Chapter - I

INTRODUCTION

1.1 Preamble:

The objective of the present study is to highlight need and importance of the study, objective, hypotheses and methodology of the study.

1.1.1 Bibliometrics:

Bibliometrics is a set or methods used to study or measure text and information citation analysis and content analysis are commonly used as Bibliometrics method.

The terms Bibliometrics consist of two words namely Biblio and Metrics. Biblio means book and metrics means simply measurement Bibliometric is the quantitative study of the physical published units is the units of physical published units is the units of bibliographic units or of surrogates of either. (Broadus a 1928); Bibliometric is the study of quantitative aspects of production dissemination of related information. (Jofuesediffe, 1990): Bibliometric encompasses a number of empirical methods such as bibliographic coupling & co-citation analysis (Kessler & small, 1995);

The UK government is considering using Bibliometric as a possible auxiliary tool in its research excellence framework, a process which will assess the quality of the research output of UK universities and on the basis of the assessment results, allocate research funding.

Historically Bibliometric methods have been used to trace relationships amongst academic journal citations. Citation analysis, which involves examining an items referring documents, is used in searching for materials and analyzing their merit. Citation indices, such as institute for scientific informations web of science, allow users to search forward in time from a known article to more recent publication which cite the known item. (Bibliometrics at royal
Bibliometric is the study of Quantitative aspects of Production, dissemination of related information (Joguesediffe, 1990). Bibliometric is the study of document and pattern of publication in which mathematical and statistical method have been applied (Fair Thom, 1970).

The assembling and interpretation of statistics relating to books and periodicals to demonstrate historical movements, to determine national and universal research, use of book and journals and to ascertain in many local situation the general use of books and journals, (Hulme, 1962).

1.1.2 Scientometrics:

Scientometrics is the science of measuring and analyzing science. In practice, Scientometrics is often done using Bibliometrics which is a measurement of the impact of (scientific) publications.

Scientometrics is the science of method scientific output similar to Bibliometrics used by librarians and information scientist. (Agrawal, aruna, 1982); related fields are the history of science and technology philosophy of science and sociology of scientific knowledge. (Eugene Garfield, 1995) ; application of mathematical and statistical methods of scientific literature (Derek de solla, 2000) ; to identify national an international network and to map the development of new fields of science and technology as well as to know the inner logic of science development (yadav Jaisi Ram, 1984) ; this enables to evaluate the size of scientific production on the assumption that the essence of scientific activity is the assumption the production of knowledge (Eugene Garfield, 2002); open access has emerged in the last few years as serious alternative to additional commercial publishing models taking the benefits offered by technology one step further (Wasudevan K T 1995); one significant finding in the field is principle of cost
escalation to the effect that achieving further findings at a given level of importance grow exponentially more costly in the expenditure of efforts and resources (Manavalan R 1982); other characteristics of open access journals are that author relation copyrights and they must self achieved content in an independent repository (David Wilson, 2001); modern Scientometrics is mostly based on latter founded the institute for scientific information which is heavily used for Scientometric analysis (Derek, J. 1995); currently prepares and international methodological manual that will contain guidelines for creating applying and interpreting the indices based on Bibliometric data (Eva Rodenas, 2001).

1.2 Three Laws of Bibliometrics:

1.2.1 Lotka’s Law:

Lotkas law introduced by Lotkas in 1926. This is inverse square law of scientific productivity for measuring the scientific productivity using the number of publication of an author of a measure, Lotka summaries his law thus number of person making the number making three contribution is about 1/9 the number „n making contributing is about 1/n²,

\[ A_n = \frac{1}{n^2} \]

1.2.2 Bradford Law:

Bradford law introduced Bradford laws in 1934. Bradford describes the scattering pattern of journal in the area of applied general physics and library purpose. A law of scattering any scientific displays (subjects) relatively few core journal are likely to contain a sub stain number is of journal that are peripheral to the discipline other zones containing the same number of articles as under zone will be

\[ 1 : n^2 : n^3 : n^4. \]

1.2.3 Zipf’s Law:
The 1999, Zipf introduced this law; it deals with the frequency of word occurrence in text. Where „R is rank of word and „F is frequency than mathematically Zipfs law to be stared as followed r.f. =c (constant) (Gustav, 1966).

1.2.4 Other Empirical Laws:

K. P. Vijayakumar in his article „Applications of Bibliometrics in library and information centers says that much of the later Bibliometric studies were made either to substantiate, modify, extend ,like or challenge these three empirical lows .

1.2.4.1 Prices Square Root Law of Scientific Productivity:

This law states that “half of the scientific paper is contributed by the square root of the total number of scientific authors.

1.2.4.2 Garfield Law of Concentration:

Garfield talked about the number of journal involved in publishing the literature of single fields.

1.2.4.3 Sengupta’s Law:

This is basically an extension of the Bradfords law. It states that, “during phases of rapid growth of knowledge in a scientific discipline, articles of interest to that discipline appear in increasing number of periodical distant from the field (Mahapatra, 2000).

1.3 Definitional Analysis:

1.3.1 Scientometrics:

The term Scientometrics gained wide recognition by the publication of the journal “Scientometrics” by Tibor Braun in Hungary in 1978. It is the study of measuring and analyzing science, technology and innovation. Major research issues include the measurement of impact, reference sets of articles to investigate the impact of journals and institutes, understanding of
scientific citations, mapping scientific fields and the production of indicators for use in policy and management contexts. In practice there is a significant overlap between Scientometrics and other scientific fields such as Bibliometrics.

1.3.2 Scientometric Analysis:

According to (2006), wouters, a cart intension has always existed between academic Scientometrics and political/practical, Scientometrics, the letter of which has been described as a hybrid of social science andbur rerate expertise (2006).

1.3.3 E-Journal:

“A journal is publications in any medium issued in successive parts bearing numerical or chronological designations and indented to be continued indefinitely (AACR2) - (WWW library.iitkgp.ernet.in.): E-journal is defined as the grouping of information that is sent out in electronic form with some regularity. It covers any serial or serial like publication available in electronic format, which is produced published and distributed electronically (Ramesh, yeranagula, 2003); A journal is academic in nature which is published using the world wide web; such a journal usually uses internet technology refereeing of papers. Many e-journals pride themselves on rapid refereeing and consequent repaid publication. (Gupta, 1998)

1.4 Selected E-Journal

1.4.1 Program: electronic library and information systems:

Program: An electronic library and information system is a scholarly refereed journal which is published in the year 1966. It is published from UK. Its publication frequency is four issues per year. Mostly covering Information Science and Information System aspects. From 2013, the journal started to shift its focus to cover to all aspects of the data revolution brought about by the Internet and the World-Wide-Web.
1.4.2 Interlending & Document Supply:

Interlending & Document Supply is a scholarly refereed journal which is published in the year 1983. It is published from UK. Its publication frequency is four issues per year. It cover a wide range of activities relating to document provision and supply, from traditional approaches to the use of advanced technology, both within and between countries worldwide. It publishes articles which have accepted by the Editor after consultation with appropriate experts including Editor Advisers.

1.4.3 Journal of the Medical Library Association:

The Journal of the Medical Library Association (JMLA) is an international, peer-reviewed journal published quarterly that aims to advance the practice and research knowledgebase of health sciences librarianship.

1.4.4 Information Society:

Information Society is an International Journal which is published in the year 1981. Its publishes from USA (Philadelphia). Its publication frequency is five issues per year. It provides a forum for thoughtful commentary and discussion of significant topics in the world of information, such as trans border data flow, regulatory issues, the impact of the information industry, information as a determinant of public and private organizational performance, and information and the sovereignty of the public and private organizational performance, and information and the sovereignty of the public. Its papers analyze information policy issues affecting society.

1.4.5 Portal: Libraries and the Academy:
Portal: Libraries and the Academy is an academic journal established in 2001. It focuses on the role of libraries within the academy, addressing topics related to information technology, library administration, and the place of the library in an institution’s educational and research mission. It is particularly given to exploration of the effects of technology on scholarship. The journal has been recognized for excellence by the Council of Editors of Learned Journals and the American Library Association. The journal is published quarterly by the Johns Hopkins University Press.

1.5 **Objectives of the Study:**

The main objectives of the present study are:

1) To identify the number of citations per article.
2) To know the most used form of document.
3) To know the nature of authorship pattern.
4) To identify the year – wise degree of collaboration of articles.
5) To find out the country wise distribution
6) To Know most productive journal
7) To know the chronological distribution of citations
8) Examine the average length of the articles.

1.6 **Hypothesis:**

The following hypothesis is formulated for the study:

1) Journals are more in number than other document.
2) Single author are more in number than multi authors.
3) Universities are the major contributors
1.7 **Scope and limitation of the study:**

The study is based on five International e-journals namely:

1. **Program: Electronic library and information systems,**
   
   The study is based on 4402 references appended to 252 articles.

2. **Inter lending and document supply,**
   
   The study is based on 3973 references appended to 326 articles.

3. **Journal of the Medical Library Association,**
   
   The study is based on 11425 references appended to 629 articles.

4. **Information Society,**
   
   The study is based on 13444 references appended to 278 articles.

5. **Portal: Libraries and the Academy**
   
   The study is based on 5920 references appended to 300 articles. during the period of
   
   2003-2012.

1.8 **Research Methodologies:**

1.8.1 **Research:**

“Research comprises of defining and redefining problems, formulating hypothesis or
suggested solutions; making deductions and reaching conclusions; and at last carefully testing
the conclusions to determine whether they fit the formulating hypothesis”.

**Research Means:**

- A way of thinking.
- Research is one of the ways to find answers to the questions.
- Critical examination of various aspects of professional work.
- Habit of questioning what we do.
Research is any such activity which helps to gain fresh insight into something “Discovering the truth examining the facts for conducting the research we must” (Kothari, 1990);

1.8.2 Research Methodology:

Methodology means study of method or a system of methods and rule applicant to research or work. It is connected basically with what principles and techniques to be follow for collecting data information and material for a given research project. (Kothari, 1990)

There are various types of research method’s

1) Descriptive and analytical research
2) Applied and fundamental research
3) Quantitative and qualitative research
4) Conceptual and empirical research
5) One time and longitudinal research
6) Survey research method
7) Sampling research method
8) Historical research method
9) Scientific research method

For the present Study Quantitative Research is Used

1.8.3 Quantitative Research:

Quantitative research is based on the measurement of quality or amount quantitative research is more focused and aims to test hypotheses. Quantitative Research is the systematic
scientific investigation of Quantitative and phenomena and their relationship. The objective of Quantitative Research is to develop and employ mathematical model, theories and/or hypotheses pertaining to natural phenomena.

The process of measurement is central to Quantitative Research because it provides the fundamental connection between empirical observation and mathematical expression of Quantitative Research.

Quantitative Research is widely used in both the natural sciences and social sciences form physics and biology to sociology and journalism. It is also used as a way to research in different aspects of education. (Gupta and Singh, 2009)

1.8.4 Data Collection:

Data can be numerically expressed that is quantified quantifiable or objective (Fasibs off and Dely, 1990) the data was collected from Program: electronic library & information system the study is based on 4402 references, Interlending & document supply, Ethics & Information Technology, Information Society and Journal of Health Communication during 2003-2012.

1.8.5 Data Analysis:

Analysis of information or data is one of the important part of any study Data analysis is done for the purpose of huge volume of data is reduced into meaning full case report.

Analysis of total 51132 citations appended to 1608 articles of Five E-Journals was done in the during 2003 to 2012. It was done by using various parameters, laid down in objective of the study, the data analyses was done using SPSS package which has been presented in the form of table and graphs to show the result prominently and easily.
1.8.6 Major Findings:

The findings are based on the analysis of collected data appended in 1608 articles and 51132 references.

1. The maximum numbers of contributions are single authored collaborations.

2. The study revealed that majority of the authors preferred Journals as the source of information providing the highest number of citations.

3. The USA has contributed the maximum number of articles. The UK is the second high productive country.

4. Maximum numbers of contributor are from the Universities.

5. The majority of publications have citations from 11 to 20.

1.9 Conspectus:

The dissertation has been presented in Nine Chapters.

1. Chapter - I: Introduction:

The objective of the present chapter is to highlight need and importance of the study, objectives, hypothesis, Quantitative Methodology of the study.

2. Chapter –II: Scientometrics: A Review

The purpose of the present chapter is to focus on previous studies on Scientometrics analysis.


5. Chapter - V: Journal of Medical Library Association: a Scientometric Study

6. Chapter –VI: Information Society: a Scientometric Study


The basic purpose of the present chapter is to analyze collected data presented in forms of tables and figures.

8. Chapter - VIII: Findings, Conclusions and Suggestions

The present chapter deals with Findings, conclusion and suggestions

9. Bibliography

The dissertation ends with bibliographical references.