

BIBLIOMETRIC

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Introduction

Bibliometric is well establish discipline for quantitative study of the various aspects of literature of a given subject in almost all the subject disciplines. Bibliometric research developed a body of theoretical knowledge and group a techniques and application based on distributions of data elements.

Librarians have been observing ever-growing number of biographic units like books, periodicals, research materials corresponding increase in the library collection, library readers, library materials and phenomenon like increasing specially in indexing. Changes in search strategy and so on. All these have been observed and recorded for better management and service it is quite natural that when sizable volume of such observation is available attempts would

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be made to make some generalization and formulate some empirical laws. This have been the course in all sciences and library science cannot be exception. Citation Analysis is one form of Bibliometric study it is an established research tool used by librarians, information scientist to indicate the relationship that exist between cited and citing document. In fact it is the out come of realization of the rate of growth and fragmentation of scientific literature the rising cost of journals.

1.0 Bibliometrics

Many attempts have been made to define the term bibliometrics and its analogous terms since the use of the term 'statistical bibliography' in 1923 by **Hulme**¹. According to him, "the purpose of statistical bibliography is to 'shed light on the process of written communication and of the nature and course of development of a discipline (in so far as this is displayed through written communication), by means of counting and analysis its various facets of written communication. "**Raising**² in 1962 defined it

as "The assembling and interpretation of statistics relating to books and periodicals to demonstrate historical movements, to determine national and universal research, use of books and journal and to ascertain in many local situation the general use of books and journals." It is regarded as one of the classical definitions of Bibliometrics. As it was pointed out earlier, the term Bibliometrics was first coined by **Pritchard**³ in 1969 in preference to existing terminology 'statistical bibliography' as he felt there is fair likelihood to misinterpret it as bibliography of statistics. He defined 'Bibliometrics' as "The application of mathematical methods to books and other media of communication". According to **Fairthorne**⁴, it is the "Quantitative treatment of properties of recorded discourse and behavior appertaining to it". The British **Standard**⁵ Glossary of documentation of Terms explained Bibliometrics as the study of "the use of documents and patterns of publication in which mathematical and statistical methods have been applied", which is basically similar to Pritchard's original definition. **Hawkins**⁶ in his on-line Bibliometric study interpreted Bibliometrics as "the quantitative analysis of the bibliographic features of a body of literature." **Nicholas** and **Ritchie**⁷ in their book entitled 'Literature on Bibliometrics' opined that

bibliometrics provided information about the structure of knowledge and how it is communicated?. They further added that bibliometric studies fall mainly into two broad groups those describing characteristics or features of a literature (descriptive studies) and those examining the relationship formed between the components of a literature (behavioral studies). More recently **potter**⁸, defined bibliometrics as "the study and measurement of the publication patterns of all forms of written communication and their authorship".

2. 0 Bibliometrics an Overview

Bibliometrics studies have become very popular these days. The word Bibliometrics is deviled from Latin and Greek words i.e. biblio and metrics so etymologically it stands for the application of mathematics to study of bibliography.

A more elaborate concepts of Bibliometrics has recently been expounded by **Eggue**⁹ Who defines it as the "development and Application of mathematical models and techniques to all aspects of communication.

2.1 The origin of the term "Bibliometrics"

The terms bibliometrics and scientometrics have been introduced almost simultaneously by Pritchard and by **Nalimov**

and **Mulchenko**¹⁰ in 1969. While Pritchard explained the term bibliometrics as "the application of mathematical and statistical methods to books and other media of communication". **Nalimov** and **Mulchenko**¹¹ defined scientometrics as "the application of those quantitative methods which are dealing with the analysis of science viewed as an information process". According to these interpretations, scientometrics is restricted to the measurement of science communication, whereas bibliometrics is designed to deal with more general information processes.

The anyhow fuzzy borderlines between the two specialties almost vanished during the last three decades, and nowadays both terms are used almost as synonyms. Instead, the field informetrics took the place of the originally broader specialty bibliometrics. The term informetrics was adopted by VINITI and stands for a more general sub-field of information science dealing with mathematical-statistical analysis of communication processes in science. In contrast to the original definition of bibliometrics, informetrics also deals with electronic media and thus includes topics such as the statistical analysis of the (scientific) text and hypertext systems, library circulation, information measures in electronic libraries, models for Information

Production Processes and quantitative aspects of information retrieval as well. In his review entitled "Biblio-, sciento-, informetrics **Brookes**¹² in 1990 gave an interesting overview about origin and contexts of these metrics of science, literature and information in general. The description given by [Glanzel and Schoepflin](#)¹³ in 1994 defines the scope of bibliometric research areas, which is much wider than the usual ones, and thus integrate all presently existing orientations such as applications to science policy, library science, and information retrieval. According to their approach, bibliometrics and informetrics include "all quantitative aspects and models of science communication, storage, dissemination and retrieval of scientific information".

The definition by [Gloria Carrizo-Sainero](#)¹⁴ (2000) considers bibliometrics "as the ensemble of methodological knowledge that will serve the application of quantitative techniques in order to evaluate the processes of production, communication and use of scientific information. Its goal is to contribute to the analysis and evaluation of science and research." This gives a clear orientation in direction toward research evaluation that has become the most important application of bibliometric research and technology.

From the above-mentioned general description of the main task of the research field bibliometrics (Scientometrics), the following statement becomes quite obvious. Bibliometrics can be used to develop and provide tools to be applied to research evaluation but is not designed to evaluate research results. Moreover, bibliometrics does not aim at replacing qualitative methods by quantitative approaches and bibliometrics is not designed to override or even to substitute peer reviews or evaluation by experts but qualitative and quantitative methods in science studies should complement each other.

2.2 Uses of Bibliometrics

Bibliometrics is used in pure research to map knowledge structures to determine such things as :

- level and nature of collaboration between scientists and disciplines (i.e. between industry and the academy).
- to study technology transfer.
- to map knowledge drift and migration (i.e. vertical, horizontal, and lateral integration and coupling).
- To determine disciplinary encroachment, inter-disciplinarily, and other geographic boundary flows, and for cognitive (i.e.

human, machine, and neural network) development.

Bibliometrics is also a primary tool for analysis of scientist / researcher behaviors (citation, decision processes, user needs etc.) It is used for design and evaluation of information Retrieval (IR) systems (i.e. search engines, online databases).

2.3 Bibliometrics is Used In Applied Research For

- Thesaurus construction
- Taxonomy and ontology development
- Meta-data development
- Design of metric-based management, product, technology and communication integration systems to relate cause and effect, such as patent citation metrics as a measure of transfer of technology from science to industry.
- policy studies.

Bibliometrics is a decision-support methodology used by LIS and KM professionals in and across virtually every discipline, including computer science, telecommunication, political science, agriculture, biology, neuroscience, education, mathematics, business, industry, religion, and art.

Bibliometrics is used in action research in the areas of

- Collection development

- indexing and abstracting
- design and execution of knowledge and community flow designs.
- evaluation studies for research funding and training programs.

3.0 Conclusion

The exponential growth of literature and rapid development of libraries generated several evolutionary studies about the effectiveness and efficiency of information services. These studies led to the identification and application of appropriate quantitative measuring techniques known as a bibliometric. Libraries and Information manager all over the world began to use bibliometric techniques in their day to day administration. These bibliometric studies throw light on the pattern of growth of literature, inter-relationship among different branches of knowledge productivity and influence of authors, pattern of collection build up their use etc. Day by day bibliometric is attaining inter disciplinary character and sophistication.

Bibliometric is one of such modern development in library science that help

library personnel to design accurate strategies associated with their work.

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