CHAPTER – I
INTRODUCTION

1.1 PREAMBLE

The objective of the present chapter is to highlight the concepts of Citation Analysis of Current Science Journal and other related themes. It aims to specify objectives, hypothesis, limitations, methodology and conspectus of the study.

1.2 INTRODUCTION

Citation analysis is worthwhile area of research. "Citation analysis" refers to references in one text to another text, with information on where that text can be found. Citation analysis is useful for understanding subject relationship effectiveness, publication trends, and so on. The first recorded citation analysis was made by Gross and Gross, 1927 who looked at citation patterns to determine the journals to be subscribed to and back volumes to be acquired for the library of Pomona College. They studied the citation frequency in the references given in the journal of the American Chemical Society. With citation analysis one can evaluate and interpret citations received by articles, authors, institutions, and other indications of scientific activity (Gupta, 1983). The citation analysis is also a way to understand users. Studying references cited by your faculty's publications or your student's papers shows you the type of sources most commonly used and valued locally in their disciplines. It makes use of bibliographic, references, which are an essential part of scientific communication. Citation analysis is a major area of bibliometric research, which uses various methods of citation analysis to establish relationships between authors or their work (Anes Encyclopedic Dictionary of Library and Information Science, 2006).

Current Science Journal published every fortnight by the Association with the Indian Academy of Sciences, is the leading interdisciplinary science journal from India. It was stared 1932 by the then Stalwarts of Indian science such as C.V. Raman, Birbal
Sahni, Meghanand Saha, Martin Foster and S.S. Bhatnagar. In 2011, the journal completed one hundred volumes. The journal is intended as a medium for communication and discussion of important issues that concern science and scientific activities. Besides Full length research articals and shorter research communications, the journal publishes review articles, scientific correspondence and commentaries, news and views, comments on recently published research papers, opinions on scientific activity, articles on universities, Indian Laboratories and institutions, interviews with scientists, personal information, book reviews, etc. It is also a forum to discuss issues and problems faced by scientists and an effective medium of interaction among scientists in the country and abroad. Current Science is indexed by web of science, current contents, GeoBase, Chemical Abstracts, IndMed and Scopus. The Impact factor of the journal for the year 2011 is 0.935.

1.3 TITLE OF THE RESEARCH

The present study entitled “Citation Analysis of Current Science Journal”.

1.4 THE PROBLEM/SUBJECT MATTER

Citation analysis is a technique of bibliometrics. It is an important research tool understanding the subject, which we analyze the structure and direction of the subject. Citation analysis is useful for librarians, Teachers and Information Scientists to represent the relationship which exist between the cited and citing document, the technique of citation analysis involve the process of collection, counting and analysis given in various types of literature. This is the direct method to analyze the library record to determine the actual use of the documents. This type of information can provide useful idea for acquisition of important material selection of documents. This can help the information system designers to plan their products and services, giving credit or related work, providing background reading, correcting the work o others, criticizing previous work, alerting forth coming work. Therefore citation analysis is important study for any discipline of pure sciences and social sciences.
1.5 BIBLIOMETRICS

According to Alan Pritchard (1969) bibliometrics, "The application of mathematics and statistical method to books and other media of communication".

Nicholas and Riche (1978) defined, "Bibliometrics is the statistical or quantitative description of a literature".

1.6 SCIENTOMETRICS

Scientometrics is a newly emerging field that investigates quantitative aspects of science, it is the quantitative arm of the science of science, scientific communication studies, and science policy studies, the term 'scientometrics' is very recent term. It is often used with the same meaning as the bibliometrics to mean the application of quantitative methods to the history of science, but is now generally used as a generic term for a variety of research approaches within the study of science. That quantifiable aspect of science can be utilized to access the characteristics of science (Conference Reports Library Hi Tech News, 2001). It is a formed structural part of science of science methodology including, the complex of mathematical and statistical method, used to analyze the quantitative characteristics of science as an enterprise (Voverience and Trumpiene, 1994).

According to Nalimov and Mulchenk (1969) "Scientometrics is the investigation of science as development of information process".

1.7 INFORMETRICS

Informetrics is a term synonymous and analogous to bibliometrics. It is a concept introduced and practiced by "International Federation of Documentation" (IFD) considered information a very important commodity which is the basic component for the growth and development of the socio-economic structure of a country.

The term "informetrics" was suggested by German scientists Blackert and
Stegel in 1979 as a newly formed branch of science, using mathematical and statistical methods to investigate scientific and technical information on theoretical level and practical information activities (Blackert and Stegel, 1979).

1.8 DEFINITIONAL ANALYSIS

The definitions of the terms used in the present study are as under:

1.8.1 CITATION ANALYSIS

R. Poul and Mohan Roy (1983), defined citation analysis as “Citation is the one of the branch of bibliometrics where the unit of analysis is being cited as a bibliographic reference or as footnote in citing document”.

According to Bose (1986) citation analysis is defined as, "A reference to a text identifying the document in which it may be found. The citations have more importance than that what is generally assumed. An important use of citation lies in bibliographical work. The bibliography on a recent topic can easily be compiled by noting down the citation (or references as is generally called) given at the end of the relevant article and then arranging them in manner".

1.8.2 JOURNAL

A scholarly or academic periodical, often published by an organization or society, collecting the articles written about a subject by and for researchers/academics in a field. Journals specialize in specific fields of study. Some journals are described as peer-reviewed.

1.8.3 CURRENT SCIENCE JOURNAL

Current Science Journal published every fortnight by the Association with the Indian Academy of Sciences, is the leading interdisciplinary science journal from India. It was started in 1932 by the then Stalwarts of Indian science such as C.V. Raman, Birbal Sahni, Meghanand Saha, Martin Foster and S.S. Bhatnagar. In 2011, the journal completed one hundred volumes. The journal is intended as a medium for communication
and discussion of important issues that concern science and scientific activities. Besides Full length research articles and shorter research communications, the journal publishes review articles, scientific correspondence and commentaries, news and views, comments on recently published research papers, opinions on scientific activity, articles on universities, Indian Laboratories and institutions, interviews with scientists, personal information, book reviews, etc. It is also a forum to discuss issues and problems faced by scientists and an effective medium of interaction among scientists in the country and abroad.

1.9 OBJECTIVES OF THE STUDY

Present research has been undertaken with a view,

1. To find out the Volume wise distribution of citations.
2. To find out Issue wise distribution of citations.
3. To find out form wise distribution of cited documents
4. To find out the distribution of E-citations and P-citations
5. To find out the chronological distribution of cited documents
6. To find out the obsolescence of Current Science literature
7. To find out the authorship pattern of cited documents
8. To rank the cited author
9. To rank the cited publisher
10. To find out the county of origin of the cited documents
11. To find out Indian and Foreign distribution of cited documents
12. To rank the cited web resources
13. To find out the language wise distribution of cited documents
14. To rank the cited journals
15. To find out the core journals in Current Science literature

1.10 HYPOTHESES OF THE STUDY

The following hypotheses are formulated in the study.

1. Most of the science scientist prefers to cite their work individually.
2. Researchers depend more on journal literature for their investigation.
3. English is predominant language regarding journals and books in science and applied sciences.
4. Maximum number of contribution are from foreign countries.

1.11 SCOPE AND LIMITATION OF THE STUDY

The study is based on citations given at the end of the Article. The present study is based on 136482 citations appended at 264 issues of 22 volumes of Current Science Journal. The span of 11 years is taken into consideration that is from January 2000 to December 2010.

1.12 METHODOLOGY

Research methodology is a way of systematically solving the research problem. It may be understood as a science of studying how research is done scientifically.

According to P. V. Young, “Research methodology, is the systematic method of discovering new facts and verifying old facts, their sequence, inter-relationships, casual explanations and natural laws which govern them” (Kothri, 1990).

There are various types of research methods as follows:
- Descriptive and Analytical research.
- Applied and Fundamental research.
- Quantitative and Qualitative research.
- Conceptual and Empirical research.
- Field and Table research.
- One time and longitudinal research.
- Survey research method.
- Sampling research method.
- Historical research method.
- Scientific research method etc.
The present study adopted quantitative method. The method is very old and popularly known in all human societies. Present day it is widely used.

The present study entitled “Citation analysis of Current Science Journal during January 2000 to December 2010. For the present study 264 issues of the latest 22 volumes of Current Science Journals General Articles, Correspondence, Research Communication, Research News, Research Articles, Scientific Correspondence, Research Accounts, Hypothesis, Review Articles, Opinion, News Content categories of Articles of this journal will be selected for the study from the year January 2000 to December 2010. Over all there were 136482 citations appended 264 issues of the latest 22 volumes of Current Science Journal. The data was collected from the bibliographical entries listed at the end of the article. The citations were photocopied and the data was collected. The analysis was done by using various parameters laid down in objectives of the study.

1.13 DATA COLLECTION

The data was collected from the bibliographical entries listed at the end of the 264 issues of the latest 22 volumes of Current Science Journal. The citations were photocopied for further Analysis.

1.14 DATA ANALYSIS

Analysis of 136482 citations appended at the end of the 264 issues of the latest 22 volumes of Current Science Journal. Analysis was done by using various parameters like to identify the core journals, to rank the cited author, to rank the cited journal, to find out chronological distribution of citation, to find out the geographical distribution of citations, to find out the types of cited document.

For data feeding a table was created consisting of fifteen fields namely item id (table to uniquely identify each record in the database), Volume No., Issue No., Categories of content Articles, Number of Authors, Type of Publication ( Bibliographic Form), Place of publication, Institute and Year of publication( publication year of each citation) , Journal title of the citation and year of the source journal to accommodate the
136482 record of the data. The data was collected from the bibliographical entries listed at the end of each article which is used by the researchers for completing the article.

1.15 SUMMARY OF MAJOR CONCLUSIONS

1. The period wise or chronological distribution of citations was measured by number of years which elapsed between the publications of document. Maximum number of citation 55647 (40.80%) are there in group of years i.e. 1991-2000. And least number of citations 1(0.0007%) came in the group of years 1671-1680 and 1731-1740.

2. The authors were analyzed to determine the percentage of single author, two author, and three authors. The maximum number of citations 191787 (59.87%) are of two authors and least number of citations 128558 (40.13%) are of single author. which shows that “Most of the science scientist prefers to cite their work individually” is invalid. (Hypothesis No. 1.)

3. The most cited documents in current science are in English Language i.e. 134249 (98.36%) and remaining are 2233 (1.64%) citations are in other languages. Which indicates that “English is predominant language regarding journals and books” (Hypothesis No. 3.)

4. The most cited literature in Current Science Journal are from USA 86015 (63.02%) and 32882(24.09%) literature are from India. Which shows that “Researchers in Current Science Journal mostly prefer foreign publication” (Hypothesis No. 4.)

5. The frequency distributions of different forms of literature used by researcher in the Current Sciences heavily depend on journal literature that is 89985(65.93%) which Indicates that “Researcher depends more on journal literature for their research” (Hypothesis No. 2.)
6. Out of 328481 citations “Kumar, R.” scores the top position with 1046 (0.318 \%) citations; second rank goes to “Mishra, S.” with 587 (0.179 \%) citations, followed by “Liul, K.C.S.C.” with 573 (0.174 \%) citations.

7. Out of 27082 book citation “Supergene Iron Oxides” scores the top position with 169 (0.62\%) citations, second rank goes to “A Revised Survey of the Forest Types of India” and “Molecular Cloning: A Laboratory Manual” with 145 (0.53\%) citations, followed by “Bergeys’s Manual of Determinative Bacteriology” with 113 (0.41\%) citations

1.16 CONSPECTUS

The thesis will be divided into 4 chapters.

Chapter 1: Introduction

The objective of the present chapter is to highlight, objectives of the study, hypothesis of the study, Scope & Limitations, methodologies, conclusions and implications.

Chapter 2: Review of Literature

The purpose of the present chapter is to on the scanned literature on citation analysis.

Chapter 3: Data Analysis

The purpose of present chapter is to analyze the citations as per the parameters laid down in objective of the study, the data was analyzed using various statistical tools.

Chapter 4: Finding, Conclusions, Suggestions & Areas of further research

Summarizes the major findings and presents the conclusions & Suggestion.

The thesis will be end with bibliographical references and Appendices.
1.17 CONCLUSION

This Chapter outlines the detail research title, objectives of the study, hypothesis of the study, Scope & Limitations, methodology etc. The chapter is followed by chapter No. 2 Review of Literature.

Bibliography:


   *Asian Libraries*, 7(10), 257-268.
