CHAPTER 1
INTRODUCTION

1.1 Introduction:

Bibliometrics have today gained a place and is understood to deal with quantification of written communication-books and other media. This implies that counting or measuring the frequency of the literature is the basic two ways. By an extension or the term, we are still with Ranganathan's coined term, librametry, because bibliometric studies do include statistical approaches to the study of library and its service.

Statistical data relating to the world of scientific information and document collection such as subject scatter, pattern of authorship, citation trends and distribution pattern of information elements have engaged the attention of statisticians and librarians for over 50 years. Attempts have been made to collect and interpret these data and to study the underlying principles. This branch of library and information activity was named “Librametrics” (Ranganathan, 1959) and ‘bibliometrics’ (Pritchard, 1969). The bibliometric laws are useful in understanding some of the information phenomena and may help in planning many of the library activities, as they indicate certain basic patterns and relationships governing information items and activities. The study mostly relates to quantification of items and their pattern of distribution.

Hyperbolic distribution and exponential growth are the prominent trends underlying information and document phenomena. These studies throw light on the growth of literature productivity and influence of authors, interrelationships among different branches of knowledge, distribution of terms in information storage and retrieval (IR) pattern of collection buildup, their use and the like statistical analysis when applied to a field of activity generates a new field derived out of fusion e.g. when we apply statistical distributions to library organization and services, call it librametry. Similarly, when it is applied bibliographical organization and services, it becomes bibliometrics. When applied to information systems and services, it becomes informetrics. The organization sciences and its productivity analyses gives
rise to scietometrics. All these techniques gives rise to statistical models in a particular context such models help.

1.2 What is Bibliometrics? :

Bibliometrics can be defined in simple words, as quantitative or statistical analysis of recorded communication, printed and non-printed sources. The analysis can be done by observation, measurement and grouping or classifying. Further this analysis deals with intrinsic and extrinsic (implicit and explicit) characteristics and behavior of documents. Intrinsic signifies the entire machinery that functions behind the science, and whosoever responsible for bringing the printed records to light (authors, publishers, research agencies and so on), and to give emphasis on intention of the author and place of publication of journal as well as, those features which are microscopic and those which need reading between the lines. Extrinsic includes anything and everything explicit, like the type of journals, co-authors, and bibliographical details. For the purpose of the present study bibliometric is defined as a branch of library science which is concerned with the techniques of measurement and evaluation of communication media.

1.3 Application of Citation Analysis :

To understand in various filed such as science, scientific contribution, publication etc. about citation analysis is now a day going to be an important research tool. Besides it very necessary to apply citation studies and other bibliometric techniques for to manage different sheds of science, to analysis the structure and direction of it, measuring the use and development of journals as well as to map the performance of scientist. In a way, it can be said that vet amount of literature is getting published as a such kind of evaluative studies.

According to Gupta and Nagpal, There are three categories of applications of citation analysis:

1) Information and Library oriented studies,
2) Science oriented studies, and
3) Management oriented studies - that pertain to the evaluation of productivity in terms of citation analysis.

During the first category of citation analysis there lies studies such as to bear library and information science management. For such analytical technique an example is noticed which is to prepare top list of journals which help to find out the important journal to purchased which would serve the majority and needs serve of regular library users.

About second category, it can be said that to use and study the socio-structural of science which has to bear of a type of science policy as well as its management. In special, about history citation analysis would be used and studied; and by Garfield, Sher and Toppie, it can be demonstrated clearly.

In the third category, used for evaluative purpose which is the most controversial issue. By the procedure, evaluation can be completed by three levels:

First the authors of institutions next the journals and later is the countries simultaneously, the necessity for evolution at all levels is advocated by Garfield yet the process is expensive.

By the observation, the first leveled evolution is an unsettled issue whereas about second and third leveled evaluation which has produced many published studies on variety of literature. In 1927 it was Gross and Gross who made studies on the second leveled evolution and dared to apply bibliometrics techniques to library acquisitions. Through this it was noticed that there counted high citation and frequent use of journals which supported the inclusion of journals titles in the library collection. According to Bradford's the use of distribution also implanted to identify the list of core journals, selection and decisions for journals subscription. Here there is is a caution to collection development librarians against the overzealous use of Bradford's law to evaluate quality for selection for selection purpose.

The third leveled evolution, there for shows and studies the management of scientific organization of different ways, which will help to the policy of science of bodies in performing appropriate allocation of funds to various scientific groups in various subjects.
To citation analysis; though the same technique is given but Smith has put similar studies with it. From the historically point of view the use of citation indexing which became apparent including with the first publication ‘Shepherds’s citation’ in 1873 presented “citatory system” to list legal precedents. The standardness of bibliographic practice as increased significantly during 20th century which has it’s own objectivity and reliability of citation indexing. In the early 1960’s Eugane Garfiled and his companions working in the same field have noticed the great obstacles of the future of citation indexing. In 1961 Garfid published with and experiment entitled ‘science citation index’ by the institute for scientific information including all his complete works, concepts of the feasibility to analysis and index citation in all subjects, since then ISI has published social sciences citation Index and Arts and Humanities Citation index in 1973, 1978 respectively.

The fundamentals concepts of citation analysis providing studding and research including direct citation, establishment of relationship between document and the researches who use the bibliographic coupling the relation of two documents by virtue of their joint-decent form the third and co-citation which appears when two citations are cited together. The first recorded citation analysis published in 1927 was studied by P L K Gross and E M Gross. To establish citation frequency for other publications and frequency for other publications and to decide journal subscription and the back file purchase for the library at the Pomone college, the research workers maintained perfectly the references in the journal of the ‘American Chemical Society’.

1.4 Purpose of Citation Study :

For study the different trends in scientific research it has noticed during the past few years that citation analysis has been adopted as a useful technique. It is used for bibliographic references, their count determination, importance of particular topic and the worth for reading. Again the technique also helps in study as how a scientist intermingles with other when one cites on others work e.g.-

1) The papers selected for citations are very important to research activity
2) Citations influence are indicative via the material used the first is not so controversial for they are neither selected for the sake of complete bibliographical coverage nor historical reason.

An interesting instance is found in ‘The Nature’ published in 1970, as we notice second assumption, where two independent papers appeared at the same time one from U.K. and another from U.S.A.

By staring Malward, the editor marked “seven of the eight references by both are identical which is neat exhibition of the principles that underline their inclusion. By understanding this the author cite their authority scientists quote their for fathers; some time writers put unnecessary and unimportant references. So that many reasons stand for the same.

Weinstocks has pointed out the purposes of citing previous works by the authors. Specific reasons for using citations are as follows :-

1. Paying homage to pioneers
2. Giving credit for related work
3. Identifying methodology, equipment, etc.
4. Providing background reading
5. Correction one’s own work
6. Correcting the work of others
7. Criticizing previous work
8. Substantiating claims
9. Altering researchers to for the coming work
10. Providing leads to poorly disseminated, poorly indexed or united work
11. Authenticating data and classes of fact physical constants etc;
12. Identifying original publication in which an idea or concept was discussed
13. Identifying the original publication or other work describing an economic concept of term
14. Disclaiming work or ideas of others
15. Disputing priority claims of others

Apart from these fifteen reasons, some more purpose was given by Gupta and Nagpal.

1. Loyalty to colleagues or guides
2. Familiarity with particular paper restrictions put up by editorial policy and the publisher.

By considering through all the angels the list is not prepared for to show lengthy and numbers but to show particular technique in citing different work and references. As a quotation cites itself “You – quote – me – I – quote – you” is not noticed uncommon among the different writers; and the fact is that when any author Deres to to cite different work and references, he fills what the work and references cited, it should be worth citing and that’s why the weightage of importance may transmute.

The interpretation we may notice here is that the value of thesis are research work is to identify from the numbers of references used in such weeks. It is a technique to which is necessary to mention that citation by authors is type of indication in which we easily get the answer of such question like - what is form of material? And how much of them are being used to support the finding.

Apart from this to cite references of scientific field is different. In it when a scientist put his findings, naturally he refers to previous findings of same nature. Similarly when an item is to be cited, very easily, the cited article and this makes to plan the matter of the considered topic of his work.

Although, there is some highness of relationship between the in the citing of the present thesis and the cited article of particular book. The relevance and the importance of particular document lie in the citing articles which are appeared in a number articles whose cited documents have seen in a maintained frequency which is fully indicative. Throughout the interpretation, whatever may be the nature to read it, it is considered that relation between document of citing as well as cited should have the firm analysis of the studies in all the cases.
In his article Ghuha writes and indicated about Ranganathan who compared citation analysis to hut of Shabari, the great devotee of Lord Rama in an ancient Hindu epic; Ramayana who after testing yet considered fit to offer to Lord Rama. To literature or any subject citation study, by the opinion of Baughman is a systematic enquiry in to the structural property and them. He again explain that the structure of literature nothing but a quality and that’s why it is a divergent characteristic. Due to him it is not a process to give one or to put before anybody else, rather it is a process which runs continuously with the literary system. He further advocates that the structure is only away of looking to the provided components who lastly goes up to mix with literature. This, in turn helps to provide to the librarian the practical guideline to words action when it appears to the matter of selecting materials for his library.

The major leit – motif behind citation analysis is to study and take for meaning the analysis a bibliometrics references and citations which are very useful in preparing the a thesis.

On the user studies, throughout the consideration, it is said that the impression of citation approach is perfect and direct the reason is that, the technique is much helpful to identify and determine the usefulness of literature of literary subject in the terms of its time – for instance it cab be that in general, the findings of the most citation studies shows that in scientific writing the use of recent references and in information are found but in historically writings it make use of old information and this is what we notice and excellent quid line to the librarian in formulating his adopting policy about different subject. To any particular collection the citation approaches independent so that its findings are applicable to all libraries universally.

1.5 History and development of citation analysis :

It was Frank Shepherd who introductive the first practical application of a citation application of a citation indexing during the year 1873 for all legal cases. After the very long distance means up to the first World War which took place in 1914 it was only the Shepherd's on whom the application was ran.
After 1920’s library literature has recorded a number of citation studies which had not a systematic policy rather in what way and how they prepared citation studies, it is the undiscused subject though many writers of the contemporary period try to attempt position and importance of journals on the old basis of an average number of references to journals cited in the research paper.

In the year 1927 it was Gross and Gross who first of all, recorded a more systematic citation count of user’s study beyond the worth. The method was implanted to make and numerical counting of all the journal in chemistry, cited in a small prescribed sample of research papers. In away the study was remained constant and important because of its historical relevance, whose findings was in the form of Bradford’s Law and whose scattering was by Stevens Law.

After a great gap it was Fusser who made a very significant study in the year 1949 since then Fusser was considered the major figure in the field of citation analysis was the first recognized study on basis of citation analysis.

In his effort to main objective were seen:

1. To find out the characteristics of literature used by the chemists of American origin.
2. To rank the journals in the order of their use.

It was the methodology whose study was to count the bibliographic references cited by American scientists in their research article and the same time to assure the forms of literature show in each citation. This process and technique helped others to pose the journals as one form of literature and to study structure and to study structural characteristics of the literature of chemistry.

During 50s, 60s, the standarded was improved as well as continues to a good number of studies having acquired exact and correct methodology and the conclusion was also perfect in all the cases. It means it can be said that 50s, and 60s, were the glorious period for the progress and development of citation analysis. It was the year in which the study is flourished perfectly and later on the process has been continually enriching. Most of the writers supported a technique of common hypothesis which was, in those day, in the field of science only put few of them used
journals rarely, upon the conclusion, directly or indirectly we notice the impact and influence of Bradford’s citation technique.

About Macanally and Steven’s it is necessary put the reference about their study in field of citation analysis. Macanally was considered first to show the difference the structure of literature of science and the literature humanities in 1951. Steven’s, in the same year made comparative analysis of the library materials cited for Ph.D. dissertation of Chicago University.

Of among total 6993 citation in regained from a sample set of 90 thesis having 50 on science and 40 of humanity writing which were fully used journal articles and books in the humanities only with the base of single subject of like humanities move thesis were on science. The number of citations on science was bigger than humanities though journal of articles of humanity were studied. Steven’s deeps study about citation analysis show that dissertation of history cited a large number of tiles which were not found in the library. Upon this progress on development and by attaching this reference he put a conclusion that scholar in the humanities showed search and make use of the materials available in the libraries rather than their own.

Dr. Leake who acted of the chair person of the committee in 1952 to consultants for the study of indexes to the medial literature in that project he got the association of Garfield. About review article, he noticed that most of sentences were in supported by a citation to earlier work. In a 1955 he published his first article in science after having to exam Sheferd and his citation.

“Institution of scientific information” was published by Garfield was establish in 1961 in later on his started publishing “Science Citation Index” form 1963. The literature of 1961 was covered firstly in SCI which had included 613 journals contained 104 million citation and published in 5 volumes. The different projects of Garfield were like:-

1. Index for journals of Histio – Chimistro and cyto – chemistry in 1966.
2. Index for statistics probability, with Dr. Turkey at Princeton University.
3. American Institute of Physics documentation Research Project and Institute of Scientific Information carried out the study of other aspects of citation indexes. The project was conducted by B. A. Lipetz. 19
4. Technical information project at Massachusetts Institute of Technology (U.S.A.) on the bibliographic of articles from recent.

In the study of citation analysis Garfield has great contribution since 1961 to 1963 or in the year in 1961 and in 1963 he had published many journals which had earned world popularity. After getting inspiration of his own work he again started to work upon various project of citation studies. Besides the popularity of SCI reached him on the top among the researcher community. The result of the popularity is that the subject of science become indivisual as well as disciplinary in nature. With this SCI index the citation studies become helpful to different subject specially. The writers history of, sociology as well as science separated one another. Naturally a good result was seen so far in U.S.A. and U.K. for the citation studies.

1.6 Development of Citation Analysis:

New techniques and developments have been launching in library science since last 60 to 70 years. To bibliometric which is prominently and popularly identify as study of citation as earned the biggest importance of to determine, use, place of publication.

By the help of innovative of new technique and majors, the development of citation analysis has been notice and marked on a specific rank; and with the day by day exploited and new tools, and different techniques to study and analysis of different studies. The progress and development of this trends has led to a specific growth in a both to numbers and kinds of studies to use for citation analysis. If we put a brief look of to past rater by turning towards past it is clearly noticed that it was Gross and Gross who first revolutionary this technique for citating analysis to study books and journals.

That’s why Gross is considered one of the most important figure in the history of citation analysis. By whom the effort to present a list of frequently cited journals arranged according to the frequently of citations which were to be attached to the source journal like journal of the America Chemical Society. Later on the writers of the
successor tried to some features of their fore fath ers with similar methods successfully; and attainted to present such efforts in one field to another.

Linda Smith is of the opinion and put forward his view that “the easiest technique to use in a citation count, determining how may citations have been received by a given document or a set of documents ever a period of time form a particular set to citing documents”. This technique of citation analysis provided by Smith was very easy and perfect, naturally it was applied to count articles which were appearing in particular journal. By passing of the time and need of the time technique can be refreshed by uncalculating the impact and factor of the average number of citations got by articles which were published in the journal during specific periods. This type of measurement and technique permits on to compare the impact” of journals which punished different number of articles.

By adopting the measures and techniques of Linda Smith, Pins and Narian, later on tried to develop and refresh of citation counts which was in account to the length of papers, the presetting of the citrating journals and the different referenced characteristic of different branches of literature.

Regarding to the development of citation analysis, Linda Smith, further tried to review of few more articles. For the refreshment purity and correctness he devise to techniques to identify documents likely to be closely related –

1. Bibliographic coupling and,
2. Who citation analysis

These is two documents are co-cited naturally when they are cited more published documents. Hence in the process of co-citations, the privies documents become attached and linked to one another for to study and cite together later on where as in bibliographic coupling, later documents became linked automatically for they cite the same previous documents.

The difference in between to techniques to count citation is that the first entitled bibliographical coupling is closely associated to the documents where as the later entitled who citation analysis in link an attachment externally to documents and the technique is valid along time as continued to be co-cited. By the Weingberg who reviewed and co-existed the theory and their practical of bibliographic coupling and
citation analysis. The 60s and the 70s were witnessed about the major characteristics of citation analysis technique to the citation counts and bibliographic coupling. In this manners co-citation analysis techniques become the focus of hand work many researchers and researchers activities. To considered co-citation analysis the meaning is that it is of a particular interest which is for measuring mapping and most probably for understand scientific specialty.

Be the passing of time the new techniques of citation analysis were developed again with the help of available and the present tools. To understand previous citations studies which were depended upon the lists of references found in the articles appearing in small numbered journal. The first or the staring stage of citation were humorous and ridiculous through this stage the citations were separated by hands which were monotonous and time consuming in the same way the scope and the importance of citation was limited. But later, with the help of computer technique the process was changed and improved significantly in two different ways:

1. By the production of printed indexes containing citation data from thousand of documents,
2. By analysis of citation data available in machine - readable form.

Institute for Scientific Information (ISI) now provides huge data for citations analysis. Subject coverage has been expanded from initial Science Citation Index (SCI) to include the Social Science Citation Index (SSCI) and the Arts and Humanities citation index (A & H. C. I.) as well.

Through this overall discussion of individual journal and articles it is quite understood that so far as the individual review is focused only. But by citing all this views use notice a various levels about the collection of data processed in the articles and journals. For this purpose, somebody feels and notices that to indicate and understand different citation and their importance. At the same time one can understand as use such analysis to determine to the most importance scholars, publication, departments etc. in specific discipline. By considering this a single from several which helps to go to close examination if the result of citation analysis is to be understood.
The advanced theories Bradford's, Zip's and Lotka's of citation analysis have become complex though their has been effective practical application in it.

The applications about citation analysis made by Bradford, Zip, and Lotka appeared revolutionary from which helped to remove much more complexities and prepared apparent and easy platform of citation analysis. The perfection of analysis is reached to so high and easy though at one time it didn’t need and retry to get the help of computer.

During its beginning the various methods of citation analysis is complicated with numerous reasons. Yet its principles are quite easy. Naturally the result went to apply traditional methods for practical analysis which perhaps will able to change the future practice even then it can not be altered for in favour of typical analysis : it is because of the first the library field who applied literature analysis and to use it to more interest in the filed of librarianship and information science. The vividness of primary background in such are as give and put such promises about research applications of citations. The result and need is that it should be satistactory and to sympathize for the utilization of wide ranged areas.

1.7 Taxonomy of Citation :

In the scientific publication and field of research, citation indexing has been playing a vital role science the time immemorial. By looking a brief towards history it is noticed that since last few decades citation indexing has gained much popularity and respect as a tool to search, indentify, retrieve of scientific publication as well as research. The popularity it self suggested that it is because of its way to help researches and scientists to provide and to study literary pattern of particular subject information and propaganda.

Citation analysis is useful tool is in the field of publication and research of among all the activities done in citation analysis most of them are based on the hypothesis which is a major promise in completing research work, in between citing item as well as all the members of cited set item. In citation analysis, besides, there is a close link of some forms. In a different words it is said that citing item are useful
Citation indexes are very much helpful. The reason is that it provides numerous and various research capabilities to the author. The fact is that most of the indexes are not quality to proceed the research work. In this manners the author has himself to take decision of which material is helpful to him and related to his work. Mostly the citation indexes are advantages in various ways. One important advantage of a using citation indexes, one thing is clearly, notice that it works as a bridge and proviably link between documents supplied by author citation and by listing together all the item with common citations.

To attach with the sequence to the said processor of citation indexing’ it is clearly suggested that citation would be considered as a link of index of its documents, the nature and scope used by the authors rather that actually attachment of the contain which the subject with is helpful to extend them. In this manners its requisite to put forward what Fano and Kessler view independently by them; if two different document refer to a common item, they should have a sort of closeness in their approach, study, context, etc. Their suggestion is clear and pure. By them the present author should imitate their ancestors with refinement as far as possible. To develop and progress in every field it is very necessary to attach with history quifaly.

Regarding to citation analysis and it progress and development, and further, Lindasmith puts review of few articles. Due to him, in scientific communication one important thing is that during the communication the scientists should give to primary test to interact with their colleagues to get better result in the production and to progoget the research work. By the help of following techniques or the brief study of following mentioned techniques helpful to identify documents closely:

1. Direct citation
2. Bibliographic coupling
3. Co – citation

A) Direct Citation :
The main reason behind accepting direct citation in research work is that the concept is used by a variety of researcher to mentioned relation of documents indifferent ways. It is Grafield and Solla – Day- Price who gained the main credit for the development of this technique. Solla – Day - Price who provided a conceptual frame work for to understand the idea of network in thorough context of scientific discipline. And in this respect he proposed himself a model due to him –

“Each paper carries on an average a dozen citations back to the previous literature”.

By this analysis it is notice that their come out who individual more of citation. The first counting for almost half of all the references back may be called archival, which are fully and fully independent of the age of older papers being cited and those who are without structure.

The next type of citation may be called research front. In it new papers use the others half of their references to link back in small numbers of highly interconnected to recent papers. In every field most of the papers are connected to one another with the neighbor by many lines of citations respectively. The perfect and correct frame of this pattern is to found in all knitting. In it each stitch is a strongly attached to the previous thread and the respective neighbor.

B) Bibliographic coupling:

The term the bibliographic coupling introduced by M. M. Kesalar of the the Massachusetts Institution of Technology in 60s. Kesalar put demonstration about coupling with computerized study of the references about 36 volumes: of the Physics reviews. The research made by him is put pressure upon the advantages of coupling cunits used as a tool as, ‘Independent words and language’ and of requires no need of perfection of earily knowledge of comprehension and consideration. It further emphasizes that if the number of particular common citation for two different papers be multiple rather than single their strength of coupling is said to be more, it implies that their contains are very close to each other.

Kesslar is one of the most experimented figures in the bibliographic coupling who developed this theory in the most progressive manner. In a series of papers he
had tried to develop and establish the usefulness of this idea Kesslars thoughts about bibliographic coupling and his works attracted the attention of scholars of experts to have information and analysis interest. But the impact was loose and nobody hardly been take seriously.

During his research carries Kesslar pointed out and forsaken for some time for his revolutionary technique. He criticized again the hypothesis as of common parental citation might be considered as insuring relation according to Martin. In the terms of contain, even multiple common citation may not sure the breed of brotherhood. By considering this, at best one can concluded that more to common citation and more is the possibility of begin their cousins. By theoretically of explanation the concept of bibliographic coupling can be discussed by the way to discuss the mathematical framework to understand it better. To understand, practically point of view our priority goes to prepare toward the formula in the terms of generation of citations instead of considering single citations.

In this way it is prepared to co-relate matrix and measures of the bibliographic coupling to make strength; and to make direct application to cluster to items. Thus, in bibliographic coupling we discuss that the later documents linked to the pervious for they cite and study the same documents and the articles of the context.

In bibliographic coupling each reference to early literature identify fixed relationship between the cited and the citing papers. Naturally there comes out a link of the reference citation and the source citation. Martin called it as ancestor and descendent respectively.

C) Co- Citation :

The concept co-citation suggested and propagated by H G Small and Marsha Ova in 1973 for the first time. Later on it was refined and developed by Small himself along with Griffith and others. Small put forward by presting co-citation as a “Form of document coupling with shows frequency with which two documents are together”. To understand and identify cluster in the various fields by computer programme, in
According to the principles of co-citation is that it is depended upon the fact if two different citation are cited together with the later literature in fact they have quite related to each other. In it the frequency of strength occurred together which binds relationship between to say strongly co-cite a large number of authors must to cite the true early works. By this opinion it can be said that the study is nothing but to measure the highness of relationship the paper as observe by practicing special scientists. Furthermore the co-citation pattern create and interest and intellectual of the present field with passing of time. In this respect small go forward by saying that co – citation directly links to cited documents which is a creation towards close association.

The documents used some time of for citation it can be taken to represent the key concept of discipline where as the different pattern of co-citation can be sued to explain in detail the relation exiting through this concets. Significant differences exist in the pattern of co-citation of coupling. Two documents are co-cited when they are cited combinedly in one or more published document.

Thus in co – citation previous documents become linked to later one because they are studied and cited together.

1.8 Research Topic:

‘A Bibliometric Study of Indian Journal of Engineering & Materials Sciences 2008 to 2012’

1.9 About the Journal :

Indian Journal of Engineering & Materials Sciences by NISCAIR in 1994. It is published papers in aerospace engineering, mechanical engineering, metallurgical
engineering, electrical / electronics engineering, civil engineering, fluid mechanics, instrumentation and materials science. Its bimonthly Journal covers on an average 8 per issue on Engineering and material science.

1.10 Objectives of the Study:

The objective of the study entitled ‘A Bibliometric Study of Indian Journal of Engineering & Materials Sciences 2008 to 2012’ were as follows:

1) To study the research publication growth in IJEMS.
2) To study the collaborative research network in engineering and materials sciences.
3) To testify the application of Bradford’s law in Indian Journal of Engineering & Materials Sciences.
4) To identify the core journals & publication in Engineering and materials sciences.
5) To study the contribution of authors in Engineering and materials sciences.
6) To study the obsolescence & half life period of literature in Engineering and materials sciences.
7) To study the geographical distribution of citation.

1.11 Scope of the Study:

This investigation undertook bibliometric analysis of the articles and their citations collected from the ‘Indian Journal of Engineering and materials sciences’ published from 2008 to 2012. The citation database of the published research publication about of 6317 citations appeared in 305 articles.
1.12 **Hypothesis:**

Proposed topic of my research was A Bibliometric Study of “Indian Journal of Engineering & Materials Sciences 2008 to 2012”. The hypotheses of the study were:

1) It was assumed that the journals were most favoured category of documents of the researcher.

2) It was assumed that the Indian journals were most favoured by researcher as compared to foreign journals.

3) It was assumed that the Indian authors were most frequently referred by researchers.

4) It was assumed that the citation data in Engineering satisfied the Bradford’s law of scattering.

5) It was assumed that Journals half life period is less than Books in Engineering & Material Science.

1.13 **Methodology of the study:**

The present was based on the details of citing article and cited references collected from ‘Indian Journals of Engineering and Materials Sciences’ for the period 2008 to 2012. Citation analysis technique was used and statistical software like WINSISIS, MS-Excel, SPSS (Statistical Package for Social Science) were used for the purpose of study.

1. **Microsoft Access:**

Microsoft Access 2007 is a relational database management system. In relationship database system, data is organized in tables that are related or linked to one another. Each table consists of rows, called records and columns, called field.

Access 2007 is a powerful program with numerous easy-to-use features, including the ability to quickly locate information, add, delete, and modify records, sort records, analyze data and produce professional-looking reports.
Once data is entered into the database table, one can quickly search the table to locate a specific record based on the data in a field. In a manual system, we can usually locate a record by knowing one key piece of information.

Using Access, it is also easy to add delete records from the table. Once we locate a record, we can edit the contents of the fields to update the record or delete the record entirely from the table.

The capability to arrange or sort records in the table according to different fields of data helps provide more meaningful information. One can organize records by name, departments, pay, class or any other category needed at a particular time. Sorting the records in different ways can provide information to different departments for different purposes.

Access includes many features that help you fast produce reports ranging from simple listings for complex, professional looking reports. One can create a simple reports by asking for a listing of specified fields of data and restricting the listing to records meeting designated conditions. We can create more complex, professional reports using the same restrictions or conditions as the simple report, the data can also be display with different layout, styles or with titles, headings, subtotals or totals.

**REVIEW OF LITERATURE**

1.14 Introduction :

Research is defined as a systematic enquiry. All research must follow some method, for successfully performing the task and getting the right result. For any scientific investigation it is necessary to carry out a literature search of the study carried out in the relevant subject field in the past.

Biblometric techniques have been widely used to study the literature of many fields. A survey of these studies gave a detail picture of different methods adopted in bibliometric areas. An attempt is also made to study quantitative aspect of the studies carried out in past. It is very difficult to present a detail picture, as bibliometric has no limitation. This chapter presents a review of such studies which includes the following themes.

The author in his article Research Productivity of Alagappa University during 1999-2011: A Bibliometric Study evaluates the research output in science and technology of the home university. The author analyzes growth of research productivity collaboration, author collaboration, and geographical distribution of publication subject-wise analysis of publication. The data is collected from web of science database during 1999 to 2011 during the study period total publication from the selected university is 776.


The author in her article DESIDOC Journal of Library & Information Technology: A Bibliometrics Analysis collected data from the D JLIT during 2001 to 2012. The purpose of the study is to know the number of articles and growth pattern of articles during the study period, to know the authorship pattern, to know the authorship pattern, to find out Indian and foreign author contribution etc. The author founds that during the study period 69 issues were publish which consist of 391 articles. Out of 391 articles 148 article i.e. 38\% are from single and reaming 62\% articles are from co-authors. The authors identify prolific authors, geographical distribution, length of article and type of documents.

3. Deshmukh P. P. and Dhuldhule R. R\textsuperscript{27}, 2\textsuperscript{nd} National Conference on Scientometrics and Knowledge Management, Dharwad, India, 2013.

The authors in their paper entitle “Citation Analysis of Doctoral Dissertation Submitted to Dr. Panjabrao Deshmukh Krishi Vidhyapeeth (DPDKV), Akola in Agriculture Chemistry” collected a data from Doctoral
Dissertation Submitted to DPDKV, Akola during 2006 to 2011. The aim of the present studies are To know the various forms of information sources used by the research scholars, number of citations, rank list of core journal, obsolescence of literature, half life period of journal and book citations, To know the authorship pattern. The author analysed that the highest no of citations are from Journal, out of 1360 total citations, 1096 are from the journal i.e. 80.51% followed by Books 10.59%, Conference proceedings 2.94%, Corporate bodies 3.53%, Thesis 2.43%. First 46 journals score 884 citations, out of 1096. Joint authorship is the most favored pattern in authorship.


The author in his article “Citation Analysis of Articles Publish in University News during 2004-05 to 2005-06” carried out citation analysis of 1714 citations from 2004-05 to 2005-06 published in university news and objective of the study are find out the characteristics of the sources of literature used, to determine the distribution of citations among the books and journals with a view to identify a suitable model to describe the citation phenomenon, to ascertain whether the distribution of citations among the periodicals and other documents confirm to the Bradford’s law of distribution and to indentify parameters to be considered in the acquisition policy based on the citation analysis. The present study has been devoted to University News during 2004, 2005. Books are the most favored category of researcher. The study concluded that the source journals 34.59% are from University News. Half life period of journal citations is 3 years. Indian authors are favored category of the researcher in journal citation. Foreign author’s books are the most favored category of books.

The author in his article entitled “Citation analysis of doctoral dissertation submitted to Dr. Panjabrao Deshmukh Krishi Vidhyapeeth, Akola in Agronomy and Botany” carried the citation analysis in detail. The main propose of the study is to examine the various forms of information sources used by the research scholars in the subject agronomy and botany, the average number of citations used by the research, a rank list of core journals in the field, ascertain the obsolescence of literature an analyze the authorship pattern of journal citations and author conclude that citation pattern of source of documents indicates that journal citation has been quoted more (73.49%) which shows journals are, in fact the best vehicle for communication of information. From the study, it may be concluded that researchers in Agricultural Science preferred Indian journals and Indian authors as compared to foreign journals. First eight journals in the ranking list are from India. The journal Indian Journal of Agronomy, Indian Journal of Genetics, Indian Journal of Agriculture Science occupies the first three ranks respectively. Their contribution is 6.84%, 5.65% and 4.93% respectively among the total journal citations. The half life period of journal citations in agronomy and botany in agriculture science is 14 years, whereas researchers cite more than 30 year old 11.73% citations. Joint authorship is the most favored pattern in authorship.


The author in his article “Citation Analysis of ILA Bulletin” published in Indian Journal of Interdisciplinary Research, 2012 analyze the citations appended in the articles published in source journal “ILA Bulletin” during 1997 to 2010. Researcher want to know the various forms of information sources used by the research scholars in the subject library and information science, to know the number of citation used by the research scholars in the subject, rank list of core journals, half life period of journal and book citation and the authorship pattern. The researcher found that citation analysis of ILA Bulletin during 1997 – 2010. During 1997 to 2001 it was in the range of 100, from 2002 to 2007 it was in the range of 150 to 250, and from 2008 to 2010 it was in the range of 90 to 140. It indicates the trends of cited documents in research paper. Ranking of source material indicates pattern of source materials
used by research and it shows that various types of sources used by the researcher and journal are still most favored category of researcher. Ranking of journal indicates research used 283 journals for 749 citations and 5 times or more than 5 times cited journals are 33, which score 56.66% of total citations. Bradford law of scattering is applied in citation data. There are a few core journals in LIS. The analysis is useful in collection development which has given relevance due to increasing cost subscribing national and international journals. Among the core journals indentified in the study, annals of library and information studies ranked first and the source journal ILA bulletin got rank 3. Out of first 15 journals in ranked list 8 are from India. Obsolescence of literature shows that research need more than 30 year old references. 14 year old journal scored more than 70% of total journal citations. Authorship pattern indicates single author documents are favored by research in LIS.


The author in his article “Trends in Classification Literature: Analysis of Literature Published during 2000 to 2009” discuss in detail about, to know the recent trends in publication of classification 2000 to 2009 the author collected data from LISA abstract 2000 to 2009. To know the trends in classification the author decided the objective to find out year wise publication trends, to identify the journals which publish more articles of classification, to identify the authorship pattern and to know the main authors in classification, the year wise analysis shows that on average 250 to 300 articles were published annually on classification. It is observed from the authorship pattern study that single author is the most prominent category of authors in classification from the authors ranking list it is found that Goler Inan is the prominent author in classification he stood rank first.

The author in his article entitled of article “Analysis of India’s Solar Photovoltaic’s Research Output” collected a data Scopus database on solar from 2000 to 2009. The purposes of the study are to find out the solar research output in India during the study period, to know the authorship pattern. The authors give ranking of journal and it is found that solar energy materials and solar cells journal is the most favored Journal in Solar Energy. The author analyzed Indian PV output, India solar PV output impact factor, institutewise distribution and ranking of authors.


The author in his article “Citation Analysis of Doctoral Research in LIS Submitted to Annamalai University” taken a sample for this study is 9316 citations that figured in 56 doctoral dissertations accepted by Annamalai University till the end of 2010. These citations pertained to journals, books conference proceedings and theses. Purpose of topic is to identify the forms of documents mostly used. Find out a ranked list of highly cited title of journal and the country of publication of the most cited journals. The researcher found that the study reveals that journal is the most preferred by the researcher in the field of library and information science for accounting for 63.55% of total citations. The study and authorship pattern reveals that majority of the contribution are from two authors. Researchers of Annamalai University are cited United States and Indian journals mostly.


The author in his article “Citation Analysis of Library and Information Studies (ALIS ) During 1997 to 2010: A Study” collected a data from the source journal Annals of Library Information Studies 1997 to 2010. The aim of the study are to find out the different types of documents use by the researcher in Library and Information Science (LIS), to identify the core journal on the basis of rank list of cited journal, to know the half life period of book and journal citation on the basis of obsolescence study. During the study period the authors find 326 articles scored 4141 citations.
The authors conclude that journals are the most favored category of document in LIS. Out of 4141 citation 54.52% citations are from journal. It is observed from the ranking of journals that the source journal ALIS is the core journal in LIS authors publish article independently.


The author in his article entitled “Bibliometric Analysis of DESIDOC Journal of Library and Information Technology during 2001-2010” set up the aim and objectives of the study are to know the year wise distribution, authorship pattern, length of paper, subject wise distribution, data is collected was the source journal DJLIT during 2001 to 2010. The authors find that during the study period 271 papers are publish, types of document study shows that journal scored 40.31% citations followed by books 20.68%. The authors conclude that maximum papers are in the range of 6 to 10 pages form the ranking of author. The authors observed that B. M. Gupta is the prominent author in library and information science in India.


The author in this article “Websites of Central Universities in India: A Webometric Analysis” carried out the subject on the mansion subject the author selected website of 41 central university for webometrics analysis with the objectives know the central university websites domain, to identify web pages, link pages, of the websites to suggest the network of the websites are the impact factors of websites the observed that websites of Mizoram University has the highest impact factor and gets rank one in the rank list of ranking of impact of factor of central university list followed by central university of Himchal Pradesh. It is noted that Jawaharlal Nehru University has rank third in 41 university. The author gives network plan for all central university in India.

The author in this article ‘A Bibliometric study of S & T Publication from two places of academic repute during 1998 to 2009’ discuss the status of S & T publication output from Bhaaglpur and Muzaffarpur during 1998 to 2009 and their share to the overall contribution made from the state of Bihar; to determine the favorite type of publication source and subject area of these two places; compare the status of funding agencies and foreign collaboration for these places in S & T publications and to determine the most consistent city in S & T publication among the two places. The study is based on the publications covered in the database namely, Science Citation Index - expanded form of web of knowledge for the period of 1998 to 2009 as on 12/7/2010 for Muzaffarpur, Bhagalpur and other districts of the state of Bihar for analysis purpose Districts of Bihar were equated with the field city of the database, SCI authors from Muzaffarpur and Bhagalpur have contributed same number of publications which are covered in SCI Expanded during 2000 and author found that the average annual percentage growth rate on the basis of SCI Expanded database for the 1998 to 2009 have been found to be 43% for Bhagalpur and 26% for Muzaffarpur. This growth has been found when India’s publication output was steady and reached an equilibrium position, whereas output of other developing countries has shown appreciable upward trends. This trend is because of the fact that the publications at none of the place have ever crossed 35 publications in any year during the period. The S & T contribution by the authors of Bhagalpur to the total publication from the state of Bihar for the specified period has remained 16.6%, where as the share by the authors from the Bhagalpur has remained 13.23%. The citation received for Bhagalpur is more consistent compared to that of Muzaffarpur.

The author in his article entitled “Applied Engineering in Agriculture: A Five Years (2004-2008) Citation Study” collected data from the journal applied engineering and agricultural the scope of the study is 2004-08. The objectives of the study are to identify the distribution of paper annually, to find out the length of papers, to know the authorship pattern etc. The author observed that during the study period 538 articles were publish in the source journal and 10553 citation are given in 538 research articles from the contribution distribution study. It was found that during 2005, 128 articles were publish in Vol. 21. The author conclude that the average length of papers publish in the source journal is 6 to 10 pages. The observes out of 538 papers 91.52% citation are from two and more than two authors. It indicates to concept of group researchers highly in agricultural science. The author’s finds that in Agricultural Science Journal are the most favored categories of the authors.


The author in his article “Research Activities of Bangalore University (1963-2005). A Publiometric Study” published in Indian Journal of Interdisciplinary Research define the purpose and aim of the study is to understand the growth and development of research activities in Bangalore University in the past 4 1/2 decades. The specific objective are to know the growth of the research productivity, understand the contribution by research supervisors towards their research interest. The data for the present study have been collected from two authoritative resources. The first one is the data published in the University News and the next is on Bangalore University library Website. The study has emphasized the perspective of the research activities in Bangalore University. So far 1497 doctoral degrees have been awarded in 38 different domains. It is observed that 737 research supervisors are engaged in guiding doctoral students. Maximum research was carried out in zoology (149, 9.59%) and Botany (133, 8.88%) departments. The primary objective of this study is to understand the growth and development of research activities in Bangalore University from the past 4 1/2 decades is thus substantiated.

The author in his study collected a data from web of science during 1945 to 2010. During the study period only Indian publication available in web of science are studied. Out of 10817 total papers the Indian papers are 1750, 1750 Indians paper are publish in 390 different journal and total citation are 25900 from the rank list of authors Nair G. B. stood first in ranking of authors and from the ranking of journal Indian journal of Medical research in rank one journal in Cholera.


The author in his article “Bibliometric Study of Doctoral Dissertation in Organic Submitted by S & T Workers of RRL, Jorhat of Evaluate the Utility Factor of the Library” in this study The author collected a data for the study from Ph.D. Thesis in organic chemistry. The objective of the study are to know the most favored category of documents from to a prepared rank list of journal of the basis of use of journal to identify the authorship pattern in organic chemistry on the basis of obsolescence study to know the half life of citation in said subject. The scope of the study is Ph. D. thesis submitted to the concern university during 1977 to 1997. In all 4253 citations are given in 19 thesis during study period. The author finds that 85.42% citation out of 4253 citation are from journal category, books scored the second highest category of documents with 8.30% out of 85.42% journal citation i.e. 3633 citation only 190 are from 8 Indian journals. Among 8 Indian journals Indian Journals of Chemistry scored first rank and Journals of Indian Chemical society is on second position. In on 66 journals gives 528 citations out of 3633 journal citation. Authorship pattern shows that the concept of group research is highly applicable in concern subject. Only 13.50% are from single author and 86.50% citation are from group research. A group
of two author is the favored in concern subject. The author observed that out of 3633 journal citation 86.40% journal citation are available in the R. R. L. Library.


The author in his article “Literature on Hepatitis (1984 – 2003): A Bibliometric Analysis” collected a data on Hepatitis published in three CDROM databases i.e. MEDLINE, CINAHL and IPA during 1984 to 2003. The purpose of the study are to find out growth rate of Hepatitis literature in selected database and to know the authorship pattern during the study period in all three databases 82617 records are available out of which 75700 records are from MEDLINE. The author compared total records in each database, publication type authorship pattern and year wise distribution of collaboration.


The author in his article “Information Use Pattern of Indian Forestry Scientist: A Bibliographic Study” find out the citation pattern of research article published from 2000 to 2002 in the source journal, Indian Journal of Forestry. The author finds 3798 citation given during the study period in 252 total published articles. The authors conclude that journals are the most favored category of researcher of forestry subject followed by monographs and technical reports. Out of total 3798 citation 60% citation are from various journals. The authors find out that the obsolescence factors in the studied subject is 17 to 18 years. The author applied the Bradford’s law of scattering in collecting data and found that the law is testified.

The author in his article “Core Journal in the Field of Library and Information Science” analyze the citation appears in popular Indian Library and Information journal publish during 1966 to 2001. The aim and objective of the study are to identify to core journal in the field of Library and Information Science in India and to prepare a rank list of cited journals according to the use of journal by the researchers, student, professional etc. The author observed that Annals of Library and Information Science journal publish in India from NISCAIR is the most favored journal among Indian journal and College and Research library is the most favored foreign journal of the LIS researcher.


The author in his article “Bibliometric Analysis of LISA” carried out Bibliometric study of Library and Information Science Abstract journal that is LISA. The main objective of the study are two know the subject wise analysis of the article, to know the quantity of articles appeared in LISA, to indentify the authorship pattern in LISA on the basis of LISA and to find out the contribution of Indian author as compare to foreign author. The scope of the study was limited to the articles published in LISA during 1994 to 1998. The author analyzes data manually. During the study period 60 issues were publish, to know the subject wise analysis in LISA. The author category 16 main subject and found that the researcher of LIS publish more articles on communication and information technology out of 16 main subject communication and information technology scored 13.41% followed by LISA in journal 12.92% and computerize and retrieval 12.91%. The authorship pattern study indicates that out of 64318 total no of articles during the study period single authors scored 49916 articles with 77.50%, it shows that during the study period the concepts of group research is not applicable in Library and Information Science. The LISA researcher published article individually, from the ranking of journals the author conclude that Kniznicea A Infomacie is the most favored journal of the LIS researcher followed by
Managing Information. To know the most prominent Indian authors in LIS the author prepared ranking of Indians authors and it is found that Satija M. P. has highest publication in LISA followed by Neelamegan A and Gopinath M. A.


The author in above article provides a brief sketch of the library and information science abstract database on CD-ROM from 1969-2000 covering 550 journals which cover 2,06,091 abstracts. The author highlights the advantages of LISA CD-ROM database Results of the study shows that although LISA includes 550 library and information science journals in its databases its coverage of journals from the developing countries is relatively poor. By the year 2000 only 24 Indian journals are covered and this figure varies from year to year. The coverage of Indian periodicals and papers is only 4.55% of the total journals and 1.67% of the number of records respectively. This bibliometrics study was analyzed to investigate year-wise distribution records, subject areas covered, evolving and decaying subjects, language-wise distribution of records country wise distribution of records, authorship pattern, ranked list of Indian and foreign journals, time lag in the coverage of Indian journals and shortcomings of LISA CD-ROM database. The study concludes that there is room for importance in the coverage of Indian journals in LISA database.

23. **Dharmapurkar Ranjit**\(^3\): *Citation Analysis, Dnyangangotri, 1, 3, 2000,91-95.*

The author in his article citation analysis published in Dnyangangotri a journal published from Yashawantrao Chavan Maharashtra Open University, Nashik Maharashtra enumerates the basis concept of citation analysis, importance of citation analysis development of the concept Citation Analysis, and hypothesis used in citation study of any kind of literature. The author’s discussion details the use of citation analysis in relation to Library and Information Science studies, scientific studies and management oriented studies.

Aparna P R (1997) in his article entitled “Scholarly Literature in Malayalam: A Study Based On The Bibliometric Analysis of the Journal ‘Vijanakairali’ published in above cited book define the aim of the study is to develop Malayalam as an effective medium for the propagation of modern science and to develop its strength and wealth., to examine the fruitful interaction between the various Indian language and to help the local language grow as a medium for social and emotional development and researcher found that Vijanakairali sets no restriction on the length for the articles to be published it world be helpful to published it would be helpful to publish more articles in an issue if an acceptable length is prescribed for the contributions. The percentage of translations published in Vijnankairali is very less. It would be helpful to the readers if relevant articles in particular fields are included, especially cover areas in which local talent is not available. Various research institutions in the state have only very poor representation in the journal. Citations were found to be appended to only a few articles. But in Malayalam, some of the articles in Vijanakairali may be the only source of information on certain topics.


Beena S (1997) in his article “Social Science Books in Malayalam: A Bibliometric Perspective” published in above cited book entitled define the scope of the study is limited to the subjects in the Social Sciences are Education, Sociology, Law, Economics, Political Science, Geography and History only. The objectives of the present study are to assess the share of social science book in Malayalam, to find out social science disciplines in which there is need for publication of more books, to analyses the titles that were published during 1981-93 using various bibliometric variables, to assess the share of translations from other language in various disciplines, to ascertain the rate of increase in cost over the period of 13 years and locate the major publishers of social books in Malayalam and the centers of production. The author concludes that 1390 Malayalam books in social science published from 1981 – 1993 but there is an unbalanced growth of books in
different subjects. While History books constitute more than a quarter, Education and Law lag behind in terms of the number. Within each subject also there are certain areas where books are yet to appear in Malayalam. The study reveals that private publishers are keen on bringing out social science books in Malayalam. They publish 90.92 percentage of the total. The lack of interest of universities, other academic and research institutions and professional bodies in the publication of books in Malayalam was evident from the study.

26. Devarajan\textsuperscript{34} : Bibliometric studies (Ess Ess Publication, New Delhi.), 1997 pp 176-206.

Kabir S & Ravi B V (1997) in his article “Citation Characteristics of Indian Journal of Sericulture 1988-1992” published in above cited book discuss the citation characteristic in detail. The purpose of the study are to assess the number of citations in Indian Journal of Sericulture, to identify the different sources of information and their dispersion, to identify the subject wise, language wise distribution of citations, authorship pattern, to find multi-authored vs single authored article, to find out core and essential journals, to identify the Indian journals used by the Indian Sericulture scientists for their research work. Researchers found that average number of citations in Indian Journal of Sericulture is 9.2. The major source of information used by the sericulture scientists are the journal articles. Thus to have maximum volume of information in the field, the journals are the prime channel of information. English language was predominant language. Thus it is the most profusely used and most important language for communication. Double author contributions are highest with about\(\frac{1}{3}\)rd of the total. Ratio between multi authored and single authored articles are single authored articles are 2.51:1. Among the journal citations Indian Journal of Sericulture ranks the top.

27. Devarajan\textsuperscript{35} : Bibliometric studies (Ess Ess Publication, New Delhi.), 1997 pp 113-119.

Korah A C and Jose M (1997) in his article “Literature on Rubber Research: A Bibliometric Study” published in above cited book, the author was taken up
objective of analyzing authorship pattern, growth of literature and distribution of publication in different periodicals. Attempt was also made to identify core journals and to quantify growth and diversification in various facets of research. The search on rubber literature covered the period 1984-1988. Wherever possible primary journals were referred mainly; but in their absence the use of secondary journals was recorded to subject, authors year etc. In the present study authors found that higher percentage of the publications are with multiple authors, indicating the trend for teamwork in research which is ideal for scientific research. Most of the publications appeared in a few journals, namely Journal of Nature Rubber Research, Rubber Chemistry and Technology, Rubber Board Bulletin, Chinese Journal of Tropical Crops, etc. The amount of literature on rubber pertaining to Malaysia, Indonesia, Indonesia, India, Thailand etc. is roughly proportional to the quantum of rubber produced in these countries. 31.48% of the publications are in the field of Chemistry and Technology. 19.94% of the papers are from Malaysia and the second position in the publications of papers goes to India and a clear cut decreasing tendency is shown in the chronological distribution of publication during the period of study.


Sangam S L & Nargund I N (1997) in his article “Trend in Research Publications by Indian Physicists: A Bibliometric Analysis” published in above cited book set up the specific objectives are to indentify the forms of documents in which Indian Physicists have communicated their research work, extent of collaboration, the institution wise contribution to the physics literature, scatter of Indian Physics research papers in foreign journals and to know rank highly productive Indian journals in the field physics. The author conclude that in the point of view of the library and information centers, it is essential to evaluate and study the research trends from time to time, so that it would be quite easy for designing, organizing and managing the various information services and products to care the information need of researchers effectively, expeditiously and exhaustively.
Ushadevi S P (1997) in her article “Indian Journal of Agricultural Economics: A Bibliometrics Study”; published in above cited book. the author aim is to make an analysis of the papers published in the volumes for the recent 10 years (1983-1992)., in to collect information on the nature of Agricultural Economics and sub-topics within its purview, author want to analyzing that the number of contribution published during the decade under study, institutional affiliation of contributors, nature and extent of collaborative authorship, sex-wise distribution of contributors, leading contributors, the relationship between institutional affiliation and subject specialization of contributors, and geographical location of the contribution and the researcher found that in her study this journal has long history of nearly a half century. During the course of years the journal had expanded its scope. But within the period of this study (1983-92) not much variation in its contents are seen. During this decade the journal published 369 source articles source articles. The largest contributors belong to Government Institutions followed by the contributors from Universities, corporate bodies functioning in the area of agricultural economics constituted the largest contributing sector. Tendency for collaborative authorship is comparatively less. 53.39% are papers of single authorship. Even among the collaborating authors the nature of collaboration is mostly conferred to two authors. The major contributions to the information content of this journal are agricultural economists working in government institutions and University departments. There is a considerable predominance of male authors. Only 5.62% are female authors. It further reveals that major contributors i.e. 86.72% are of Indian Origin. The rest of the contributors are from USA, Australia, Sri Lanka, Bangladesh, Canada, Pakistan, Netherlands, U.K., Holland, Japan, Malaysia, Philippines and Singapore. Cited documents include journals, books, conference proceedings, thesis and dissertation, unpublished papers and other. Majority of the cited documents include journals and books (41.06%, and 36.34%, respectively).
30. Mete M. V\textsuperscript{57}, A Dissertation Submitted to Department of Library and Information Science Amravati University, Amravati, India, 1995.

The author in his unpublished work “Citation Analysis of Annals of Library Science and Documentation During 1984 to 1993” analyzes the Citations given in Annals of Library Science and Documentation during 1984-1993. The main objective of the study are to evaluate and to interprets citations received by the articles, authors, institutions and other aggregates of scientific activities. The present study conclude that the 6.74% of the citations are author self citations and 13.9% of the citations are self citations of journals. From this it is concluded that persons referring to a particular journal will like to publish their own article in the same journal. Author self citation reveals that the researchers generally tend to carry on research with one basic field. 10 issues of Annals of library Science and Documentation covered 1824 citations in 202 articles which indicate that every issue contains five articles in an average covering average of 9 citations in each articles. The no. of journals used for 1036 citations are 134. Bradford’s Law of Scattering is testified with the journal citation showing the nucleus of zones contains 6 core journals which covered 1/3 of the total citations.


The main purpose of the project was to study the various problems of research in the subject. The problem includes their information needs for their research, the utilization of available literature, their citation behavior, etc. and the research found that citations cited in the dissertation are not in the standard form. Researchers have not adopted the uniforms pattern and sequence. During the 5 years tenure (1986 – 1990) 22 theses were submitted, out of which 9 were on Agriculture Economics and 5 on Industrial Economic. Journal article is a highly favored category of researchers 37.24% citations are from journals which indicate the literature use pattern. Out of 698 journal citations the half life period of journal citation is 10 years. Bradford Law of Scattering denotes that 7 journals cover 238
citations; second 21 journals cover 231 citations and the rest 101 journals covers 229 citation. While in the team research, the percentage of Indian Authors is very meager where as percentage of Foreign Authors is high.

32. Patil M. B\textsuperscript{61}: Pattern of Literature Use by the Scientists at the National Chemical Laboratory, A Citation Analysis, Unpublished M. Lib. Dissertation, University of Pune, 1992.

The author in his unpublished dissertation pattern of literature used by the scientist at NCL: A citation Analysis submitted to Pune university, Pune in 1982 define the objectives to identify types of documents and favored category of documents, prepare a rank list of journals in chemistry, to know the availability of used literature in NCL library and to test Bradford law of scattering in journal citations. The author selected a sample of data from the articles published by the scientist of NCL laboratory during 1978 to 1980. The author observed that Indian Journal of Chemistry stood second in rank list of cited journals. Total 4366 journal citations are from 479 journal and first 8 journals scored 29% journal citation and last 290 journals scored only 10% journal citations. The authors also carried out a study of self renewing library and Ninety Percent library on the basis of ranking list of journals and obsolescence of journal citations and the authors conclude that concept of self library by Atkinsans is more effective in library compared to obsolescence concept of Ninety Percent library.