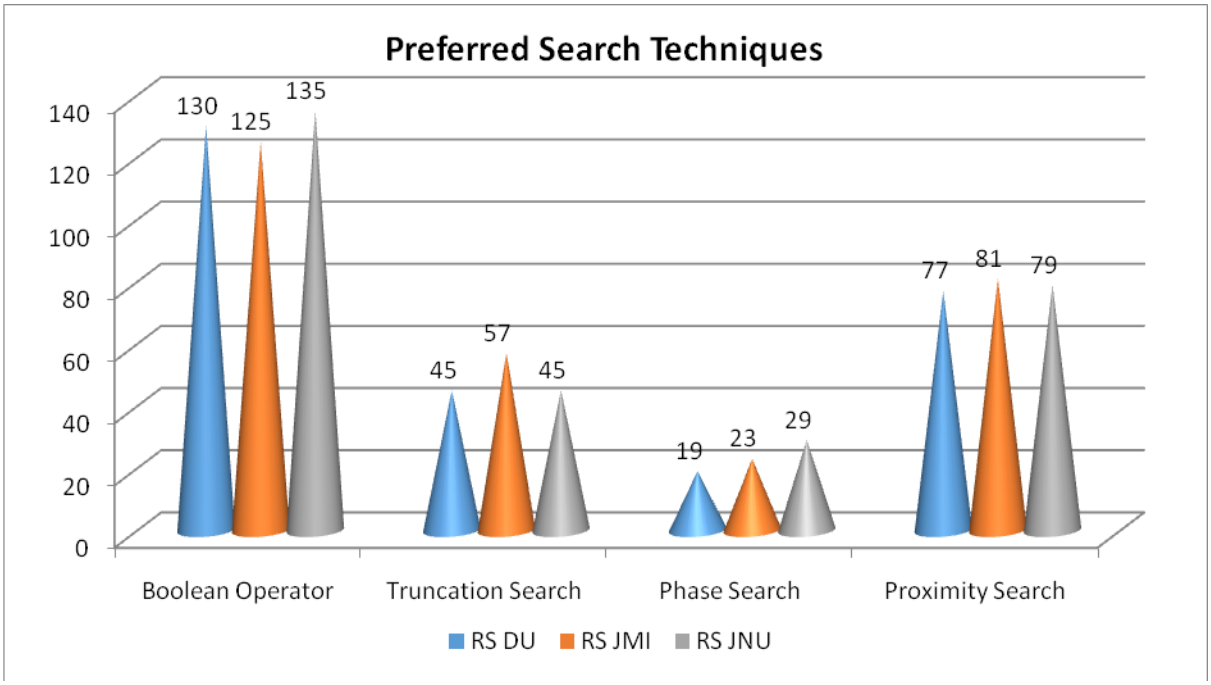
On the other hand higher percentage of research scholars in JNU (90%) prefer Boolean operators, whereas 86.66 in DU and 83.33 in JMI research scholars also prefer Boolean operators as search technique, but the percentage is slightly lower.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	1570.167	2	785.083	.562	.589
	Within Groups	12570.750	9	1396.750		
	Total	14140.917	11			
RS	Between Groups	43.167	2	21.583	.010	.990
	Within Groups	18965.750	9	2107.306		
	Total	19008.917	11			

With the help of one way ANOVA test, it was attempted to find out any significant difference in preferred search technique for online databases by faculty members and research scholars. The result of test covers that calculated p-value, .589 for faculty members and .990 for research scholars, which is greater than the significance level of 0.05 i.e. (p>0.05), which means that there is no significant difference among the faculty members and also the research scholars of under study universities and they prefer Boolean operators as a search technique for online databases.





4.3.16 Means of Browsing Information from Online Databases

Ways	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Type the web address directly	60 (40%)	55 (36.66%)	45 (30%)	90 (60%)	35 (43.75%)	65 (43.33%)
Use search engines	30 (20%)	20 (13.33%)	25 (16.66%)	15 (10%)	10 (12.5%)	20 (13.34%)
Use subscribed online databases	60 (40%)	75 (50%)	80 (53.33%)	45 (30%)	35 (43.75%)	65 (43.33%)
Total	150 (100%)	150 (100%)	150 (100%)	150 (100%)	80 (100%)	150 (100%)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

It revealed from the table that a very large population of users i.e. 40% faculty members and 50% research scholars in DU, 53.33% faculty members and 30% research scholars in JMI while 43.75% faculty members and 43.33% research scholars in JNU use subscribed online databases to browse the required information. This finding correlates with the study of Musa, Ahmad, Maryam and Hamishu (2015) and also with Nikam and Dhruva (2013) stated that majority of the respondents use subscribed online databases for browsing information from online databases. Habiba and Chowdhury (2012) and Hussain, Khan and Nishat (2011) also revealed in their studies that a high percentage of respondents use subscribed online databases for browsing information.

The data, moreover, shows that 40% faculty members and 36.66% research scholars in DU 30% faculty members and 60% research scholars in JMI whereas 43.75% faculty members and 43.33% research scholars in JNU use the web address directly to browse the required information. Similarly, Kaur, Randhawa (2010) and Khan and Zaidi (2009) in their study found that most of the respondents type web address directly for browsing information followed by use subscribed online databases.

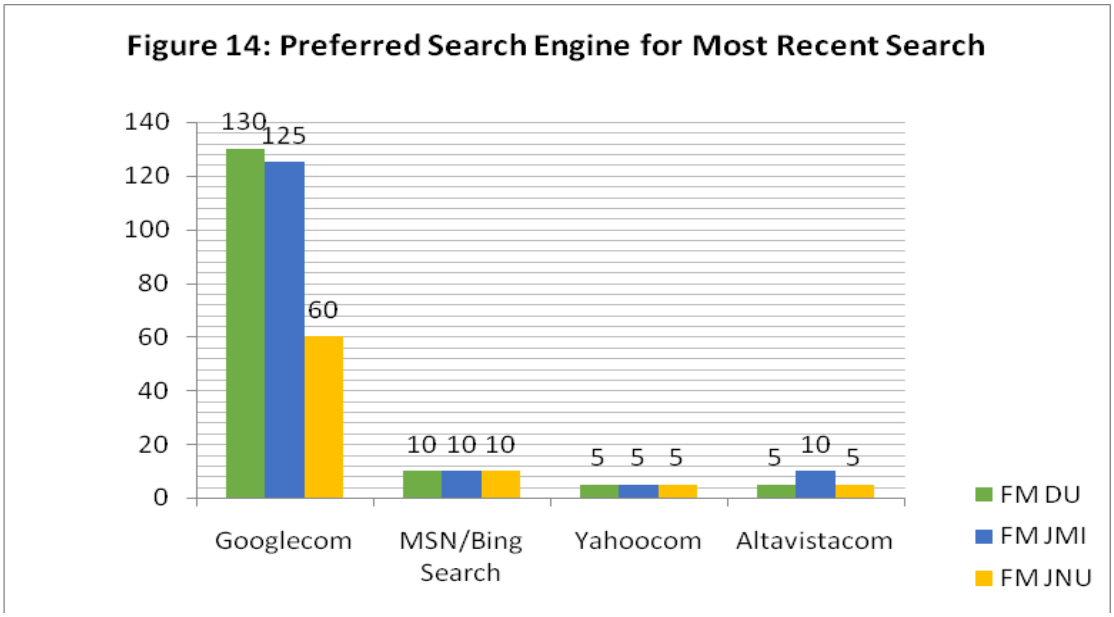
The data further shows that a thin percentage of users i.e. 20% faculty members and 13.33% research scholars in DU 16.66% faculty members and 10% research scholars in JMI while 12.5% faculty members and 13.34% research scholars in JNU use search engines to browse the required information.

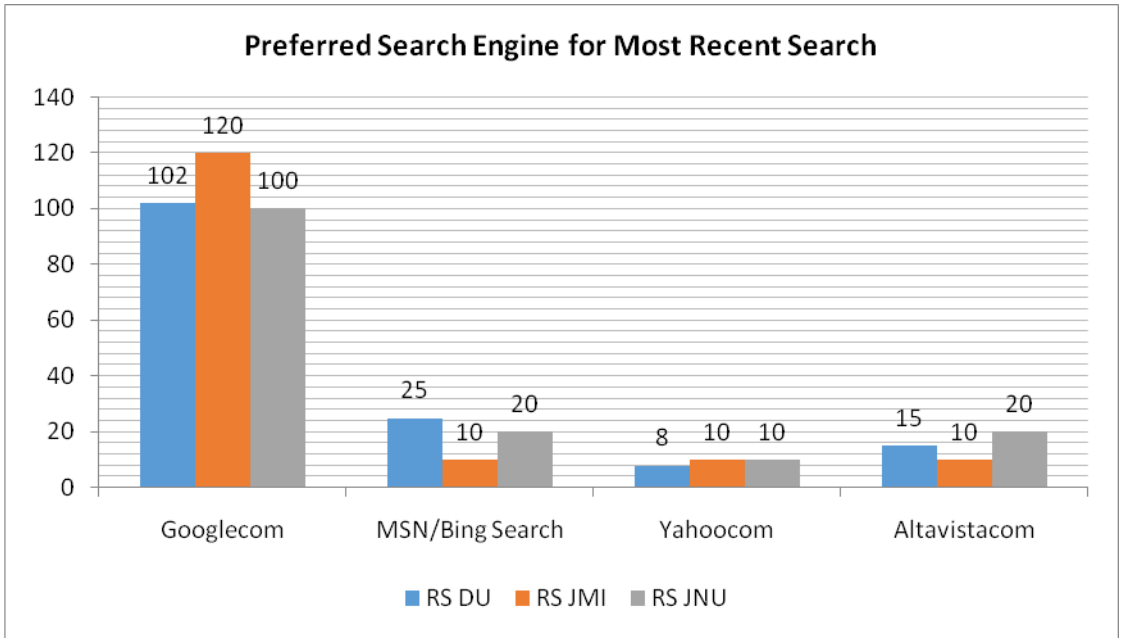
One Way ANOVA Test- It reveals from the table 4.3.16 that subscribed online databases were found to be the most important means of browsing information from the online databases, which received good number of responses of faculty members in JMI (53.33%), while a slight lower percentage of faculty members is found in JNU (43.75%) and in DU (40%). Moreover, high percentage of research scholars in JNU (60%) use the web address directly to browse the required information, while 50% research scholars in DU and 43.33% in JNU use subscribed online databases to browse the required information, which is slightly lower.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	1088.889	2	544.444	1.273	.346
	Within Groups	2566.667	6	427.778		
	Total	3655.556	8			
RS	Between Groups	.000	2	.000	.000	1.000
	Within Groups	5750.000	6	958.333		
	Total	5750.000	8			

In order to determine if there is any significant difference by means of browsing information from the online databases, by faculty members and research scholars of the universities under study, One way ANOVA Test was applied that reveals that the obtained p-value .346 for faculty members and 1.000 for research scholars is more than the significant level of 0.05 i.e. (p>0.05) which indicates that there is no significant difference among the faculty members and research scholars of these universities. It concludes that respondents use subscribed online databases for browsing required information.





4.3.17 Preferred Search Engines for Most Recent Search

Search Engines	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Google.com	130 (86.66%)	102 (68%)	125 (83.33%)	120 (80%)	60 (75%)	100 (66.66%)
MSN/Bing Search	10 (6.66%)	25 (16.66%)	10 (6.66%)	10 (6.66%)	10(12.5%)	20 (13.33%)
Yahoo.com	5 (3.34%)	8 (5.34%)	5 (3.34%)	10 (6.67%)	5 (6.25%)	10 (6.67%)
Altavista.com	5 (3.34%)	15 (10%)	10 (6.67%)	10 (6.67%)	5 (6.25%)	20 (13.34%)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

In order to know the preferred search engines by the respondents for their most recent searches, they were given four options like Google, MSN/Bing, Yahoo, and AltaVista. The data, presented in the table shows that 86.66% faculty members and 68% research scholars in DU, 83.33% faculty members and 80% research scholars in JMI use google.com in JNU 75% faculty members and 66.66% research scholars use google.com for their recent search. This finding correlated with the study of Md. Sohail and Alvi (2014) and Nikam and Dhruva (2013) who found that Google.com is preferred search engine to search the major portion of their required information as their most recent search. Prabhakaran and Sankaranarayanan (2012) and Singh (2012) also revealed in their studies that a high percentage of respondents use Google.com as their preferred search engine.

The data show that 6.67% faculty members and 16.66% research scholars in DU. 6.67% faculty members and research scholars and 12.5% faculty members and 13.33% research scholars in JNU use MSN/Bing for their recent search. Similarly, Hussain, Khan and Nishat (2011) and Chopra (2008) also stated that majority of the respondents use MSN/ Bing to search their required information and very few respondents use other search engines.

The table also reveals that 3.33% faculty members and 10% research scholars in DU. 6.67% faculty members and research scholars in JMI while 6.25% faculty members and 13.33% research scholars in JNU use Altavista.com for their most recent search.

It clearly shows that Yahoo.com search engine is used by 3.33% faculty members and 5.34% research scholars in DU, 3.34% faculty members and 6.67% research scholars in JMI followed by 6.25% faculty members and 6.67% research scholars in JNU.

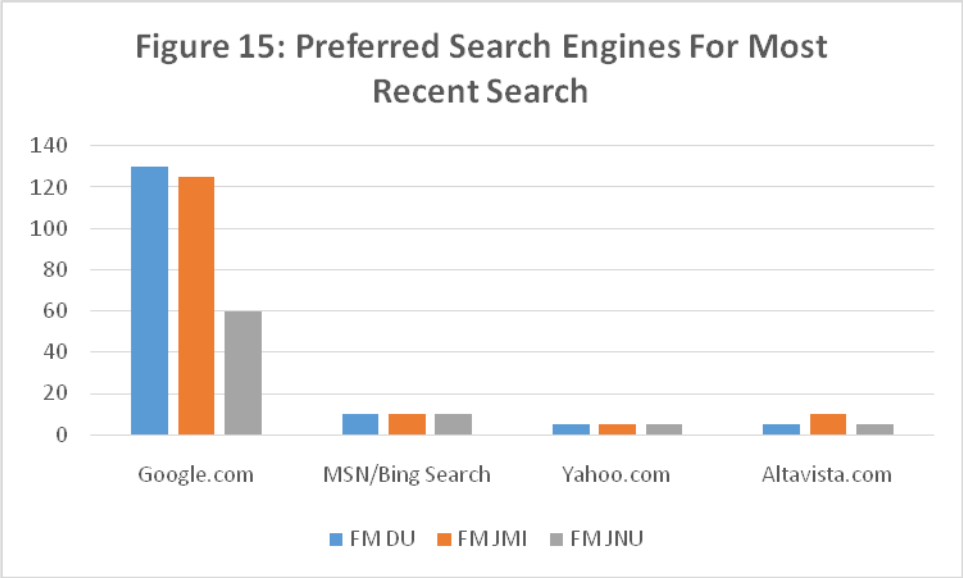
One Way ANOVA Test- It is evident from the table 4.3.17 that Google.com is the most preferred search engine for most recent search by the faculty members. It acquired the highest responses in DU (86.66%) and in JMI (83.33%), but the percentage of faculty members in JNU (75%) was slightly lower.

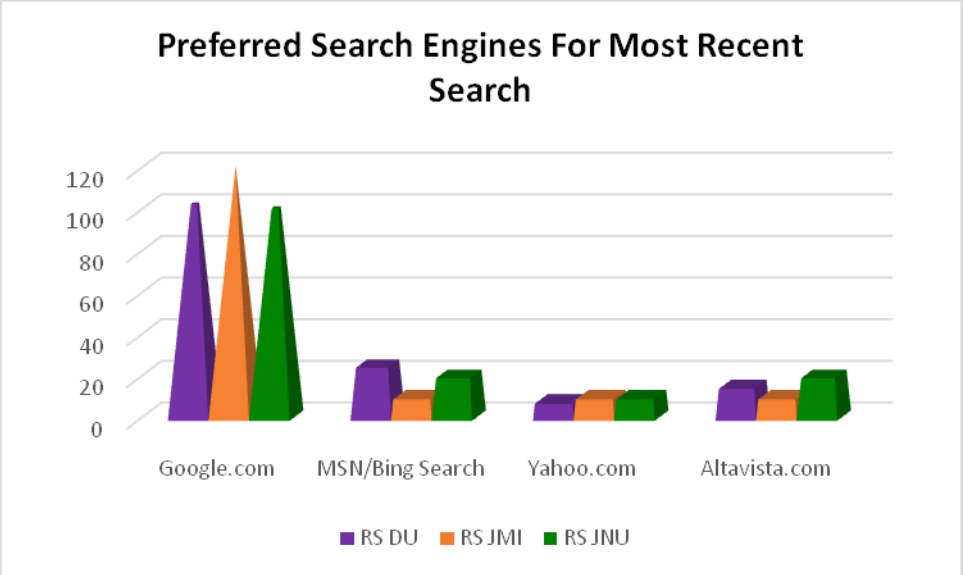
Similarly, the research scholars prefer Google.com as search engine for most recent searches i.e. in JMI 80% responses were received. But 68% research scholars of DU and 66.66% in JNU also prefer Google.com as search engine for most recent search.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	816.667	2	408.333	.154	.859
	Within Groups	23800.000	9	2644.444		
	Total	24616.667	11			
RS	Between Groups	.000	2	.000	.000	1.000
	Within Groups	20043.000	9	2227.000		

On applying one way ANOVA test for checking the presence of any significant difference among the researchers of DU, JMI and JNU for preferred search engines for the most recent searches it clearly indicates that p-value of faculty members is .859 and 1.000 for research scholars which is more than significant level of 0.05 i.e. (p>00.5) and specifies that there is no significant difference among the respondents of DU, JMI and JNU. Therefore, it shows that respondents mostly prefer Google.com as preferred search engine for most recent searches through online databases.





Awareness About Online Databases

Table 4.3.18 Awareness about UCG-INFONET Consortium

Response	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Yes	150 (100%)	110 (73.33%)	150 (100%)	130 (86.66%)	80 (100%)	130 (86.66%)
No	-	40 (26.67%)	-	20 (13.34%)	-	20 (13.34%)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

The online databases are either available in library or through consortium. An effort has been made to find out the awareness among the library users about UGC-Infonet Consortium. The collected data further show that in DU, JMI and JNU 100% faculty members are aware of UGC-Infonet consortium. This finding correlates with the study of Das and Maharana (2013) and also with Sinha, Singha and Sinha (2011) who found that majority of the respondents are aware about UGC-Infonet Consortium.

Similarly, Md. Sohail and Ahmad (201) and Mukherjee and Prashant (2010) also revealed in their study that high percentage of respondents having awareness about UGC-Infonet consortium.

This finding correlates with the study of Chopra (2008) and Nikam and Pramodini (2007) in a study found that most of the respondents are about UGC-Infonet consortium and very few are not aware about UGC-Infonet consortium.

Similarly, in DU 73.33% research scholars, 86.66% research scholars in JMI and JNU are aware of UGC-Infonet consortium.

The analysis reveals that all the faculty members and majority of research scholars are aware of UGC-Infonet consortium and a very few research scholars in all select universities are not aware of UGC-Infonet consortium.

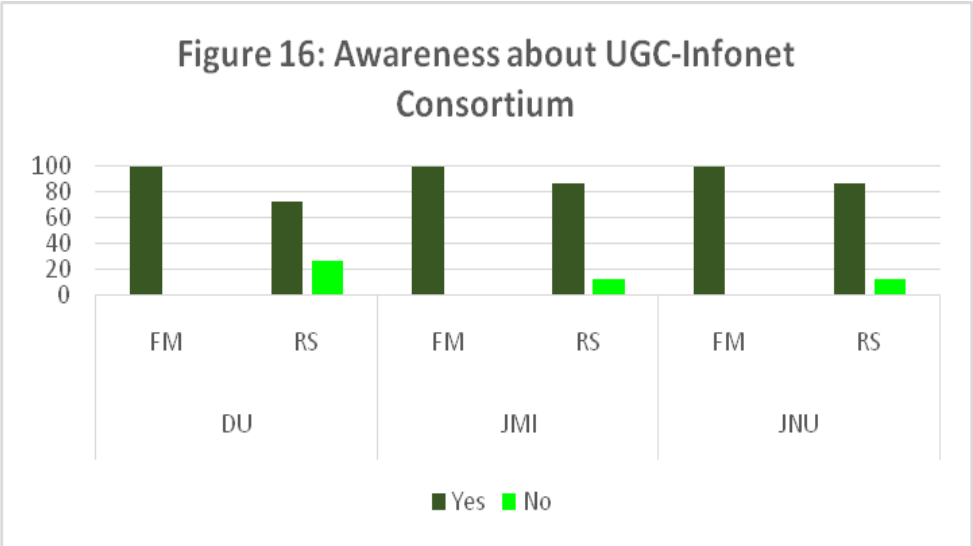


Table 4.3.19 Satisfaction about Online Databases Accessed in Consortia

Satisfaction	Respondents					
	DU		**JMI**		**JNU**	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Large Extent	100 (66.66%)	30 (20%)	112 (74.66%)	41 (27.33%)	65 (81.25%)	38 (25.33%)
Some Extent	30 (20%)	90 (60%)	22 (14.67%)	80 (53.33%)	10 (12.5%)	83 (55.33%)
Least Extent	20 (13.34%)	30 (20%)	16 (10.67%)	29 (19.34%)	5 (6.25%)	29 (19.34%)

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

The opinion of users regarding satisfaction about online databases accessed in the consortia is pooled The table 4.3.19 shows that in DU 66.66% faculty members and 20% research scholars 74.66% faculty members and 27.33% research scholars in JMI, while 81.25% faculty members and 25.33% research scholars in JNU are satisfied to a large extent about online databases accessed in the consortia. This finding correlates with the study of Md. Sohail and Ahmad (2011) who stated that majority of the respondents are large extent satisfied about online databases accessed in the consortia.

The data show that 20% faculty members and 60% research scholars in DU 14.67% faculty members and 53.33% research scholars in JMI whereas 12.5% faculty members and 55.33% research scholars in JNU are to some extent, satisfied with the online databases, accessed in the consortia. Similarly, Mukherjee and Prashant (2010) and Chopra (2008) also revealed in their studies that respondents are large extent

satisfied about online databases accessed in the consortia and few are some extent satisfied.

It is also revealed from the table that 13.34% faculty members and 20% research scholars in DU 10.66% faculty members and 19.34% research scholars in JMI and 6.25% faculty members and 19.34% research scholars in JNU are least satisfied with online databases accessed in the consortia.

One Way ANOVA Test- The response regarding the satisfaction about online databases accessed in consortia among the respondents in table 4.3.19 reveals that a variation is observed in the results that shows a higher percentage of faculty members in JNU (81.25%) and in JMI (74.66%) accept that they are to a large extent satisfied with online databases accessed in consortia, whereas a contrast was observed among the faculty members of DU where the percentage of faculty members is slightly lower, i.e. 66.66%.

On the other hand high percentage of research scholars in DU (60%) are to some extent, satisfied with online databases accessed in consortia, whereas in JMI and JNU 53.33% of research scholars are to a lesser extent satisfied with online databases in consortia.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	1088.889	2	544.444	.277	.767
	Within Groups	11800.667	6	1966.778		
	Total	12889.556	8			
RS	Between Groups	.000	2	.000	.000	1.000
	Within Groups	5496.000	6	916.000		
	Total	5496.000	8			

In order to determine if there is any significant difference as regards to satisfaction with online databases accessed in consortia by the faculty members and research scholars of the universities under study, one way ANOVA test was applied that reveals that the obtained p-value is .767 for faculty members and 1.000 for research scholars, which is more than the significant level of 0.05 i.e. ($p>0.05$), that

indicates that there is no significant difference among the researchers and also the faculty members taken separately, of these universities. It concludes that the faculty members and research scholars are mostly satisfied with online databases accessed in consortia.

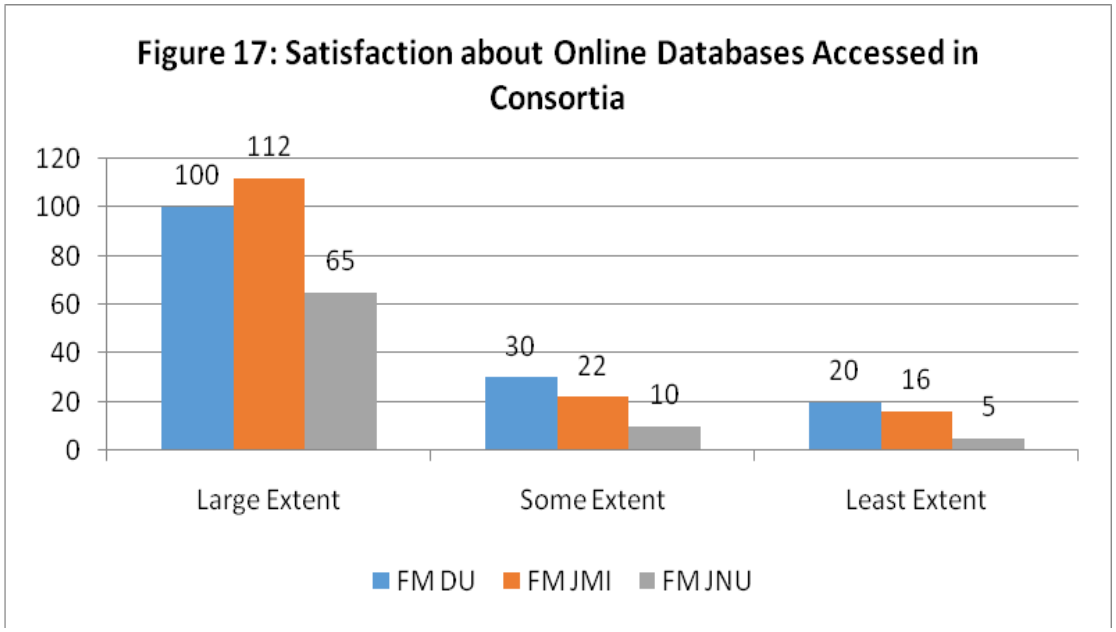
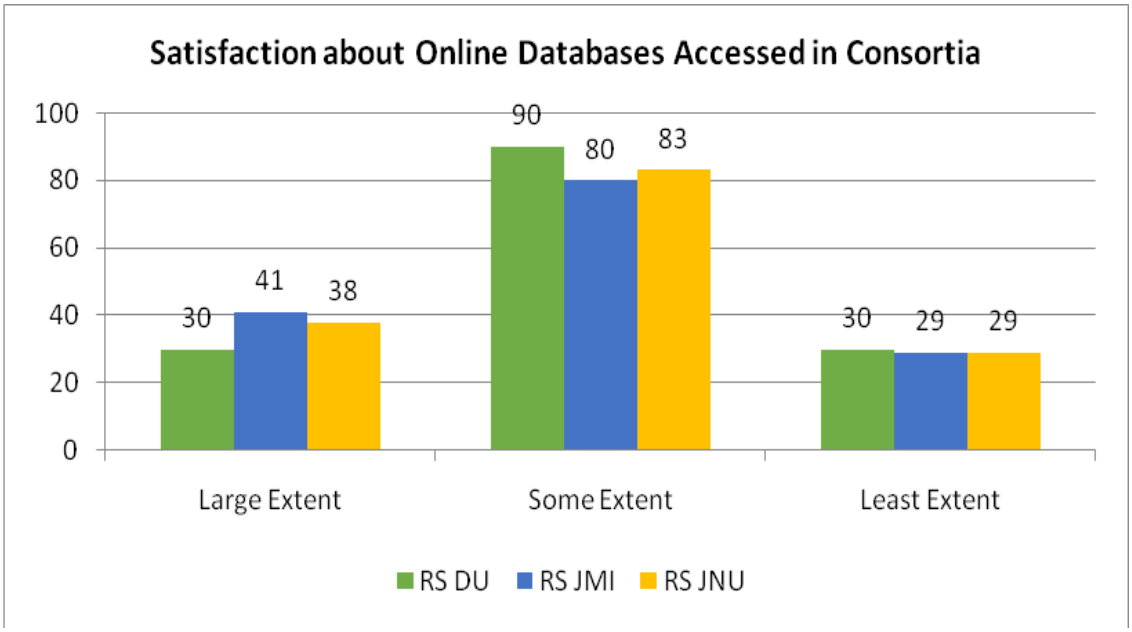


Figure 17: Satisfaction about Online Databases Accessed in Consortia



Impact On Academics

4.3.20 Extent of use of Online Databases and Printed Material

Extent	Respondents								
	DU			JMI			JNU		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
Online Databases Only	9 (6%)	25 (16.66%)	**34 (11.33%)**	8 (5.34%)	23 (15.34%)	**31 (10.33%)**	6 (7.5%)	15 (10%)	**21 (9.13%)**
Online databases most of the time	17 (11.33%)	85 (56.67%)	**102 (34%)**	7 (4.67%)	92 (61.33%)	**99 (33%)**	6 (7.5%)	89 (59.33%)	**95 (41.3%)**
Online databases and printed material equally	119 (79.34%)	37 (24.67%)	**156 (52%)**	125 (83.33%)	31 (20.66%)	**156 (52%)**	60 (75%)	40 (26.66%)	**100 (43.48%)**
Printed material most of the time	5 (3.33%)	3 (2%)	**8 (2.67%)**	10 (6.66%)	4 (2.67%)	**14 (4.67%)**	8 (10%)	6 (4%)	**14 (6.08%)**
Mean	37.5	37.5	**75**	37.5	37.5	**75**	20	37.5	**57.5**
SD	47.25	30.1	**57.83**	50.53	32.96	**56.56**	23.11	32.24	**40.12**

***** DU = Delhi University, JMI= Jamia Millia Islamia University, JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

In libraries printed and electronic both type of material is available to fulfill the requirements of the users. So, an effort has been made to know to what degree the users use online databases and printed material. It is an advantage for the users, as they have both options to use these resources as per their need. The data in table 4.3.20 show that the 79.33% faculty members and 24.67% research scholars in DU, 83.33% faculty members and 20.66% research scholars in JMI 75% faculty members and 26.66% research scholars in JNU use online databases and printed material equally for academic work. This finding correlates with the study of Shukla and Mishra (2011) who stated that majority of the respondents use online databases and printed material equally.

It is noted that 11.33% faculty members and 56.67% research scholars in DU 4.66% faculty members and 61.33% research scholars in JMI whereas 7.5% faculty members and 59.33% research scholars in JNU use online databases most of the time for their academic work. Similarly, Upadhyay and Chakraborty (2008) also revealed in their study that a high percentage of respondents use online databases most of the time.

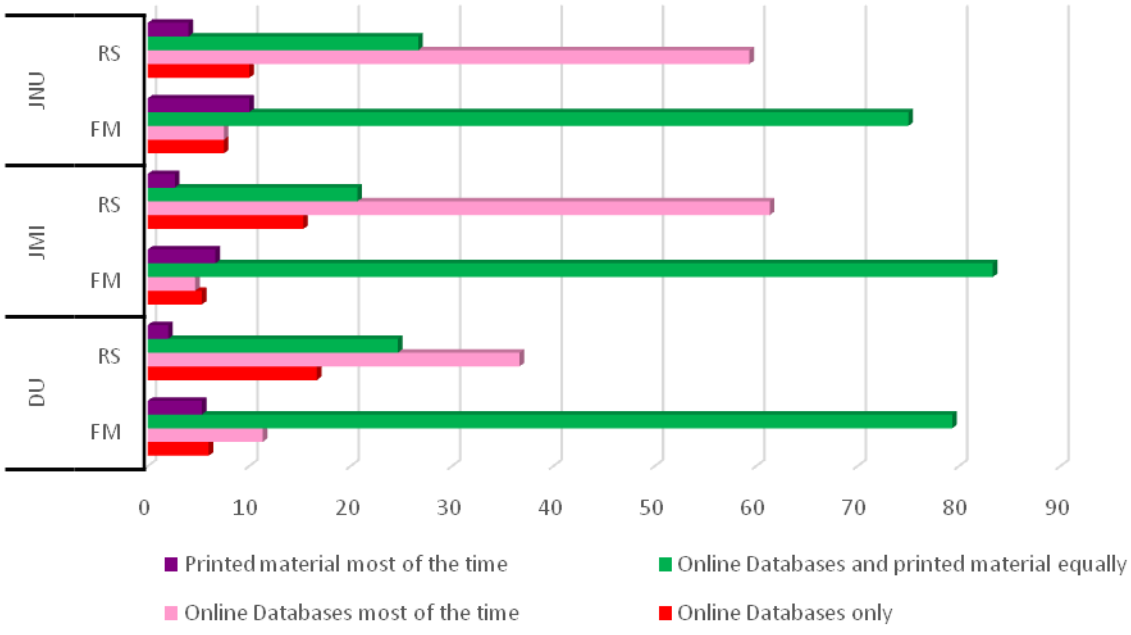
Moreover, 6% faculty members and 16.66% research scholars in DU, 5.33% faculty members and 15.34% research scholars in JMI and 7.5% faculty members and 10% research scholars in JNU prefer to use online databases only for academic work.

It is also noticed that 3.33% faculty members and 2% research scholars in DU 6.66% faculty member and 2.67% research scholars in JMI while 10% faculty members and 4% research scholars in JNU use printed material most of the time for academic work.

Statistical Inference

It is evident from the table number 4.3.20 that most of the respondents declared they use online databases and printed material equally i.e. 156, 156, 100 responses from DU, JMI, JNU while, their corresponding mean values were 75 (SD= 57.88), 75 (SD= 56.56, 57.5 (SD= 40.12). Furthermore, the least number of responses were obtained for printed material most of the time.

Figure 18 : Extent of use of Online Databases and Printed Material



Discussion

The analysis reveals that most of the respondents in all select university libraries use online databases and printed material equally. Besides this, table 4.3.20 also clears that research scholars use online databases most of the time for their research work.

Table 4.3.21 Advantages of Online Databases

Advantages	Respondents								
	DU			**JMI**			**JNU**		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
Less time in searching	70 (46.66%)	73 (48.66%)	**143 (47.67%)**	61 (40.66%)	89 (59.33%)	**150 (50%)**	45 (56.25%)	95 (63.33%)	**140 (60.87%)**
Easy accessibility	133 (88.66%)	125 (83.33%)	**258 (86.00%)**	120 (80%)	135 (90%)	**255 (85%)**	75 (93.75%)	110 (73.33%)	**185 (80.43%)**
Simultaneous Facility	19 (12.66%)	35 (23.33%)	**54 (18%)**	17 (11.33%)	20 (13.33%)	**37 (12.33%)**	8 (10%)	35 (23.33%)	**43 (80.7%)**
Downloading Facility	29 (19.33%)	67 (44.66%)	**96 (32%)**	25 (16.66%)	75 (50%)	**100 (33.33%)**	55 (68.75%)	67 (44.66%)	**122 (53.04%)**
Archival Facility	31 (20.66%)	21 (14%)	**52 (17.33%)**	25 (16.66%)	25 (16.66%)	**50 (16.67%)**	35 (43.75%)	15 (10%)	**50 (21.73%)**
Access to current/ up-to-date information	124 (82.66%)	89 (59.33%)	**213 (71%)**	130 (86.66%)	98 (65.33%)	**228 (76%)**	72 (90%)	110 (73.33%)	**182 (79.13%)**
Access to wider range of information	87 (58%)	80 (53.33%)	**167 (55.67%)**	90 (60%)	81 (54%)	**171 (57%)**	67 (83.75%)	60 (40%)	**127 (55.21%)**
Mean	70.43	70	**143.43**	81.14	74.71	**141.57**	51.0	70.28	**121.28**
SD	34.39	24.69	**57.66**	36.22	37.24	**60.48**	18.81	22.81	**38.8**

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia(University), JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

Various facilities are provided by the library to take advantage of online databases. The table shows the advantages which has influenced the respondents while using online databases (multiple answers were permitted in the questionnaire). The table reveals that 46.66% faculty members and 48.66% research scholars in DU 40.66% faculty members and 59.33% research scholars in JMI whereas 56.25% faculty members and 63.33% research scholars in JNU use online databases as it takes less time in searching.

It is interesting to note that a considerable percentage of users with 88.66% faculty members and 83.33% research scholars in DU 80% faculty members and 90% research scholars in JMI while 93.75% faculty members and 73.33% research scholars in JNU take advantage of online databases due to their easy accessibility. This finding correlates with the study of Khandpal, Rawat and Vithal (2013) and also with Nikam and Dhruva (2013) who stated that most of the respondents are taking advantage of online databases due to easy accessibility.

The collected data further show that 12.66% faculty members and 23.33% research scholars in DU 11.33% faculty members and 13.33% research scholars in JMI while10% faculty members and 23.33% research scholars take advantage of online databases due to simultaneous usage of online databases.

Moreover, the data also reflect that a good percentage of users with 19.33% faculty members and 44.66% research scholars in DU 16.67% faculty members and 50% research scholars in JMI while 68.75% faculty members and 44.66% research scholars strongly agree with downloading facility of online databases.

It is further obtained from table that 20.66% faculty members and 14% research scholars in DU. A thin percentage of 16.66% faculty members and research scholars in JMI whereas 43.75% faculty members and 10% research scholars in JNU using online databases that have archival facility.

It is interesting to note that a considerable percentage of users with 82.66% faculty members and 59.33% research scholars in DU, 86.66% faculty members and 65.33% research scholars in JMI while 90% faculty members and 73.33% research scholars in JNU take advantage of online databases that have access to current/ up-to-date information. Habiba and Chowdhury (2012) and Tyagi (2012) also revealed that

a high percentage of users are using online databases because access to current/ up-to-date information.

The collected data further shows that 58% faculty members and 53.33% research scholars in DU, 11.33% faculty members and 13.33% research scholars in JMI whereas 10% faculty members and 23.33% research scholars use them as these have wider range of information. Similarly, Togia and Tsigilis (2009) and Bar-llan, Peritz and Wolman (2003) in a study found that majority of the respondents are taking advantage of online databases due to its less time in searching, and wider range of information.

Statistical Inference

Table 4.3.21 reveals that majority of respondents were expected for the option easy accessibility in DU (258), in JMI (255) and in JNU (185) as an advantages of online databases. While, their corresponding mean values were 143.43 (SD=57.66), 141.57 (SD=37.24), 121.28 (SD=38.8) respectively.

Discussion

It can be concluded from the above analysis that researchers in all select university libraries are taking advantages of online databases because of easy accessibility. On the other hand table also shows that faculty members and research scholars take advantages of online databases due to access current/ up to date information and access to wide range of information.

Table 4.3.22 Comparison of Online Databases with Conventional Document

Response	Respondents								
	DU			**JMI**			**JNU**		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
Time saving	140 (93.33%)	143 (95.33%)	**283 (94.33%)**	138 (92%)	140 (93.33%)	**278 (92.67%)**	80 (100%)	137 (91.33%)	**217 (94.35%)**
More informative	112 (74.66%)	108 (72%)	**220 (73.33%)**	95 (63.33%)	127 (84.66%)	**222 (74%)**	80 (100%)	90 (60%)	**170 (73.91%)**
Easy to use	128 (85.33%)	138 (92%)	**266 (88.67%)**	108 (72%)	95 (63.33%)	**203 (67.67%)**	65 (81.25%)	112 (74.66%)	**177 (76.96%)**
More expensive	50 (33.33%)	65 (43.33%)	**115 (38.33%)**	45 (28.66%)	87 (58%)	**132 (44%)**	69 (86.25%)	77 (51.33%)	**146 (63.48%)**
More flexible	69 (46%)	87 (58%)	**156 (52%)**	79 (52.66%)	45 (30%)	**124 (41.33%)**	57 (71.25%)	47 (31.33%)	**104 (45.22%)**
More preferred	57 (38%)	67 (44.66%)	**124 (41.33%)**	57 (38%)	57 (38%)	**144 (38%)**	69 (86.25%)	59 (39.33%)	**128 (55.65%)**
More effective	45 (30%)	35 (23.33%)	**80 (26.67%)**	60 (40%)	40 (26.66%)	**100 (33.33%)**	50 (62.05%)	37 (24.66%)	**87 (37.83%)**
Mean	85.86	91.86	**177.71**	83.14	84.43	**167.57**	67.14	79.86	**147.0**
SD	30.88	28.6	**59.28**	27.32	26.78	**50.25**	6.96	25.1	**30.07**

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia(University), JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

As we know that both conventional and online resources are available in the library, an effort has been made to find out the utility of online databases in comparison to conventional documents. The respondents were required to respondents. The table reveals that in DU 93.33% faculty members and 95.33% research scholars 92% faculty members and 93.33% research scholars in JMI and 100% faculty members and 91.33% research scholars in JNU stated that online databases are time saving than conventional documents. This finding correlates with the study of Nikam and Dhruva (2013) and Shukla and Mishra (2011) who stated that majority of the respondents found online databases are time saving in comparison with conventional document.

It is interesting to note that a considerable percentage of users with 74.66% faculty members and 72% research scholars in DU 63.33% faculty members and

84.66% research scholars in JMI and 100% faculty members and 60% research scholars in JNU use online databases for being more informative in comparison to conventional documents. This finding correlates with the study of Nikam and Dhruva (2013) and Shukla and Mishra (2011) who stated that majority of the respondents found online databases are time saving and more informative in comparison with conventional document.

The collected data further show that 85.33% faculty members and 92% research scholars in DU 72% faculty members and 63.33% research scholars in JMI use online databases while 81.25% faculty members and 74.66% research scholars in JNU prefer online databases as it is easy to use them in comparison to conventional documents. Similarly, Khan and Zaidi (2009) also revealed in their study that in comparison of online databases with conventional document, highest percentage of respondents stated online databases are easy to use.

Moreover, the data also reflect that a good percentage of users with 33.33% faculty members and 43.33% research scholars in DU 28.66% faculty members and 58% research scholars in JMI whereas 86.25% faculty members and 51.33% research scholars in JNU stated that online databases are more expensive than conventional documents.

It is further revealed from table that 46% faculty members and 58% research scholars in DU 52.66% faculty members and 30% research scholars in JMI and 71.25% faculty members and 31.33% research scholars in JNU use online databases as these are more flexible than conventional document.

It is interesting to note that a considerable percentage of users i.e. 38% faculty members and 44.66% research scholars in DU 38% faculty members and research scholars in JMI while 86.25% faculty members and 39.33% research scholars in JNU use online databases as more preferred than conventional document.

The collected data further show that 30% faculty members and 23.33% research scholars in DU, 40% faculty members and 26.66% research scholars in JMI whereas 62.5% faculty members and 24.66% research scholars state that online databases are more effective than conventional documents.

Statistical Inference

The collected data of table number 4.3.22 depicts that maximum number of responses selected for the option time saving as to find out the utility of online databases in comparison to conventional documents i.e. 283, 278, 217 from DU, JMI, JNU which was found to be fairly above their corresponding mean values of 177.71 (SD= 59.28), 167.57 (SD= 50.25) and 147.0 (SD= 30.07) respectively.

Discussion

It is evident from the analysis that in all select universities maximum number of respondents observed online databases are time saving. Besides this, the table also shows that researchers declared online databases as easy to use and more informative.

4.3.23 Influence of Online Databases

Influence	Respondents								
	DU			**JMI**			**JNU**		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
Expedited the academic work	129 (88.66%)	135 (90%)	**264 (88%)**	110 (73.33%)	123 (88.66%)	**233 (77.67%)**	69 (86.25%)	119 (79.33%)	**188 (81.74%)**
Improved professional competence	74 (49.33%)	10 (6.66%)	**84 (28%)**	90 (60%)	40 (26.66%)	**130 (43.33%)**	45 (56.25%)	20 (13.33%)	**65 (28.26%)**
Easier and faster access of information	98 (65.33%)	110 (73.33%)	**208 (69.33%)**	125 (83.33%)	129 (86%)	**254 (84.67%)**	40 (50%)	108 (72%)	**148 (64.35%)**
Use of conventional document has increased	35 (23.33%)	69 (46%)	**104 (34.67%)**	87 (58%)	70 (46.66%)	**157 (52.33%)**	37 (46.25%)	79 (52.66%)	**116 (50.43%)**
Dependency on the electronic resources has increased	4 (2.66%)	55 (36.66%)	**59 (19.67%)**	10 (6.66%)	35 (23.33%)	**45 (15%)**	10 (12.05%)	45 (30%)	**55 (23.91%)**
Mean	68	75.8	**145.8**	84.4	79.4	**163.8**	40.2	74.2	**114.4**
SD	33.90	42.54	**68.42**	21.64	34.65	**53.13**	13.14	34.96	**42.4**

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia (University), JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

Since on increasing number of online resources are available in the libraries and variety of interfaces are provided to the users to access their desired information for their work, an effort has been made to explore the influence of online databases on their work. It is interesting to note that a considerable percentage of i-e with 88.66% faculty members and 90% research scholars in DU 73.33% faculty members and 88.66% research scholars in JMI while, 86.25% faculty members and 79.33% research scholars in JNU, use online databases to expedite their academic work. This finding correlates with the study of Nikam and Dhruva (2013) who revealed that majority of the respondents found online databases expedited the academic work with easier and faster access of information.

The collected data further show that 49.33% faculty members and 6.66% research scholars in DU, 60% faculty members and 26.66% research scholars in JMI whereas, 56.25% faculty members and 13.33% research scholars in JNU prefer the use of online databases as it improves the professional competence coming them. On the other hand Tyagi (2012) stated that online databases improved the professional competence of respondents.

Moreover, the data also reflect that a healthy percentage of users i-e 65.33% faculty members and 73.33% research scholars in DU, 83.33% faculty members and 86% research scholars in JMI while 50% faculty members and 72% research scholars admit that easier and faster access of information is the main reason for preferring online databases. This finding correlates with the study of Nikam and Dhruva (2013) who revealed that majority of the respondents found online databases provide faster access of information. Similarly, Shailendra and Singh (2011) in a study found that most of the respondents stated online databases provide easier and faster access of information.

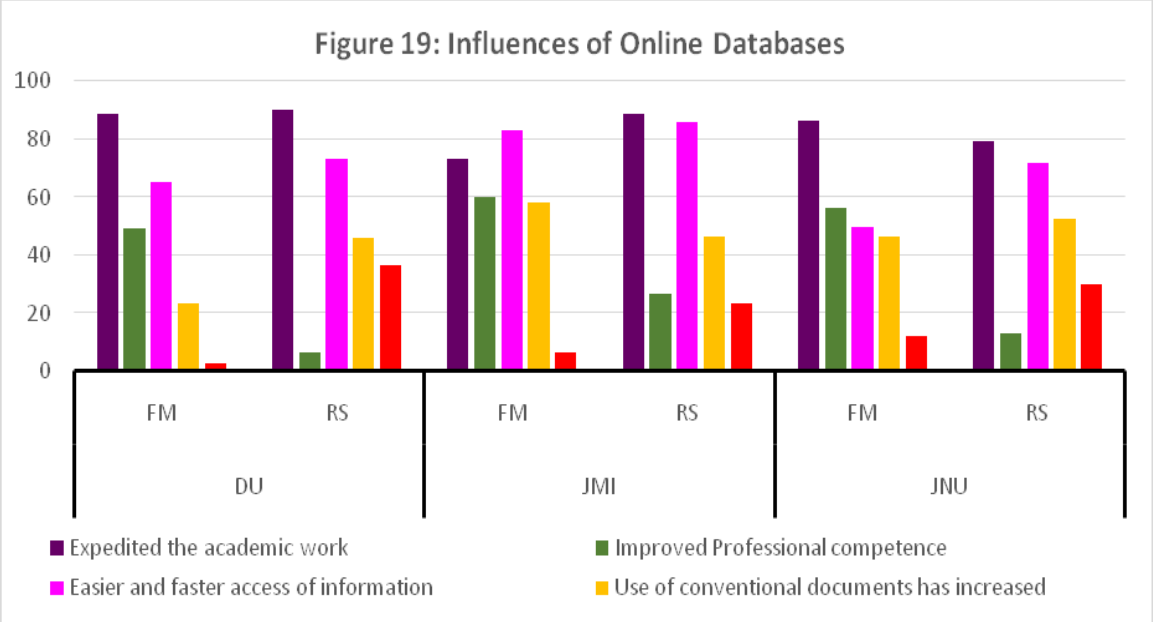
It is further obtained from table that 23.33% faculty members and 46% research scholars in DU, 58% faculty members and 46.66% research scholars in JMI while 46.25% faculty members and 52.66% research scholars in JNU use online databases as it increase use of conventional documents.

It is interesting to note that a thin percentage of users i-e 2.66% faculty members and 36.66% research scholars in DU, 6.66% faculty members and 23.33% research scholars in JMI whereas, 12.5% faculty members and 30% research scholars

in JNU use online databases as it increase the dependency on the electronic resources.

Statistical Inference

It is observed from the table numbers 4.3.23 that majority of the researchers declared influence of online databases as it expedited the academic work, i.e. 264, 233, 188 from DU, JMI and JNU and their corresponding mean values were 145.8 (SD= 68.42), 163.8 (SD= 53.13), 114.4 (SD= 42.4) respectively. Moreover, least numbers of responses were acquired for the option dependency on the electronic resources has increased.



Discussion

It is observed from the figure 19 that online expedited the academic work of respondents. Besides this, table number 4.3.23 also shows that respondents exhibited more preference to the options easier and faster access of information

Challenges And Satisfaction

4.3.24 Satisfaction with Online Databases Facility

Satisfaction	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Yes	150 (100%)	132 (88%)	150 (100%)	125 (83.33%)	80 (100%)	138 (92%)

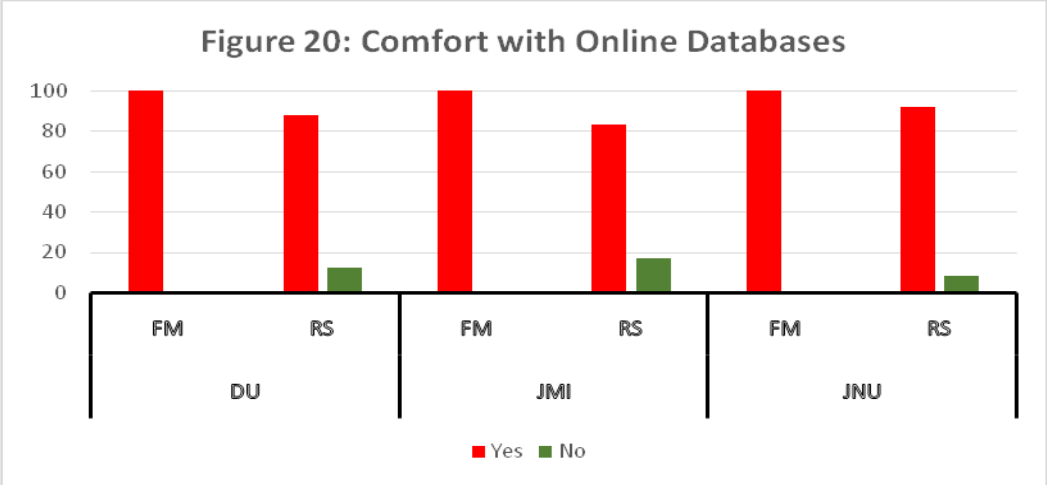
***** DU = Delhi University, JMI= Jamia Millia Islamia (University), JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

It reflects through the table that a strong percentage of users i-e 100% faculty members and 88% research scholars in DU. 100% faculty members and 83.33% research scholars in JMI while, 100% faculty members and 92% research scholars in JNU are satisfied with the online database facility. This finding correlates with the study of Musa, Ahmad, Maryam and Hamisu (2015) and Habiba and Chowdhury (2012) stated that good percentage of respondents are feeling comfort with online database facilities provided by the library. Naqvi (2012) and Hussain, Khan and Nishat (2011) found that majority of respondents are satisfied with the online database facilities. Similarly, Md. Sohail and Ahmad also revealed that high percentage of are feeling comfortable with online database facilities provided by the library.

It reveals from the above analysis that all faculty members in all select university libraries are feeling satisfied with the online databases provided by the library. On the other hand, majority of the research scholars are satisfied with online databases facility.



4.3.25 Problems in Using Online Databases

Problems	Respondents					
	DU		JMI		JNU	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Slow access speed	101 (67.33%)	112 (74.66%)	115 (76.66%)	122 (81.33%)	75 (93.75%)	135 (90%)
Difficulty in finding relevant information	89 (59.33%)	95 (63.33%)	55 (36.66%)	81 (54%)	50 (62.05%)	99 (66%)
Lack of training related to online databases	25 (16.67%)	67 (44.66%)	17 (11.33%)	65 (43.33%)	20 (25%)	69 (46%)
Lack of IT knowledge	-	9 (6%)	-	19 (12.66%)	-	15 (10%)
Non Supporting staff	10 (6.66%)	35 (23.33%)	21 (14%)	31 (20.66%)	13 (16.25%)	27 (18%)

(Multiple answers were permitted)

***** DU = Delhi University, JMI= Jamia Millia Islamia (University), JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

It is revealed from the table that a considerable percentages of respondents i-e 67.33% faculty members and 74.66% research scholars in DU, 76.66% faculty members and 81.33% research scholars in JMI whereas, 93.75% faculty members and 90% research scholars in JNU say that slow speed access in using online databases is a major problem.This finding correlates with the study of Musa, Ahmad, Maryam and Hamisu (2015) and Md. Sohail and Alvi (2014) who stated that most of the respondents faced slow access speed and difficulty in finding relevant information while used online databases. Swamy and Kishore (2014) and Das and Maharana (2013) also revealed that a high percentage of respondents faced slow access speed as major problem while used online databases.

The collected data, however, reflects that 59.33% faculty members and 63.33% research scholars in DU, 36.55% faculty members and 54% research scholars in JMI and in JNU 62.5% faculty members and 66% research scholars admit that they face difficulty in finding relevant information while using online databases.

The data also reveals that 16.67% faculty members and 44.66% research scholars in DU, 11.33% faculty members and 43.33% research scholars in JMI and 25% faculty members and 46% research scholars in JNU face the lack problem of training related to online databases. Similarly, Habiba and Chowdhury (2012), Naqvi (2012) and Prabhakaran and Sankaranarayanan (2012) in their studies found that very few stated lack of training related to online databases.

The table, further, shows that in DU 6.67% faculty members and 23.33% research scholars 14% faculty members and 23.33% research scholars in JMI while 16.25% faculty members and 18% research scholars in JNU face non supporting staff while using online databases.

In contrast to above, 6% research scholars in DU, 12.66% in JMI and 10% research scholars in JNU face lack of IT knowledge while using online databases.

One Way ANOVA Test- It is evident from the table 4.3.25 that slow access speed is the major hindrance in using online databases. Slow access speed option obtained most of the responses in the select universities under the study i.e. 93.75% in JNU although the percentage of faculty members in JMI (76.66%) and in DU (67.33%) was slightly lower as compared to JNU.

Similarly, the research scholars also stated slow access speed as major problem in using online databases 90% in JNU and 81.33% in JMI responses were received. But the research scholars of DU with a slight lower percentage (74.66%) also declared slow access speed as major problem in using online databases.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	485.200	2	242.600	.140	.871
	Within Groups	20750.400	12	1729.200		
	Total	21235.600	14			
RS	Between Groups	97.200	2	48.600	.024	.976
	Within Groups	23842.400	12	1986.867		
	Total	23939.600	14			

On applying One Way ANOVA Test for checking the presence of significant difference among the respondents of DU, JMI and JNU to problems in using online databases, clearly indicates that p-value for faculty members is .876 and .976 for research scholars, which is more than the significant level of 0.05 i.e. ($p>0.05$) and thus specifies that there is no significant difference among the respondents of DU, JMI and JNU. Therefore, it reveals that faculty members and research scholars accept slow access speed as major problem in using online databases.

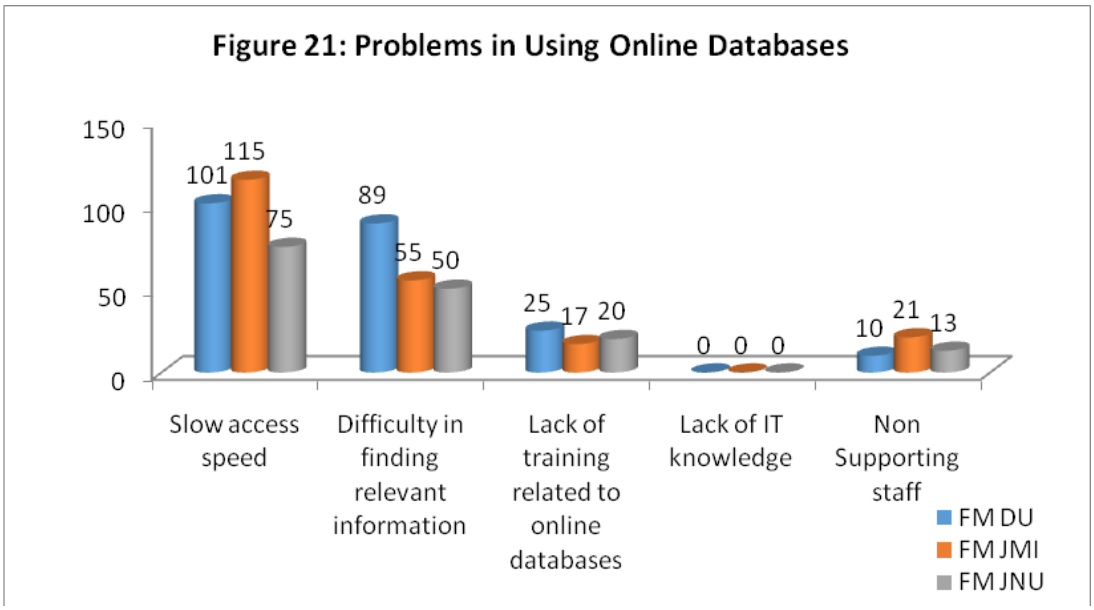


Figure 21: Problems in Using Online Databases
150
100
50
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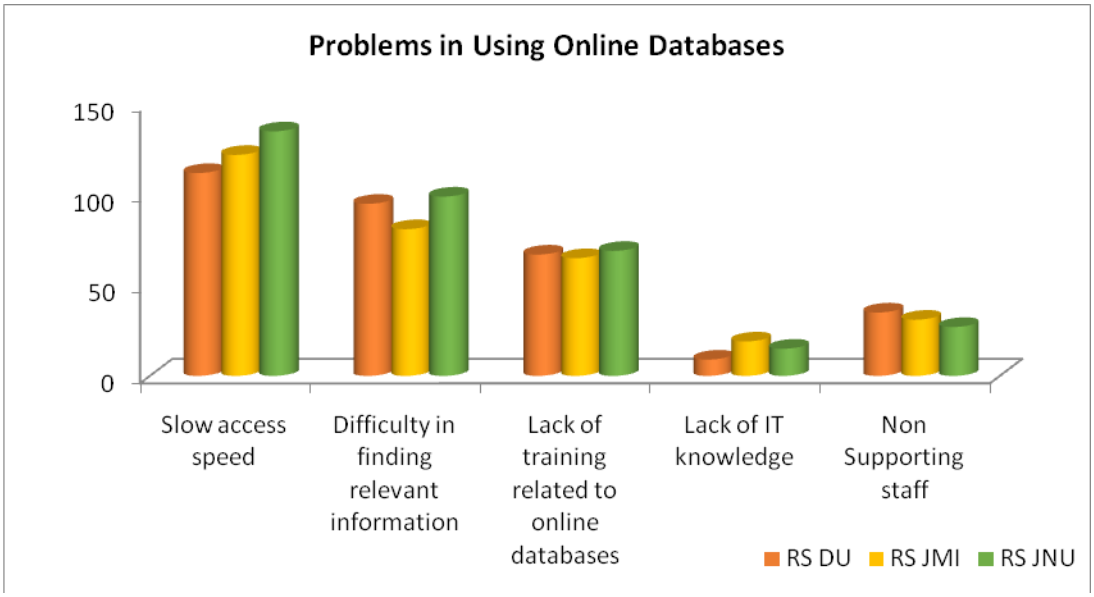
101
115
75
89
55
50
25
17
20
0
0
0
10
21
13
Slow access speed
Difficulty in finding relevant information
Lack of training related to online databases
Lack of IT knowledge
Non Supporting staff
FM DU
FM JMI
FM JNU


Problems in Using Online Databases
150
100
50
0
Slow access speed
Difficulty in finding relevant information
Lack of training related to online databases
Lack of IT knowledge
Non Supporting staff
RS DU
RS JMI
RS JNU

4.3.26 Satisfaction level of Online Databases

Satisfaction	Respondents								
	DU			**JMI**			**JNU**		
	FM N=150	RS N=150	Total N= 300	FM N=150	RS N=150	Total N= 300	FM N=80	RS N=150	Total N= 230
Fully	100 (66.66%)	90 (60%)	**190 (63.33%)**	109 (72.67%)	109 (72.66%)	**218 (72.67**	55 (68.75%)	121 (80.67%)	**176 (76.52%)**
Partially	36 (24%)	43 (28.66%)	**79 (26.33%)**	27 (18%)	25 (16.67%)	**52 (17.33%)**	15 (18.75%)	8 (5.33%)	**23 (10%)**
Least Satisfied	10 (6.67%)	10 (6.67%)	**20 (6.67%)**	9 (6%)	10 (6.67%)	**19 (6.33%)**	5 (6.25%)	12 (8%)	**17 (7.39%)**
Not Satisfied	4 (2.67%)	7 (4.67%)	**11 (3.67%)**	5 (3.33%)	6 (4%)	**11 (3.67%)**	5 (6.25%)	9 (6%)	**14 (6.09%)**
Mean	37.5	37.5	**75**	37.5	37.5	**75**	20	37.5	**57.5**
SD	38.04	33.44	**71.348**	42.10	41.88	**83.97**	20.62	48.23	**68.49**

***** DU = Delhi University, JMI= Jamia Millia Islamia(University), JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

The table 4.3.26 shows that a high percentage of respondents i.e. 66.66% faculty members and 60% research scholars in DU; 72.66% faculty members and research scholars in JMI, and 68.75% faculty members and 80.66% research scholars in JNU accept that they are fully satisfied with the online databases facility provided by the university library. This finding correlates with the study of Khandpal, Rawat and Vithal (2013) and Dhanavandan, Esmail and Nagarajan (2012) who stated that good percentage of respondents are fully satisfied with online databases facilities provided by the library. Naqvi (2012) and Prabhakaran and Sankaranarayan (2012) also revealed in their studies that a high percentage of respondents are fully satisfied with the online database facilities.

It reveals from the data that 24% faculty members and 28.66% research scholars in DU, 18% faculty members and 16.67% research scholars in JMI whereas 18.75% faculty members and 5.33% research scholars are partially satisfied with online databases facility provided by the university library. Similarly, Singh (2012), Tyagi (2012) and Khan and Zaidi (2009) in a study found that majority of respondents are partially satisfied with online databases facilities.

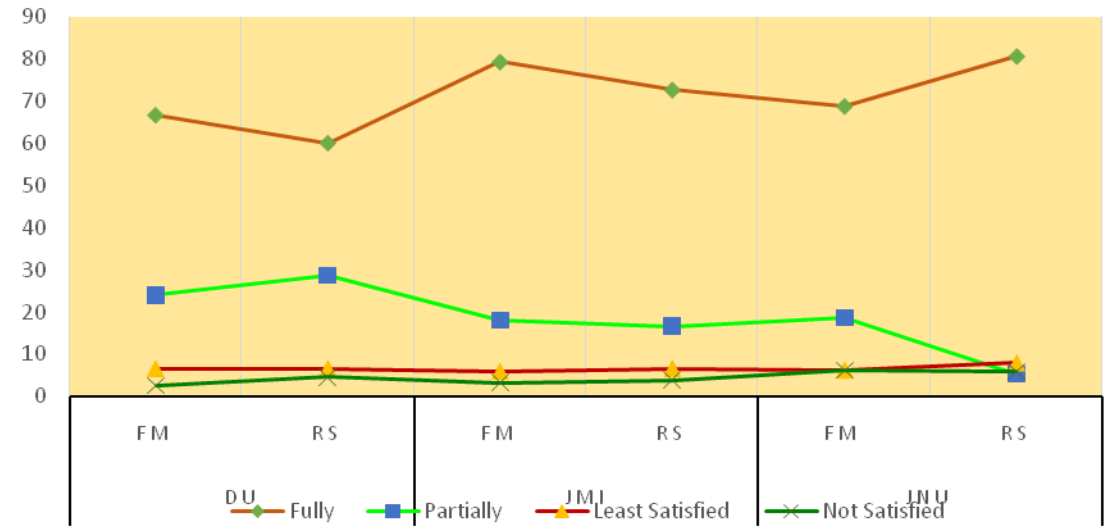
The table further shows that a thin percentage of respondents i.e. 6.67% faculty in DU 6% faculty members and 6.67% research scholars in JMI while 6.25% faculty members and 8% research scholars in JNU are least satisfied with online databases facility provided by university library.

The table also shows that 2.66% faculty members and 4.66% research scholars in DU, 3.33% faculty members and 4% research scholars in JMI while 6.25% faculty members and 6% research scholars in JNU are not satisfied with online databases facility provided by the university library.

Statistical Inference

Table number 4.3.26 shows that the majority of respondents were declared for the option fully satisfied i.e. 190, 218, 176 from DU, JMI and JNU for satisfaction level of online databases, while their corresponding mean values were 75 (SD= 71.348), 75 (SD= 83.97), 57.5 (SD= 68.49). Moreover, least number of responses were received for not satisfied.

FIGURE 22: SATISFACTION WITH ONLINE DATABASES



Discussion

In short the table 4.3.26 shows that majority of respondents in these universities are fully satisfied with online databases facility provided by the university library. While a considerable percentage of respondents are partially satisfied with online databases facility.

4.3.27 Anticipation Personal usage of Library over Next Three Years

Usage	Respondents					
	DU		**JMI**		**JNU**	
	FM N=150	RS N=150	FM N=150	RS N=150	FM N=80	RS N=150
Will Increase	130 (86.66%)	130 (86.66%)	132 (88%)	140 (93.33%)	65 (81.25%)	120 (80%)
Will stay the same	20 (13.34%)	20 (13.34%)	18 (12%)	10 (6.67%)	15 (18.75%)	30 (20%)

***** DU = Delhi University, JMI= Jamia Millia Islamia (University), JNU= Jawaharlal Nehru University

* FM= Faculty Members, RS= Research Scholars

*N= Number

It reveals that 86.66% faculty members and research scholars in DU, 88% faculty members and 93.33% research scholars in JMI whereas, 81.25% faculty members and 80% research scholars in JNU concede that the usage of library will increase during next three years.This finding correlates with the study of Khan and Sudharma (2015) who stated that highest responses of users anticipated personal usage of library will increase over next three years. Similarly, Swamy and Kishore (2014) and Naqvi (2012) also revealed in their studies that majority of the respondents predicted personal usage of library will increase.

Moreover the data show that 13.34% faculty members and research scholars deserve that in DU, 12% faculty members and 6.67% research scholars in JNU and

18.75% faculty members and 20% research scholars agree that the usage of library will remain same over next three years. This finding correlates with the study of Khan and Zaidi (2009) found that high percentage of users anticipated personal usage of library will increase over next three years and few indicated library usage will stay the same.

One Way ANOVA Test- The response regarding the anticipation of personal usage of library over next three years among the respondents in table 4.3.27 reveals that a variation is observed and result shows that higher percentage of faculty members in JMI (88%) and 86.66% in DU declared that usage of library will increase over next three years, whereas the some was observed among the faculty members of JNU, with a lower percentage (81.25%) are also of this opinion

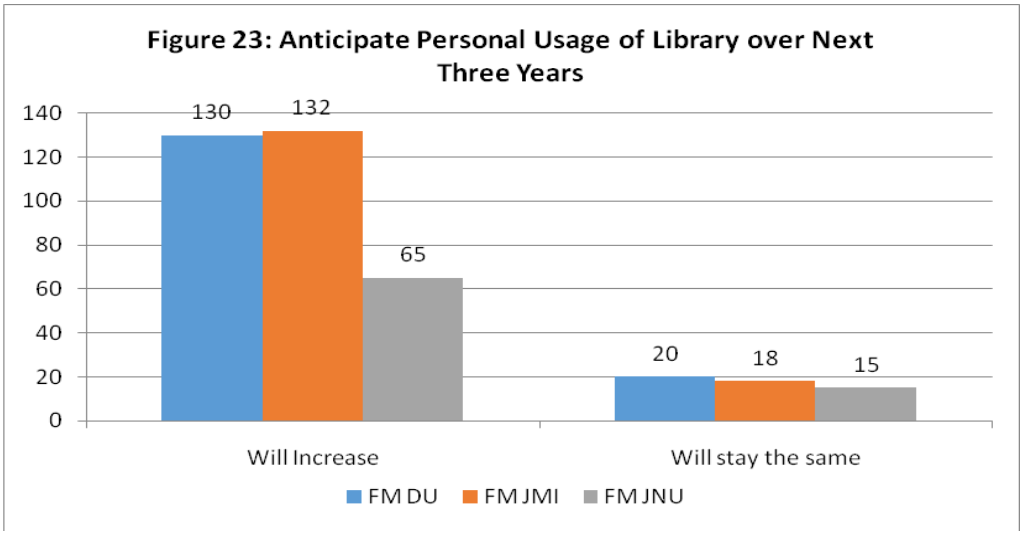
On the other hand a high, percentage of research scholars in JMI (93.33%) concede that the usage of library will increase over next three years, whereas slightly lower percentage in DU (86.66%) and in JNU (80%) research scholars also agree that the usage of library will increase in the next three years.

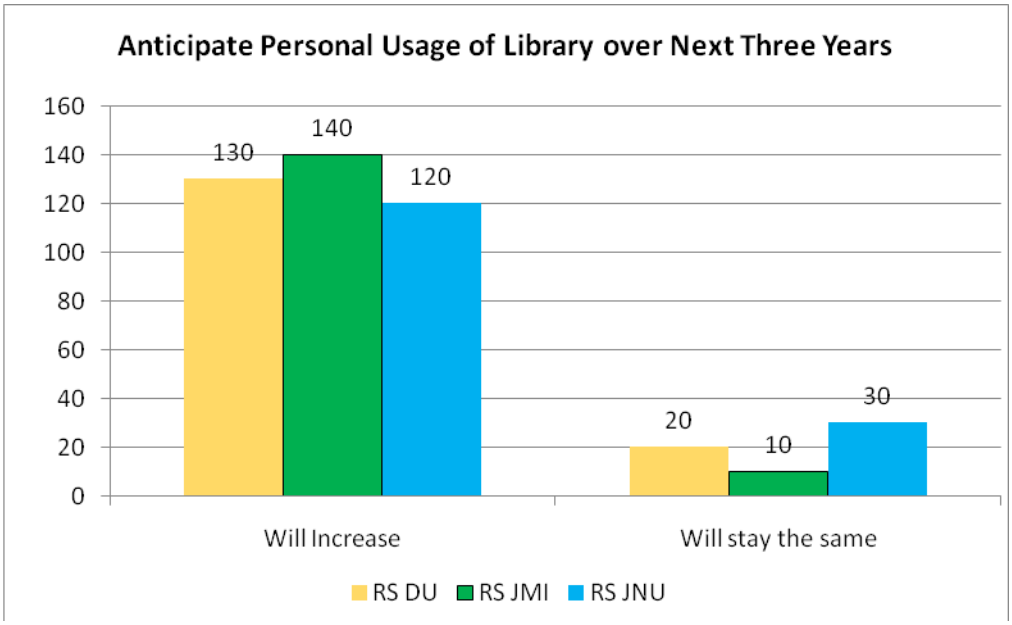
One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	1633.333	2	816.667	.178	.846
	Within Groups	13798.000	3	4599.333		
	Total	15431.333	5			
RS	Between Groups	.000	2	.000	.000	1.000
	Within Groups	18550.000	3	6183.333		
	Total	18550.000	5			

In order to determine if there is any significant difference in the views regarding personal usage of library will increase over next three years, by faculty members and research scholars of the universities, one way ANOVA test was applied that reveals that the calculated p-value is .846 for faculty members and 1.000 for research scholars, is more than the significant level of 0.05 i.e. ($p>0.05$) which directs

that there is no significant difference among the respondents separately of these universities. It concludes that the faculty members and research scholars anticipate that personal usage of library will increase over the next three years.





CHAPTER 5
FINDINGS, TENABILITY OF HYPOTHESIS, CONCLUSION AND SUGGESTIONS

CHAPTER- 5
FINDINGS, SUGGESTIONS AND CONCLUSION

This chapter highlights the major findings after a proper analyzation of data in a summarized form. Tenability of Hypotheses has been checked and some important suggestions on the basis of users opinion and the observation of investigator have also been put forwarded which could be incorporated to enhance the use of electronic databases for the benefit of the users and for the organization on the whole. In the last, some recommendations have also been made which could further add value and weight to the overall utilization of university libraries. A few possible areas for further research have also been suggested to investigate into.

5.1 Findings

A set of two well-designed questionnaires distributed among the faculty members and research scholars, of DU, JMI and JNU, the University under study to obtain the data by using survey method. On the basis of the analysis and interpretation of the collected data, the findings of the study are in two groups. (a) Performance of the libraries based on the responses from the librarians of the three university libraries and (b) common and differentiating performance, which covers common and comparative aspects of use of online databases by the users of these libraries.

5.1.1 Libraries/Librarians Perspective

This part contains the inferences derived from the analysis of questionnaires from the librarians of the university libraries under study:

1. The study reveals that Zakir Hussain Library of Jamia Millia Islamia (JMI) is the oldest university library among the under study libraries.

2. It is observed that DU retains maximum library staff i.e. 314 followed by JNU and JMI.

3. DU has highest collection of books (17 Lakhs), whereas online databases collection of 50 in JNU is the highest.

4. It reveals that DU has the largest annual budget of Rs.4.45 crore.

5. All the under study university libraries are members of DELNET and INFLIBNET, the prominent Library Network and INDEST Library Consortia.

6. Different library management software are used by university libraries, as Troodon software in DU, Libsys7 in JMI and VTLS-Virtua in JNU.

7. It is observed that only DU and JMI has separate online databases centre in their libraries.

8. As regards the number of terminals to access online databases, DU has maximum number of terminals i.e. 300 followed by 200 terminals in JNU and 100 in JMI.

9. It reveals from the data that the users at JNU accessed a maximum number of 8271 e-journals through UGC-INFONET as compared to DU and JMI. More over JNU accessed 22 full text databases whereas DU and JMI have an equal number of 18 full text databases at their disposal.

10. It is identified that 5 years collection of online databases in all select university libraries may vary as per demand. Currently in 2015 DU has highest collection of online databases in comparison to JNU and JMI. Online databases through UGC-INFONET in DU increase but it remains same in every year in JMI and JNU. (Table 5.2.7)

11. In DU and JNU medium of online databases services is same through internet via their website and commercial online service vendors. On the other hand, JMI has commercial online service vendors and through LAN & remote Login.

12. These university libraries have same criteria for selecting online databases.

13. It is found that almost similar online databases are accessed by all libraries. 18 full text databases and 5 bibliographic databases are similar in all university libraries.

14. All university libraries having similar collection development policy for online databases.

15. It is observed that all select university libraries agree on 'user's opinion for continuation or cancellation of subscribed online databases' as a criteria of weeding policy of online databases. Besides this, DU and JMI prefer 'availability of online databases for longer period and JNU prefer 'more comprehensive coverage offered by others as weeding policy.

16. The university libraries have same measures to promote online databases.

17. It is found that JNU& DU users are highly satisfied with different types of online whereas JMI users are also satisfied with them to a lesser extent.

5.1.2 Users Perspective

A separate questionnaire has been enlisted to find out the user's perspective about online databases and its usage. This part comprehends major findings on the basis of the analysis and interpretation of the collected data from users of the university libraries, under study:

- **Common Perspectives**

  - The study reveals that more than 80% of the users in all the three university libraries are using online databases.

  - It is observed that a major portion of faculty members, in all three university libraries, visit the library weekly. On the other hand, a high percentage of research scholars visit the library daily and weekly.

  - A good number of the users (faculty members and research scholars) having similar purpose of using library i.e. for borrowing books.

- A good percentage of users in all the three university libraries are familiar with both print and online sources.
- A highest percentage of users i.e. 100% of faculty members in these university Libraries and more than 92% research scholars are aware about the availability of online databases.
- Large number of users admits that they receive adequate training for using online databases by library.
- It is observed that users have been using online database service for a long time. A good number of faculty members and research scholars have been using online databases service for more than 4 years.
- It is observed that libraries provide various online databases to the users for dissemination of different types of information. As regards of online databases, Springer Link is the first rank, Taylor & Francis is on second rank and Science Direct on third, these are most frequently used by both faculty members and research scholars. Besides these Nature, J-STOR, Cambridge University Press etc. are their frequently used online databases.
- Journal articles is the most searched material from the online databases. Faculty members and research scholars in all three university libraries mostly search journal articles followed by conference papers and theses/dissertations.
- It is observed that in these university libraries a highest percentage of faculty members and research scholars admit that Boolean operator is the most preferred search technique.
- A good percentage of users from these university libraries prefer Google.com search engine for most recent searches.
- 100% faculty members and a high percentage of research scholars in these university libraries are aware about UGC-INFONET consortium.

- The faculty members and research scholars in these universities agree that the usage of library will increase over next three years.

- **Different Perspective**

  - Frequency of using online databases shows that around 50% faculty members in the three university libraries and 40% research scholars in JNU and 30% in DU & JMI use online databases 2-3 times in a month.

  - Library website is the main source to keep abreast of the online databases by faculty members and research scholars of JMI and JNU. Comparatively, research scholars of DU voted teacher/research supervisor as main source to keep informed about online databases.

  - Around 75% faculty members and 62% research scholar prefer department as the most sought after place for accessing online databases. On the other hand around 60% research scholars in DU and JMI prefer computer centre as a place for accessing online databases.

  - The purpose of using online databases is different among the respondents. A high percentage of faculty members use online databases for study/teaching work, whereas more than 80% research scholars consult online databases for research work.

  - Majority of the faculty members prefer advanced search followed by basic search, whereas more than 80% research scholars in DU and JNU prefer basic search but in JMI, research scholars prefer advanced search.

  - In the library, printed and online both resources are available. It is found that faculty members use online databases and printed material equally for their academic work. On the other hand, research scholars use online databases most of the time for their research work.

  - The respondents are facing many problems in using online databases. 67.33% faculty members in DU, 76.66% in JMI and 93.75% in JNU face slow access speed face difficulty in finding relevant information whereas 59.33% faculty members in DU, 36.66% in JMI and 62.05% in JNU.

Similarly a high percentage i.e. 74.66% research scholars in DU, 81.33% in JMI and 90% in JNU indicate slow access speed followed by problem in finding relevant information.

- Majority of the faculty members are satisfied to a large extent with online databases accessed through consortia, whereas 60% research scholars in DU, 53.33% in JMI and JNU are to some extent satisfied with online databases accessed through consortia.

- As for the advantages of online databases, it is found that more than 80% faculty members state easy accessibility followed by access to current/up-to-date information. Faculty members, further, mention its other advantages such as access to wider range of information and less time in searching. Similarly majority of the research scholars prefer it for easy accessibility followed by access to current/up-to-date information.

- A comparison of online databases with conventional documents reveals that majority of the respondents prefer online databases as it is time saving, easy to use, more informative, and more flexible.

- As for the advantages, a good percentage of faculty members admit that it has expedited the academic work followed by easier and faster access of information along with an improved professional competence. On the other hand a high percentage of research scholars state it expedites the academic work followed by easier and faster access of information.

5.2 Tenability of Hypotheses

At the beginning of the study, few hypotheses had been formulated which is verified in the light of its findings, the tenability of hypotheses is checked and presented below.

Hypothesis 1

The maximum number of users have considerable awareness about online databases in their fields.

Table 4.3.5 shows that 100% faculty members in DU, JMI and JNU are aware about online databases subscribed by university libraries. On the other hand 92.6% research scholars in DU, 94% in JMI and 96% in JNU are having awareness about online databases subscribed by university libraries.

Thus the findings of the present research work prove that majority of respondents under the study have awareness about online databases.

Hypothesis 2

Online databases are the preferred means of electronic resources used in the institutions.

The online databases are considered as preferred means of sources in the information age. In this context, it is evident from the table 4.3.10 that university provides internet/web facilities through many places such as university library, computer centre, department, hostel, home. The respondents have started using these places for accessing the online databases. It is observed that majority of the respondents preferred the option department as a place for accessing online databases and their corresponding mean values are 84.6 in DU (SD=78.19), 86.00 in JMI (SD=83.14) and 66.67 in JNU (SD=66.71). It is clearly visible that respondents of DU, JMI and JNU commonly use the department for accessing online databases.

The table 4.3.19, the responses regarding the satisfaction about online databases accessed through consortia among the respondents reveal that a variation is observed and the result shows that higher percentage of faculty members in JNU (81.25%), in JMI (74.66%) and in DU (66.66%) are, to a large extent satisfied with online databases accessed in consortia. On the other hand (60%) in DU (53.33%) in JMI and JNU (53.33%) research scholars are to some extent satisfied with online databases accessed in consortia.

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	1088.889	2	544.444	.277	.767
	Within Groups	11800.667	6	1966.778		
	Total	12889.556	8			
RS	Between Groups	.000	2	.000	.000	1.000
	Within Groups	5496.000	6	916.000		
	Total	5496.000	8			

On applying ANOVA Test to check if any significant difference among the researchers of DU, JMI and JNU, exhibits in considering online databases accessed through consortia by the faculty members and research scholars of the university under study, it was found that the calculated p-value is .767 for faculty members and 1.000 for research scholars is more than the significant level of 0.05 i.e. ($p>0.05$) which indicates that no significant difference appears among the researchers and also the faculty members, separately.

It is evident from the table 4.3.20 that most of the respondents admit that they use online databases and printed material equally. Their corresponding mean values are 75 in DU (SD=75.83), 75 in JMI (SD= 56.56) and 57.5 in JNU (SD= 40.12). The analysis reveals that most of the respondents in all select university libraries use online databases and printed material equally for their academic work.

Thus the finding of work indicates that the hypothesis is hence proved.

Hypothesis 3

There exists a significant difference in adopting searching techniques/methods while using various types of online databases by different levels of users.

The interpretation in chapter 4 shows that the respondents of the university libraries under study are using different search techniques for online databases. It is evident from the table 4.3.14 that advanced search is the most preferred search method adopted by the faculty members. Advanced search obtained the good number of responses i.e. 70% in DU and 73.33% in JMI; however percentage of faculty members in JNU is 86.25% which is much higher as compared to both the other universities.

On the other hand, the research scholars prefer basic search method. 90% in JNU and 83.33% in DU responses were received in its favour, while a lower percentage of 63.33% research scholars in JMI research scholars prefer basic search.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	470.167	2	235.083	.122	.886
	Within Groups	17272.500	9	1919.167		
	Total	17742.667	11			
RS	Between Groups	66.167	2	33.083	.011	.989
	Within Groups	27086.750	9	3009.639		
	Total	27152.917	11			

On applying ANOVA Test to check if any significant difference among the researchers to DU, JMI and JNU exists in preferred search methods, it clearly indicates that p-value for faculty members is .886 and .989 for research scholars, which is more than the significant level of 0.05 i.e. ($p>0.05$). It thus specifies that there is no significant difference among the respondents of DU, JMI and JNU relating to preferred search methods. It shows that faculty members and research scholars prefer both advanced and basic search methods.

In table 4.3.15, responses regarding the preferred search technique for online databases identify a bit of variation observed in the responses. Higher percentage of faculty members in JNU (87.05%) and in JMI (83.33%) prefer Boolean operator as search technique, whereas it was observed in DU where 74.66% faculty members, too, prefer Boolean operators, but the percentage is slightly lower.

On the other hand, higher percentage of research scholars in JNU (90%) prefer Boolean operators, whereas 86.66 in DU and 83.33 in JMI to prefer Boolean operators as search technique, but the percentage is slightly lower.

One Way ANOVA Test

		Sum of Squares	df	Mean Square	F	Sig.
FM	Between Groups	1570.167	2	785.083	.562	.589
	Within Groups	12570.750	9	1396.750		
	Total	14140.917	11			
RS	Between Groups	43.167	2	21.583	.010	.990
	Within Groups	18965.750	9	2107.306		
	Total	19008.917	11			

With the help of one way ANOVA test, it was attempted to find out any significant difference in preferred search techniques for online databases by faculty members and research scholars. The result of test covers that calculated p-value, .589 for faculty members and .990 for research scholars, which is greater than the significance level of 0.05 ($p>0.05$), which means that there is no significant difference among the faculty members and also the research scholars of two universities and they prefer Boolean operators as a search technique for online databases. It is clear from the table that according to their need, percentage of respondents may increase or decrease and also they adopt different techniques.

Thus the findings of work indicates that the hypothesis is hence proved.

Hypothesis 4

Users are not fully satisfied with accessing databases and also for not providing adequate training.

Table 4.3.26 displays that 66.66% faculty members in DU, 79.33% in JMI and 68.75% in JNU accept that they are fully satisfied with the online databases facilities followed by partially satisfied, i.e. 24% faculty members in DU, 18% in JMI and 18.75% in JNU. On the other hand research scholars in all these university libraries are fully satisfied, i.e. 60% in DU, 72.66% in JMI and 80.66% in JNU followed by 28.66% research scholars in DU, 16.66% in JMI and 5.33% in JNU are partially satisfied with the online databases facilities provided by the library.

From the table 4.3.6 it reveals that 83.33% faculty members in DU, 80% in JMI and 62.05% in JNU get adequate training for using online databases. While 73.33% research scholars in DU and JNU and 83.33% in JMI get adequate training for using online databases.

Thus the hypothesis can be rejected.

Hypothesis 5

The online databases have an enormous impact on research conducted in universities.

Table 4.3.22 shows that at the point of comparison of online databases with conventional documents, most of the faculty members accept it as time saving, i.e. 93.33% in DU, 92% in JMI and 100% in JNU followed by easy to use, i.e. 85.33% in DU, 72% in JMI and 81.25% in JNU and more informative too . On the other hand 95.33% research scholars in DU, 93.33% in JMI and 91.33% in JNU reported online databases as time saving followed by easy to use, i.e. 92% in DU, 63.33% in JMI and 74.66% in JNU. Collected data in table shows that online databases is time saving, easy to use and more informative.

From table 4.3.23 it is clear that 88.66% faculty members in DU, 73.33% in JMI and 86.25% in JNU prefer online databases as it expedited the academic work

followed by easier and faster access of information, i.e. 65.33% in DU, 83.33% in JMI and 50% in JNU. Online databases improved professional competence of faculty members i.e. 49.33% in DU, 60% in JMI and 36.25% in JMI. Similarly, 90% research scholars in DU, 88.66% in JMI and 79.33% in JNU stated online databases as expedited the academic work followed by easier and faster access of information, i.e. 73.33% in DU, 86% in JMI and 72% in JNU. It is clear from the table that online databases have enormous impact on research work.

Thus the findings of the present research work establish the fifth hypothesis.

5.3 Suggestions

On the basis of analysis of data, findings of the study, opinion received from the librarians and users; and personal observation of the investigator, the following suggestions are made for enhanced, effective and successful use of online databases in different type of universities as well as to improve the efficient management, especially in science and technology disciplines.

1. Every university library should subscribe to other useful online databases which are not covered by consortia, so that users can get access to more online databases.

2. Reasonable finance and other facilities should be provided by the libraries to support the library's assignment related to online databases services.

3. To provide confederated search to its users, every university library should incorporate their all subscribed online databases, or they should provide links to subscribed online databases on library webpage/portal for disturbance free access.

4. Librarians and faculty members should publicize online databases for those users who are unaware about online databases.

5. A feedback system should be adopted at regular intervals by every library regarding the performance of the library related to user satisfaction as well as use of online databases services, to ensure

maximum utilization of online databases and which are not in use, may be dropped.

6. Library should provide document supply service for those articles which are not available in full text.

7. Library should make available-mail alert service, to provide update web resources and online databases time to time through bunch mail facilities on users IDs which can make users aware about the currently being subscribed additions of online databases as well as those are totally unaware of it.

8. An online user manual should be developed by the library to help users; as well as more training programmes should be organized.

9. Number of computers having good bandwidths with internet/intranet access should be connected by the library at places of user concentration to provide faster access, enhanced downloading speed to help to save the time of users.

10. For providing never-ending access to online databases, proper maintenance of computer systems is required for every university. So the university libraries should either employ trained technical staff or give annual maintenance contract to competent agency for this purpose.

11. User awareness program about online databases, its scope and merits, should be conducted at intervals for authors. Proper orientation programme should be continued for users on regular basis to introduce the subject specific resources for faculty members as well as research scholars, in every university library to maximize the use of online databases.

12. User studies must be conducted to know the changing user needs and identifying their problems while using online databases.

13. Technically, trained manpower should be provided at major internet/intranet access points to help and instruct the new users.

14. Staff should be given technical training from time to time to handle with the latest updates in the technology.

15. Staff at the service desk should be well acquainted and cooperative with information search and use skills and should know the search techniques adopted in using various databases to help the users in accessing the information.

16. Libraries should organize workshops and seminars for the faculty members and research scholars regularly to enhance the usage of online databases.

17. It is better to have a mechanism for measuring the impact of online databases on academic community. This will help the publishers to improve the quality of databases services from time to time.

5.4 Recommendations for Future Study and Research

The present study analyzed and evaluated the use of online databases in Science and Technology disciplines in the three universities of Delhi. It brings an opportunity to think on several topics for further research in future. Based on the findings, the following similar types of studies may be undertaken for further research in country.

1. The study can be extended to other universities, institutes libraries, NITs, IIMs, Institutes of National importance, Library & Information Centres, Research Centres.

2. The present study is conducted among limited number of university libraries. In future researchers can further widen the scope of the study and the comparison among them.

3. A study on the awareness and usage of online databases by other professional groups such as medical professionals, legal professionals etc. may also be taken up.

4. A study can also be conducted to analyze the impact of online databases on higher learning/research institutes in India.

5. Future researcher can explore the online databases services of publishers in India who contribute a lion's share of scholarly publications in the country.

5.5 Conclusion

The information and communication technology has empowered faculty members and research scholars to produce, understand and share the information explosion worldwide. The present study is sought to investigate the comparative views of use of online databases in select university libraries of Delhi especially in Science and Technology field. The investigator collected information from librarians and users of online databases. The findings show that faculty members and research scholars who responded in the survey were well aware of online databases. The majority of faculty members and research scholars as per their need for information always prefer time and probability and ease of use to access online databases.

The majority of faculty members and research scholars prefer to use online databases for study/teaching work and for research work as well as to update knowledge. The emergence of online databases has opened a new path for the academic community. The respondents explore the online databases through libraries and the web for the development of their academic and research needs. Faculty members and research scholars mostly search the journals articles followed by conference proceedings and theses/dissertations among the other resources as these are easy to locate and nature of information requirement of the users. The study reveals that modest percentage of respondents is satisfied with online database service provided by the university libraries. The major barrier faced by them while accessing online databases is slow access speed and difficulty in finding relevant information. Lack of training related to online databases is also found as a barrier by research scholars. Some of the users are not aware with UGC-Infonet Consortium, but those who are aware are using online databases. Faculty members to a large extent are satisfied with online databases whereas research scholars are to some extent satisfied with online databases accessed through the consortia.

The study indicates that users are taking interest in using online databases due to easy accessibility and current/up-to-date information. At the point of comparison of online databases with conventional documents, users stated that online databases are time saving, easy to use and more informative. Therefore, users anticipate personal usage of library will increase over further years. Majority of respondents considered that use of online databases expedited the academic work and easier and faster access of information could be possible.

This clearly shows that online database is an important element of the academic and research community. It became a fundamental part of libraries, supporting the users in education, learning and research. So it becomes the responsibility of library to keep pace with technological developments and also to cope up with the users. Accessibility and usability of online databases is more valuable when it is readily available in the required format at the time of work.

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APPENDICES

APPENDIX- A

QUESTIONNAIRE FOR LIBRARIANS

Part- A

Dear Sir/Madam

I am conducting a survey on the topic "Use of Online Databases in Science and Technology in Select University Libraries of Delhi: A Comparative Study" for my research work. I request you to kindly fill up this questionnaire. Information provided by you will be kept confidential. I shall be highly obliged to you.

Yours Sincerely

Deepmala

---

1. **General Information.**

Name of the University: _____

Name of the University Library: _____

Year of Establishment: _____

Name of the University Librarian: _____

1.1 Phone
1.2 Mob.
1.3 E-mail
1.4 Library Website

---

2. **Working Hours**

2.1 Number of working days (approximately/ year)

2.2 Opening hours (working days)

2.3 Opening hours (Saturdays, Sundays & Holidays)

The Institute

3. Library Collection

Items	Description	
	Print	**Electronic**
Books		
Current Journals		

Bound Journals		
Online Databases		
Ph. D. Theses		
Dissertations		
CD-ROMs		
Manuscripts		
Rare Books		
Audio Cassettes		
Videos		
Microfilms/Microfiches		
Magnetic Tapes/Films		
Others (Please specify)		

4. Library Staff

Designation	Strength
University Librarian	
Deputy Librarians	
Archivists	
Assistant Librarians	
Information Scientist/Officers	
Professional Assistants	
Curators	
Semi Professional Assistants	
Library Assistants	
Technical Assistants	
Library Clerks	
Curators	
Library Attendants	
Others	

5. No. of Registered Library Users (in the field of Science and Technology only)

Category of Users	Strength
Faculty Members	
Research Scholars	

Budget

6. Annual Budget allocated to the Library?

_____

7. Percentage of the total budget spent on online databases?

_____

Library Software and Network

8. Please mention the names of the Library Networks of which your library is a member?

_____

9. Which library software you are using in your library?

_____

PART-B

Online Database Services

1. Do you have a separate Digital/online resource (database) centre?

Yes [ ]
No [ ]

2. If yes, please mention how many terminals are available to access the e-resources/online databases for users?

_____

3. What are the working hours of this centre?

Below 6 hours	[ ]	6-8 hours	[ ]
8-10 hours	[ ]	above 10 hours	[ ]

4. Estimated numbers of users per day visiting this centre

_____

5. How many professionals are working in this section?

_____

6. How many e-resources/online databases are you accessing through UGC-INFONET Consortia?

I. E-journals _____
II. Full Text Databases _____
III. Bibliographic Databases _____
IV. Others (Please specify) _____

7. Besides UGC-INFONET, is your library a member of other Library Consortia?

Yes [ ]
No [ ]

If yes, please specify their names

_____

8. Details of Electronic/online Databases

a) Collection of Electronic/online Databases (in numbers):

Online Databases	**2011**	**2012**	**2013**	**2014**	**2015**
Open access					
Through UGC INFONET					
Through other consortia					
Through subscription					

b) Through which medium do you provide the online databases services?

CD-ROM Network
Yes [ ]
No [ ]
Internet via their website
Yes [ ]
No [ ]
Commercial Online service Vendors
Yes [ ]
No [ ]
Others (please specify) _____

c) Among the full text and bibliographic databases **in the field of Science & Technology,** please mention those which are accessed by faculty members and research scholars in your library **(a list of such databases may please be provided by you)**

Full Text Databases

ACM Digital	**Yes/No**
American Chemical Society	**Yes/No**
American Institute of Physics	**Yes/No**
American Physical Society	**Yes/No**
American Society for civil engineers	**Yes/No**
American Society for Mechanical engineers	**Yes/No**
American Society for Microbiology	**Yes/No**
Bentham Science	**Yes/No**
Cambridge University Press	**Yes/No**
EBSCO	**Yes/No**

Emerald Insight	**Yes/No**
Elsevier Science	**Yes/No**
IEEE	**Yes/No**
Indian Institute of Physics	**Yes/No**
Nature	**Yes/No**
Oxford University Press	**Yes/No**
Portland Press	**Yes/No**
Project Euclid	**Yes/No**
Project Muse	**Yes/No**
Proquest	**Yes/No**
Royal Society of Chemistry	**Yes/No**
Science Direct	**Yes/No**
SIAM	**Yes/No**
Springer Link	**Yes/No**
Taylor & Francis	**Yes/No**
Wiley Inter Science	**Yes/No**
Wiley Online	**Yes/No**

Bibliographic Databases

ISID	**Yes/No**
JCCC	**Yes/No**
LISA	**Yes/No**
LISTA	**Yes/No**
MathSciNet	**Yes/No**
SciFinder Scholar	**Yes/No**
SCOPUS	**Yes/No**
Web of Science	**Yes/No**

Policies Related to Online Databases

9. A) what are the criterion as regards their features for selecting e-resource/online databases? (Multiple answers may please be provided)

Cost effectiveness	**Yes/No**
Subject relevance	**Yes/No**
Quantity to meet users needs	**Yes/No**
Currency of information	**Yes/No**
Authenticity of information	**Yes/No**
Back Issues Facility	**Yes/No**
After sale maintenance	**Yes/No**
Period of Access	**Yes/No**

Added Value	**Yes/No**
Distributed access	**Yes/No**
Legal Issues	**Yes/No**
Ease of accessibility	**Yes/No**

b) What are the criterion as regards user's point of view are you following for selection of online databases?(Multiple answers may please be provided)

Recommendation of Faculty members, Research scholars and students	**Yes/No**
User recommendation	**Yes/No**
List services	**Yes/No**
Surfing electronic information research website	**Yes/No**
Consulting other libraries	**Yes/No**
Scanning catalogue	**Yes/No**
News group	**Yes/No**
Free Online Trial Access	**Yes/No**

c) Do you preserve the online databases? Yes/No

If yes, please mention the format which you prefer for preservation:

PDF Format	[ ]
HTML Format	[ ]

Others (please specify) _____

d) Do you consider the users feedback while deciding to repeat or drop the subscribed online databases for the next year?

Yes [ ] No [ ]

e) Does your library have a Collection Development Policy for online databases? Yes/No

If yes, please mention the elements of Collection Development Policy for online databases following by your library. **(Multiple answers may please be provided)**

Selection Responsibility	**Yes/No**
Need Assessment & Users requirement	**Yes/No**
Short and Long Term Objectives	**Yes/No**
Levels of Collections	**Yes/No**
Acquisition Procedures	**Yes/No**
Selection Criteria	**Yes/No**
Security, Authentication	**Yes/No**
Balance Between Print & electronic collections	**Yes/No**

Coordination of Libraries Resources **Yes/No**

Others (Please specify) _____

f) What are the criterion of weeding policy of online databases? (Multiple answers may please be provided)

Availability of online databases for longer period **Yes/No**

More comprehensive coverage offered by others **Yes/No**

Difficult to preserve the online databases **Yes/No**

User's opinion for continuation or cancellation of subscribed online

Databases **Yes/No**

10. What measures have been taken to promote the use of online databases with in university?

Provide links from home page **Yes/No**
Conduct orientation programme for users **Yes/No**
E-mail/Internet mailing link **Yes/No**
Others (Please specify) _____

Influence of Online Databases

11. Please specify the user's level of satisfaction:

Items Used	Highly Satisfied	Satisfied	Less satisfied	Dissatisfied
Bibliographic				
Full Text				
Abstract				
Graphic				

12. Are you providing hands-on-training to use online databases to the users in your library?

Yes [ ]
No [ ]

13. In your opinion, what are the advantages of using online databases? (Multiple answers may please be provided).

Users being satisfied with the library activities [ ]
Users visit library frequently [ ]
Users feel comfortable in locating resources in the library [ ]
Users are more and more demanding [ ]
Users are more quality conscious [ ]
Users have become more time conscious [ ]
Usage of the library resources increased [ ]

Any other (Please specify) _____

14. Your valuable suggestions relevant to the topic are welcome.

_____

_____

Your valuable suggestions are invited regarding the electronic resources and services) provided by your library:

Name and Signature

Thanks for giving your precious time in completing this Questionnaire

APPENDIX- B

QUESTIONNAIRE FOR USERS

Part- C

Dear Sir/Madam

I am conducting a survey on the topic "Use of Online Databases in Science and Technology in Select University Libraries of Delhi: A Comparative Study" for my research work. I request you to kindly fill up this questionnaire. Information provided by you will be kept confidential. I shall be highly obliged to you.

Yours Sincerely,
Deepmala

Personal Information:

Name: _____

Gender: Male ( ) Female ( )

Status: Teacher ( ) Researcher ( )

Name of the University: _____

Department/Branch: _____

Use of Library Services

1. **How frequently do you visit the library?**

   Daily ( ) Weekly ( ) Monthly ( ) Occasionally ( )

2. **For what purpose you use library?**

   Borrowing books ( )

   Consulting Print Periodicals/Journals ( )

   Consulting online databases ( )

   Consulting other resources ( )

3. **Please rate how familiar you are with the following sources by which you can obtain information?**

Sources	**Too Familiar**	**Familiar**	**Somewhat Familiar**	**Not Familiar**
Print Sources				
Online Sources				

4. **Are you familiar with online databases subscribed by your University Library?**

   Yes ( ) No ( )

5. **Do you feel training is important to make maximum use of library online databases?**

   Yes ( ) No ( )

6. **Is library providing adequate training for using online databases?**

   Yes ( ) No ( )

Frequency and Use of Online Databases

7. **How long have you been using the online databases services?**

   Less than 6 months ( ) 6 months-1 year ( ) 1-2 years ( )

   2-4 years ( ) More than 4 years ( )

8. **How often do you use online databases?**

   Daily ( ) 2-3 times a week ( )

   2-3 times a month ( ) Once in a month ( )

9. **Please mention the source that keeps you abreast (informed) of the online databases available in your library?**

   Teacher/Research Supervisor ( ) Library Website ( ) Friends ( )

   Display section for material ( ) Library Circulars ( ) Any other (pl. specify) _____

10. **Where do you access online databases?**

    University library ( ) Compute Centre ( ) Department ( )

    Hostel ( ) home ( ) Any other place (Pl. specify) ()

11. **What is the purpose of using online databases? (Multiple choice is permitted**

    For study/ teaching purpose ( )

    For research work ( )

    To update knowledge ( )

    For Career development ( )

    To support other academic work ( )

12. Which of the following online databases you have used in university library? (Multiple answers may be given)

ACM Digital	( )
American Chemical Society	( )
American Institute of Physics	( )
American Physical Society	( )
American Society for Civil Engineers	( )
American Society for Mechanical Engineers	( )
American Society for Microbiology	( )
Annual Reviews	( )
Bentham Science	( )
Cambridge University Press	( )
Elsevier Science	( )
IEEE	( )
Indian Journals	( )
Institute of Physics	( )
J-STOR	( )
Nature	( )
Oxford University Press	( )
Portland Press	( )
Project Euclid	( )
Project Muse	( )
Royal Society of Chemistry	( )
Science Direct	( )
SIAM	( )
Springer Link	( )
Taylor & Francis	( )
Wiley Inter Science	( )
Wiley Online	( )
Any other (Pl. specify)	( )

13. What is the frequency of your using online databases? (Multiple answers may be given)

Electronic Databases	**Frequency**				
	MF	**F**	**SF**	**R**	**N**
ACM Digital					
American Chemical Society					
American Institute of Physics					
American Physical Society					
American Society for Civil Engineers					
American Society for Mechanical Engineers					
American Society for Microbiology					
Annual Reviews					
Bentham Science					
Cambridge University Press					
Elsevier Science					
IEEE					
Indian Journals					
Institute of Physics					
J-STOR					
Nature					
Oxford University Press					
Portland Press					
Project Euclid					
Project Muse					
Royal Society of Chemistry					
Science Direct					
SIAM					
Springer Link					
Taylor & Francis					
Wiley Inter Science					
Wiley Online					

(MF- Most Frequently, F-Frequently, SF-Somewhat Frequently, R-Rarely, N-Never)

14. Which of the material do you search from the online databases? (Multiple choice are permitted)

Books ( ) Journals articles ( ) Conference Papers ( )

Theses/Dissertations ( ) Case studies ( ) Patents ( )

Any other (Pl. specify)……..

15. Which of the following search methods do you use mostly? (Multiple answers are permitted)

Basic Search ( ) Advanced Search ( )

Expert Search ( ) Citation Locator ( )

16. Which of the searching technique is used by you?

Boolean Operator ( ) Truncation search ( )

Phase Search ( ) Proximity search ( )

Any other (Pl. specify)

17. How do you browse the required information from the online databases?

Type the web address directly ( )

Use search engines ( )

Use subscribed online databases ( )

Any other (please specify) ( )

18. Which search engine do you use for your most recent search?

Google.com		MSN/Bing Search	
Yahoo.com		Altavista.com	

Awareness About Online Database

19. Do you have awareness about the UGC-INFONET Consortium?

Yes ( ) No ( )

20. Are you satisfied with the online databases accessed in the consortia?

Large Extent ( ) Some extent ( ) Least Extent ( )

21. How many online databases are available in your subject through UGC-Infonet Consortium?

Less than 20 ( ) Between 20-40 ( ) More than 40 ( )

22. Which online databases you use through UGC-Infonet Consortium?

_____

_____

_____

Impact On Academics

23. To what extent do you use online databases and printed material in your academic work?

Online databases only ( )

Online databases most of the time ( )

Online databases and printed material equally ( )

Printed material most of the time ( )

24. What are the advantages you find in accessing online databases? (Multiple answers may be given)

Less time in searching ( )

Easy accessibility ( )

Simultaneous usage ( )

Downloading facility ( )

Archival facility ( )

Access to current/ up-to-date information ( )

Access to wider range of information ( )

Any other (Please specify) ( )

25. In your opinion, using online databases as compared to the use of conventional documents is:

Time saving		or Time consuming	
More informative		or Less informative	
Easy to use		or Complicated	
More expensive		or Less expensive	
More flexible		or Less flexible	
More preferred		or Less preferred	
More effective		or Less effective	

26. How the use of online databases has influenced your academic efficiency?

Expedited the academic work	( )
Improved professional competence	( )
Easier and faster access of information	( )
Use of conventional documents has increased	( )
Dependency on the electronic resources has increased	( )

Challenges And Satisfaction

27. Are you satisfied with the online databases facilities of university library?

Yes ( ) No ( )

28. What problems do you face mostly while using online databases? (Multiple answers may be given)

Slow access speed	( )
Difficulty in finding relevant information	( )
Lack of training related to online databases	( )
Lack of IT Knowledge	( )
Non supporting staff	( )

29. Are you satisfied with the online databases facilities provided by the university library?

Fully ( ) Partially ( ) Least satisfied ( ) Not satisfied ( )

30. How do you anticipate your personal usage of the library to change over the next three years?

Will increase ( ) Will decrease ( ) Will stay the same ( )

31. Are you comfortable with online databases facilities of your university library?

Yes ( ) No ( )

Your valuable suggestions are invited regarding the electronic resources and services) provided by your library:

Name and Signature

Thanks for giving your precious time in completing this Questionnaire.

APPENDIX- C

PROFILE OF UNIVERSITIES UNDER THE STUDY

The purpose of this part is to provide an overview of the under study university libraries, i.e. Central Library of University of Delhi, Jamia Millia Islamia and Jawaharlal Nehru University. This chapter will discuss a brief history, collection, membership, sections, users, staff, and services in a systematic manner.

1. Introduction

In the past years various information revolutions happened as 6000 years ago writing was first invented and in 1300 BC the first written book was published. Again in 1455 AD the invention of printing press created document revolution. But the Guttenberg's invention brought reasonable reading materials to the mass which created the agencies to collect, store and circulate printing materials to the public. These agencies are called libraries. Library is a social agency which has been created by actual necessities in modern civilization. Library and society are interlinked and independent. Library is a social institution charged with the function of assembles, organize, preserve, socialize and serve all expressed thought embodied as manuscripts, books, periodicals, journals etc.

International Organization for Standardization has defined a library as "irrespective of the title, any organized collection of printed books and periodicals or of any other graphic or audio-visual materials, and the service of the staff to provide and facilitate the use of such materials as are required to meet the research, informational, educational or recreational needs of its users".

As time passed information and communication technology has drastically changed the association, administration and working of conventional libraries and created as modern libraries which provide the access to information in many formats and from many sources. Today libraries are providing information and incredible amounts of knowledge without geographical boundaries by electronic means and with a variety of digital tools.

According to S.R. Ranganathan, "A library is a public institute or established charged with the care of a collection of books, the duty of making them accessible to those who required the use of them and the task of converting every person in its neighbourhood into a

habitual library goers and readers of a books". Thus a library is regarded as a public institution which is also expected to convert the potential readers into actual readers.[1]

- **Functions of Library**

  A library should provide for …….

1. Life long-self education
2. Information/documents on all subjects including local, national, international affairs to serve economic, political and social welfare.
3. Proper use of leisure.
4. Advancement of culture.
5. Preservation of literacy heritage for posterity.

- **Types of Libraries**

  The libraries are the following types.

- ❖ National Library
- ❖ Public Library
- ❖ Special Library
- ❖ Academic Library
  - School Library
  - College Library
  - University Library

1.1 University of Delhi

The University of Delhi is the premier university of the country and is known for its high standards in teaching and research and attracts eminent scholars to its faculty. It was established in 1922 as a unitary, teaching and residential university by an Act of the then Central Legislative Assembly. The President of India is the Visitor, the Vice President is the Chancellor and the Chief Justice of the Supreme Court of India is the Pro-Chancellor of the University.

The University has grown into one of the largest universities in India. At present, there are 16 faculties, 86 academic departments, 77 colleges and 5 other recognized institutes spread all over the city, with 132435 regular students and 261169 students in non-formal education programme. Five Departments namely Chemistry, Geology, Zoology, Sociology and History have been awarded the status of the Centres of Advanced Studies. These Centres

of Advanced Studies have carved a niche for themselves as centres of excellence in teaching and research in their respective areas. In addition, a good number of University departments are also receiving grants under the Special Assistance Programme of the UGC in recognition of their outstanding academic work. The University today boasts of as many as 15 big libraries apart from libraries in colleges. The instruments are used quite frequently by Teachers and Research Scholars of postgraduate departments of the University as well as by many other institutions in Delhi and its neighbourhood. The University has recently laid fibre-optic network in the North and the South Campuses connecting all colleges and departments.[2]

1.1.1 Delhi University Library System

The Delhi University Library System was established in 1922 with a collection of mere 1380 gifted books. During the first decade of its existence it functioned from shifting locales. In 1933 it managed to get a relatively stable space, viz. the 'Dance Hall' of the Old Vice regal Lodge (the present office of the Vice-Chancellor). Sir Maurice Gwyer, Vice-Chancellor of the University from 1938 to 1950 was instrumental in the blossoming of the Library in its new locale. Under his care, it was transformed into "a place as well of beauty as of learning". One of the early benefactors of the library was Shri G.D. Birla.

The Library moved to its present locale in the heart of the Campus on December 01, 1958. Prior to the appointment of a formal librarian, the entire collection was looked after by a "Library Committee" (amongst some of its office bearers were noted historians Professor I. H. Qureshi, Dr. T .G .P .Spear and Scientist Professor D.S. Kothari) and Honorary Librarians. Dr. S.R. Ranganathan, father of the Modern Library Science movement in India (then Librarian of University of Madras) and Professor S. Das Gupta, the first Librarian (1942-66) were the moving spirits behind its constant up gradation in the University apparatus.

Delhi University Library System (DULS) having more than 34 libraries in its fold, the DULS is accomplishing its task of reaching to wider academic community. We have advanced our web activity with the subscription of as good as 63 high quality electronic databases being made available through campus network to teachers, students and research scholars. In addition to this 21 more databases are also accessible through UGC-INFONET Digital Library Consortium. DULS also promotes Open Access e-resources. Our success lies on its use by the academic community of Delhi University. DULS is regularly conducting innovative Information Literacy Programs (ILP) for the benefit of students, researchers and Faculty members and also making efforts in developing tutorials to make the community

proficient in the use of WWW. Its OPAC is also being strengthened. It endeavours to further improve all efforts to facilitate right information to the right user at the right time.[3]

1.1.1.1 Library Hours

Monday to Friday - 9.00AM to 8.00PM

Saturday - 9.00AM to 8.00PM

Sunday & Holidays - 9.00AM to 6.00PM

Library is open round the year except on Republic Day, Independence Day, Gandhi Jayanti and Holi. DULS is highly used library where various users, i.e., Students, research scholars, faculty members, outsiders as guest member etc.

Table 1.1.1 Library Membership and Loan Period

Members Category	Borrowing Privileges	Loan Period
University Teachers	10	1 Month
College Teachers	6	1 Month
Ph. D. Students	6	1 Month
M. Phil Students	6	14 Days
M.A. Students	4	14 Days
M.A. (Ex) Students	2	14 Days
Special Membership	2	14 Days
Non-Teaching Staff of the University	4	15 Days

Table 1.1.2 Library Collection

Category	**Description**
Books	17,98,119
E-Books	1,30,102
Current Journals	1563
Bound Journals	3,66,000
E-Journals	43,965
Online Databases	49
CD-ROM	3,745
Ph.D. Thesis/ Dissertations	26,481
Manuscripts	783
Resources Through UGC-INFONET Consortium	22

1.1.1.2 Services

There are many services offered by DULS to their users. These are the following:

a) **Circulation:** Central Library of DU provides the long range Circulation Services. Central Library makes facilitate to the user to get issue books, CDs and back issues of the Magazines.

b) **Reference Service:** Reference helps the users identify and locate information through various reference materials such as dictionaries, encyclopaedias, bibliographies, atlases etc. in effective manner leading to their optimum utilization.

c) **Information Service:** Through information service, library always informed their users about pertinent information as it is published.

d) **Inter Library Loan:** User can use ILL to request materials not owned by the Central Reference Library. The library has provision for inter library loan with other libraries both within the cities and outside.

e) **Current Awareness Service:** Library always provide all the current information of primary documents which influence the progress of a research worker or a research team, is made available to them at the right time.

f) **Resource Sharing:** The users can access the union catalogue which contained detailed catalogue of the holdings of both the libraries. Users can get benefit through resource sharing as library provide resources on demand to other libraries.

g) **User Education:** It's a duty of library to organise and conduct short courses of education and training in the use of libraries and sources and make them aware about collections and services of library. Library also provide training facilities for use of technological equipment to access information with in the library, online access to foreign databases through formulation of queries.

h) **Photocopy:** Central Library provides the photo copying services but copyright regulations must be observed at all times.

i) **Internet Access:** Central Library provides the facility to access internet through university LAN.

j) **Consultation:** This is for those who are doing research from any university. They can avail the facility through the recommendation of their Supervisors.

k) **Bibliographic Services:** Central Library provides the different type of Bibliographic Services. Central Library makes available the online bibliography of doctoral theses with abstract and M. Phil dissertations awarded by the University of Delhi. The

bibliography and abstracts can be accessed with the help of year wise Subject Index arranged alphabetically.

l) **Orientation Program:** With the help of orientation program, library wants to their users aware about library and its services for their benefit.

1.1.1.3 Online Services

Central Library provides various online services to cater the information needs of different user categories.

a) **Digital Collection:** Delhi University Library has a well-equipped digital library consisting of many nodes which have access to internet. It has digitized 14386 books out of copyright zone available in DULS and have been placed on the web for global internet accessibility using the open source content management system.

b) **A-Z list of E-Journals:** A large number of e-journals are accessible through DU campus network. It facilitates searching the e-journals by title and subject. Besides, it also provides A-Z list of all e-journals as well as listing of e-journals by publishers and by databases. The search result includes Title, Access period, URL, Address, Publisher, Database and Remarks, if any for individual e-journals.

c) **E-mail:** DULS also provide E-mail service to their users through which they can ask any question or post their comment regarding any work.

d) **E-Referencing:** It introduces the reference service through e-mail. Users are given facility to post their mail to the given mail address and answer of their desired questions will be reverted by the reference librarian.

e) **DELNET:** The Central Library of University of Delhi is a member of DELNET. The users can access databases hosted by DELNET.

f) **OPAC:** The library's Online Public Access Catalogue (OPAC) can be accessed on intranet and internet to search bibliographic records available in the Central Library through a web-based search interface or with Window Client. The OPAC can be searched by author, title, subject, classification number and published. The users can also get information about new arrivals of books/journals etc. in the library through OPAC.

g) **Information Literacy Online Tutorial:** This service will make the users able to identify, retrieve, evaluate and use information through whatever channel or medium.

Users can enhance their information literacy skills for the adoption of appropriate information according to their needs.

h) Subject Portal: With the help of DU Campus Internet Connectivity users can use all the links for subscribed databases of their area of interest.

i) Knimbus Search: A federated search tool, *Knimbus*, is available to search journals articles in multiple databases.

j) Electronic Databases: The library provides the whole university campus wide access to electronic databases through campus network. Digital Collections on many subjects are made available for the users. Besides a good number of databases are also available through UGC Infonet Digital Library Consortium.

The university library has a long list of e-resources/ e-databases. However, for the sake of time and space the list of only important/ popular databases has been mentioned.

These are following subscribed databases by Central Library:

A-Z list of E-Journals (Searchable)	http://crl.du.ac.in/atozn/
Search Engines	
Knimbus	http://knimbus.com/web/home.jsp/
Citation Analysis Resources	
SCOPUS	http://www.scopus.com/
Full Text Databases	
ABI/INFORMATION Complete	http://search.proquest.com/
ACM Portal	http://portal.acm.org/
American Journal of Science	http://www.ajsonline.org/
American Phytopathological Society	http://www.apsnet.org/
American Society for Microbiology	http://www.asm.org/
EBSCO	
Emerald Xtra (Back files)	http://www.emeraldinsight.com/
IEEE Xplore	http://www.ieeexplore.ieee.org/
Indian Journals.com	http://indianjournals.com/
Science Direct	http://www.sciencedirect.com/
UMI Database	http://search.proquest.com

Under UGC-Infonet Consortia Delhi University Library provides following resources:

Full Text Databases	
American Chemical Society	http://www.pubs.acs.org
American Institute of Physics	http://www.scitation.aip.org
American Physical Society	http://www.scitation.aip.org
Annual Reviews	http://arjournals.annualreviews.org
Blackwell Publishing	http://www.interscience.wiley.com
Cambridge University Press	http://www.journals.cambridge.org
Elsevier Science	http://www.sciencedirect.com
Emerald	http://www.emeraldinsight.com
Institute of Physics	http;://www.iop.org
J-STOR	http://www.jstor.org
Nature	http://www.nature.com
Oxford University Press	http://www.oxfordjournals.org
Portland Press	http://www.portlandpress.com
Project Euclid	http://www.projecteuclid.com
Project Muse	http://www.muse.jhu.edu
Royal Society of Chemistry	http://www.rsc.org
SIAM (Society for Industrial & Applied Mathematics)	http://epubs.siam.org
Springer Link	http://www.springerlink.com
Taylor & Francis	http://www.informaworld.com
Wiley Online Library	http://onlinelibrary.wiley.com
Bibliographic Databases	
SciFinder Scholar	http://www.cas.org
MathSciNet	http://www.ams.org
ISID	http://www.isid.org.in
JCCC	http://www.jccc.ugcinfonet.in
Citation Analysis Resources	
Web of Science	http://www.isiknowledge.com/
Open Access Resources	
About Open Access	oaeresources.html

Open Access E-Journals	oaeresources.html#e-journals
Open Access Directories	oaeresources.html#directories
IRs @ member Institutions	oaereources.html#IRs

1.2 Jamia Millia Islamia University

Jamia Millia Islamia, an institution originally established in Aligarh in India in 1920. Maulana Mehmud Hasan laid the foundation stone of Jamia Millia Islamia at Aligarh on Friday 29 Oct 1920. Hakim Ajmal Khan, Dr. Mukhtar Ahmed Ansari and Abdul Majeed Khwaja supported by Gandhiji, shifted Jamia from Aligarh to Karol Bagh in New Delhi in 1925. In 1928 the leadership of Jamia moved into the hands of Dr. Zakir Hussain who became its Vice-Chancellor. In 1936 Jamia was shifted to new campus to Okhla. On 4 June 1939, Jamia Millia Islamia was registered as a society. In 1962, the UGC declared the Jamia "deemed to be university". By a special act of the parliament, Jamia was made a central university of India in December 1988. Many new courses at UG and PG levels have since been added. Besides its six faculties, Jamia has number of centres of learning and research. The Jamia is also marching ahead in the field of information technology. Apart from this, the Jamia has a campus wide network, which connects a large number of its departments and offices.[4]

1.2.1 Zakir Hussain Library

The library of Jamia Millia Islamia, Dr. Zakir Husain Library was established with the establishment of the Jamia in 1920. The library was started first with a small collection donated by Maulana Mohd Ali Jauhar. The library was named Dr. Husain Library in 1973 on the name of the former Vice-Chancellor of Jamia Millia Islamia and former president of India. Dr. Zakir Husain Library is the central library of the Jamia library system, which includes various faculty libraries. The existing building covers an area of 23,038 sq. ft. A new central library building covered area of 1,06,850 sq. ft. The building has been designed to reflect the Jamia's contemporary image and accommodate the ever-increasing demands of the modern library system. A stacks capacity for about 6 lakh books and a seating capacity for 1275 users, including reading hall.[5]

1.2.1.1 Library Hours

Monday to Friday - 9:00 AM to 12:00 AM (Night)

Summer Vacation - 9:00 AM to 8:00 PM

Saturday, Sunday & Holidays - 9:00 AM to 10:00 PM

During Examination - 9:00 AM to 12:00 AM (Night)

The library remains closed on 10 occasions of: - Republic Day, Holi, Jummatul Wida, Eid-ul-Fitr, Independence Day, Gandhi Jayanti, Dussehra, Eid-ul-Azha, Diwali and Muharram.

Table 2.2.1 Library Membership and Privileges

Type of Members	**Borrowing Privileges**
Member of the court, EC, AC	15
Officers of the Jamia	15
Head of the Departments	15
Directors of the centres	15
Faculty	15
Guest/Part Time Faculty	8
Research Scholars (M. Phil/Ph. D), Research Fellows	8
Post Graduate Students	6
Under Graduate Students	4
Academic Staff (School/College)	6
Administrative Staff	4
Other Permanent Staff	2
Special Members	2

Table 2.2.2 Library Collections

Category	**Description**
Books	5,40,000
E-Books	45,677
Current Journals	410
Bound Journals	22,200
E-Journals	7,110
Online Databases	40
CD-ROM	1500
Ph.D. Thesis/ Dissertation	15,780
Manuscripts	2230
Rare Books	4,200
Resources Through UGC-INFONET Consortium	24

1.2.1.2 Services

Zakir Husain Library provides the following services to the users:

a) **Reading Room Service:** Within the reading halls, reading and studying facility for textbook collection is made available. There is separate reading halls for scholars / teachers and Post Graduate students are available.

b) **Lending Services:** The library has made available the borrowing facilities of books between 9:00 am to 4:30 pm.

c) **Document Delivery Service:** Bonafied members of the library can get reprints of journals/ articles by filling up the form at the circulation counter.

d) **Inter Library Loan:** For the books, periodicals and articles, library offers inter library loan service to its users which are not available in the library. The library also lends its resources to the libraries of other government and academic institutions. Library provides this service on No profit- No loss basis. Library has institutional memberships of DELNET, INFLIBNET, British Council Division and American Centre Library.

e) **Document Procurement Services:** Document procurement services can be made available from American Center Library, British Council Library, DELNET and INFLIBNET.

f) **Current Awareness Service:** Library always provide all the current information of primary documents which influence the progress of a research worker or a research team, is made available to them at the right time.

g) **Resource Sharing:** The users can access the union catalogue which contained detailed catalogue of the holdings of both the libraries. Users can get benefit through resource sharing as library provide resources on demand to other libraries.

h) **User Education:** It's a duty of library to organise and conduct short courses of education and training in the use of libraries and sources and make them aware about collections and services of library. Library also provide training facilities for use of technological equipment to access information with in the library, online access to foreign databases through formulation of queries.

i) **Reference Service:** The library maintains a separate reference collection consisting of fast finding tool such as almanacs, atlases, biographical and language dictionaries, directories, handbooks and statistical compilations, encyclopaedias, technical data, maps, films etc. The reference books are not issued but consulted within the library.

The library provides the reprographic service in this section also. Reference services provides assistance with factual and research question, subject guides on finding and using materials and library instructions and research consultation.

j) **Information Service:** Through information service, library always informed their users about pertinent information as it is published.

k) **Photocopy Service:** The library provides photocopy services through private contractors. The services are located as a separate unit next to main entrance of the textbooks section. The users can approach the unit directly. They may also request the circulation counter.

l) **Internet Services:** Internet access facility is provided by the library to the bonafied members of the library. The bonafied members can use the internet in the library. To promote the usage of IT for library services, time to time library organizes seminar/ conference, exhibitions and educational programmes for staff and library professionals.

m) **OPAC:** The online catalogue is placed at the entrance lobby of the main building and the users can search the relevant documents through OPAC. Online catalogue provides bibliographic access to library's integrated computerized catalogue of English, Hindi, Urdu, Arabic and Persian books. The Online Public Access Catalogue allows the users to search the relevant documents by: Author, Title, Subjects, Keywords and Class Number. It provides the actual status of documents, whether a particular document is available or on loan. The online catalogue is extremely user friendly and enables users to search the relevant information with much ease and speed.

n) **Orientation Programmes:** Individual and group orientation programmes are available for digital resources and services.

o) **Other Services:** Single window search facility is available for its e-journals, e-books, in-house digitized documents and open access resources through EDS (EBSCO Discovery Service). A federated search tool, *Knimbus*, is available to search journals articles in multiple databases.

1.2.1.3 Remote Access: The library provides remote login facility for e-journals to faculty, researchers and other bonafied members.

1.2.1.4 Digital Resource Centre: Presently 100 systems have been providing to make it a gateway to digital resources. It provides access to 7000 peer-reviewed scholarly e-journals in

the various fields. The digital information resource centre is launched by the library to its bonafied members. The databases of e-resources are continuously revised and updated according to the information needs of the users. The users may log on to the Jamia's website. The users may also log on to the concerned website according to the URL indicated at the end of each databases.

These are the following databases subscribed by the library:

Full Text Databases
American Chemical Society
American Society for Civil Engineers
American Institute of Physics
American Society for Mechanical engineers
American Physical Society
Annual Review
Cambridge University Press
Economic & Political Weekly (EPW)
Elsevier Science
IEEE Xplore
Indian Journals
Institute of Physics
J-STOR
Oxford University Press
Portland Press
Project Euclid
Project Muse
SIAM
Springer Link
Taylor & Francis
Web of Science
Wiley Journals
Bibliographic Databases
ISID
MathSciNet
JCCC@ UGC-INFONET
SciFinder

1.3 Jawaharlal Nehru University

JNU is located in New Delhi, named after Indian Prime Minister Jawaharlal Nehru. JNU is among the premier universities in India. In the early 1970s, when JNU opened its doors to teachers and students, frontier disciplines and new perspectives on old disciplines were brought to the Indian university system. The very Nehruvian objectives embedded in the founding of the University, national integration, social justice, secularism, the democratic way of life, international understanding and scientific approach to the problems of society had built into it constant and energetic endeavour to renew knowledge through self-questioning. The JNU campus is a microcosm of the Indian nation, drawing students from every nook and corner of the country and from every group and stratumof society.Several Centres in these Schools have been declared by the UGC to be Centres of 'Excellence'. These are Centre for Historical Studies, Centre for the Study of Social Systems, Centre for Political Studies, Centre for Economic Studies and Planning, Centre for the Study of Regional Development, all in the School of Social Sciences. In addition three Science Schools-School of Physical Sciences, School of Life Sciences and School of Environmental Sciences have also received the UGC recognition as Centers for Excellence. It's true global character can be seen from the MOU's signed with major university throughout the globe.[6]

1.3.1 Central Library

The central library of JNU is one of the most modern and well equipped university libraries in India. It started in the annex in Vigyan Bhawan in 1969 and later shifted to the old campus of the university in the year 1970 and finally shifted to the new campus in 1989.

The Central library is knowledge centre which has rich resources and located at the heart of academic complex and schools. It is accessible easily from all buildings in the academic complex and provides comprehensive access to books, journals, reports, e-journals/online databases, e-books, e-theses and dissertations. It is housed in a nine story tower building and has carpet area of about one lakh sq. ft. each with different collection as well as reading facilities. The central library is a depository of all Govt. publication and publications of some important international organizations like WHO, European Union, United Nations and its allied agencies etc.[7]

1.3.1.1 Library Hours

Monday to Friday	-	9.00AM to 6.00AM	[21 Hours]
Saturday	-	9.00AM to 12.00 Midnight	[15 Hours]
Sunday	-	9.00AM to 8.00PM	[11 Hours]

The general reading room remains open for 24 hours throughout the year. The library remains closed for only three National Holidays and on Holi during the year.

Table 2.3.1 Library Membership and Loan Period

Category of Members	**Number of Borrower Ticket Issued**
Faculty Members/ Officers	12
M.Phil/ Ph.D. Students	6
Master's/ Undergraduate	4+2
Part Time Students	2
Staff Members	2
Special Members	2

Table 2.3.2 Library Collection

Category	**Description**
Books	5,20,965
E-Books	1,00,110
Current Journals	775
Bound Journals	1,08,752
Online Journals	20,750
Online Databases	50
CD-ROM	2110
Ph.D. Thesis/ Dissertations	19,780
Rare Books	1080
Resources Through UGC-INFONET Consortium	22

1.3.1.2 Services

There are many services offered by central library to their users. These are the following:

a) **Information Desk:** This service makes the users known about referral service with queries and other queries about services, accessing electronic resources and technology in the library.

b) **DELNET:** Through DELNET users can search the union catalogues of the resources available in member-libraries of DELNET. It provides an array of facilities including e-mail to its member-libraries and various services and resources helps the users for their academic or research work.

c) **Heller Keller Unit:** This unit caters to the information needs of the visually challenged and partially sighted students in reading, writing and learning.

d) **Cyber Library:** It comprises 200 terminals for students and research scholars to access internet and online resources.

e) **Reference Services:** Trained library staff provides assistance with general enquiries and guidance regarding the organization of the library and use of the OPAC.

f) **Information Services:** Through information services library define the best way of keeping its users informed about relevant information as it is published.

g) **Document Delivery Service/ Inter Library Loan:** Central library offers ILL services to its members for the books and journals which is not available in the university library. This is facilitated through DELNET.

h) **Current Awareness Service:** Library provides all the information contents of current published primary documents which influence the progress of a researcher, is made available at the right time to them in convenient form.

i) **User Education:** Often library organize and conduct short courses of education and training in the use of libraries and sources and make them aware about collections and services of library. It also provide training facilities for the use of technological gadgets to access information through machine readable catalogue with in the library, online access to foreign databases through formulation of queries and search strategies and knowledge of foreign databases.

j) **Photocopy Service:** Photocopy service is offered by a private operator on the mezzanine floor against payment.

k) **Resource Sharing:** The users can get access the union catalogue with contained detailed catalogue of the holdings of both the libraries.

l) **Orientation Program:** Library organize orientation program according to types of user to make them aware about library and its services for their benefit.

1.3.1.3 Online Services

a) **Online Catalogue:** Online catalogue provides bibliographic access to library's integrated computerized catalogue of books. The Online Catalogue allows the users to search the relevant documents by: Author, Title, Subjects, Keywords and Class Number. It provides the actual status of documents, whether a particular document is available or on loan. The online catalogue is extremely user friendly and enables users to search the relevant information with much ease and speed.

b) **Single Window Search:** Single window search facility is available for its e-journals, e-books, in-house digitized documents and open access resources through EDS (EBSCO Discovery Service) by title, keyword and by author. A federated search tool, *Knimbus*, is also available to search journals articles in multiple databases.

c) **Trial Resources:** Few resources are being opened for review by the library users, which will help in knowing whether these are useful for library collection.

d) **Data Portal:** This portal aims to provide single point access to data sets and reports, both free and subscribe published by government agencies.

e) **Online Journals:** Central library provides the electronic facility to access e-journals collection and other e-resources through the university LAN. The list of journals subscribed by library can search by title.

f) **Online Databases:** The library provides the whole university campus wide access to electronic databases through campus network. Digital Collections on many subjects are made available for the users. Besides a good number of databases are also available through UGC Infonet Digital Library Consortium.

These are following subscribed databases by Central Library:

Full Text Databases
ACM Portal
American Society for Microbiology
Applied Science & Technology Source
Artstor
BBC Monitoring Library
Cairn Information (French E-Journals Database)
CEIC Macroeconomic Database
CNKI Database
CNKI (English)
CNKI (Simplified Chinese)
DNSA
EBSCO Research Database
Economic Outlook
Emerald Insight
Foreign Broadcast Information Service (FBIS) Daily Reports
Hein Online
HENRY- STEWART Talk Collection
Humanities Source
IEEE Xplore
Inder Science Online Journals
Indian Citation Index
INDLAW
Integrum (Integrum Database)
Journal Citation Report
Lecture Notes in Computer Science
Lexis Nexis
Literature Online With MLA
Manupatra
MLA
Nature Research Journals

Newspaper Direct
ProQuest Academic Research Library
ProQuest Dissertations & Theses
ProQuest Times of India Archive
ProQuest Historical Newspapers: The Guardian and The Observer
ProQuest Historical Newspaper: The Wall Street Journal
SAGE HSS Package
SCC Online
Science Direct
SciFinder
Science Online
South Asia Archive
TAIR- The Arabidopsis Information Resources
The Cambridge Crystallographic Data Centre (CCDC)
WILEY Protocols
Wiley Inter Science
World Bank E-Library Yearbook of International Organization
Statistical Databases
India Stat

Under UGC-Infonet Consortia Central Library provides following resources:

Bibliographic Databases
ISID
MathSciNet
JCCC@ UGC-INFONET
SciFinder
Full Text Databases
American Chemical Society
American Institute of Physics
American Physical Society
Annual Review
Cambridge University Press

Economic & Political Weekly (EPW)
Elsevier Science
Institute of Physics
J-STOR
Oxford University Press
Portland Press
Project Euclid
Project Muse
SIAM
Springer Link
Taylor & Francis
Web of Science
Wiley Journals

Complimentary Subscription
Knimbus
Indian Journal.com
EBSCO- Literary Reference Centre Plus
Open Access Resources
Open J-GATE
DOAJ

g) E-Newspaper: It contains 2990 full content newspapers and magazines from 100 countries and can be accessible from any terminals/computer attached with JNU Intranet/Wi-Fi and also on mobile.

h) Remote Access: The library provides remote login facility for e-journals to faculty, researchers and other bonafied members.

i) New & Events: All the users can get information about Lecture Series, Book release, Training Programme, Seminars/Conferences, Workshops, Exhibitions through university website

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APPENDIX-D

List of Published Paper:

01 Papers in National Journal (2016)

02 Paper in International Journal (2014-2016)

03 Papers in National Conference (2015-2016)

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1. **Deepmala and Khan, M T M** (2014). Social Networking Sites: Its Applications and Implication in Libraries. *Journal of Information Technology and Library Science.* Vol. 2, No. 3, p. 1-12.

   ISSN: 2347-9760

2. **Deepmala and Khan, M T M** (2016). Use of Electronic Databases in University Library: An Evaluative Study. *International Journal of Library Science.* Vol. 13, No. 2, p. 99-107.

   ISSN: 0975-7546

3. **Deepmala and Upadhyay, Ashok Kumar** (2016). Usage of Social Networking Site (STSs) in University: A Study. *International Journal of Library Science.* Vol. 14, No. 3, p. 53-64.

   ISSN: 0975-7546

4. **Deepmala and Upadhyay, Ashok Kumar** (2015). Usage of E-Resources in Engineering Colleges of Greater Noida, G. B. Nagar, Uttar Pradesh: A Comparative Study. *In National Conference on Library Information Science and Information Technology for Education NCITE'15.* 27th August, 2015, p. 90-96.

5. **Deepmala and Upadhyay, Ashok Kumar** (2015). Use of Electronic Resources in Private Universities of G B Nagar, U.P. *In National Conference on "IPR: Challenges in Digital Environment" (NCICDE-2015).* Nov. 20-21, 2015.

6. **Deepmala and Upadhyay, Ashok Kumar** (2015). Online Databases: A Tool for Scholarly Communication. *In 2nd National Conference on Library Information Science and Information Technology for Education NCITE'15.* 27th August, 2016, Vol. 22, No.6.