Chapter XIV
Bibliometry Technique and Software for Patent Intelligence Mining

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ABSTRACT

This chapter introduces the bibliometry treatment techniques as a way to obtain elaborated information for competitive intelligence experts. It presents various bibliometry treatments using software able to analyze patent databases as well as commercial database extracts or Web information. With the growing complexity of science, technology, and economy it is of a prime importance for decision makers and strategists to have the best possible view of their environment. The bibliometry analysis provides different ways to cross information, build lists, charts, matrices, and networks. In the process of knowledge creation the bibliometry analysis can be used to provide new set of information from large mount of data. This information can be used for brain storming, SWOT analysis, and expert evaluation.

INTRODUCTION

The amount of technical and scientific information is growing exponentially in the information and knowledge age. The very rapid growth of the information available has been seen in almost all the fields of business, science, and technology. For instance the Biological Abstracts increase approximately of 350,000 references of original research annually; CA Search (Chemical Abstracts) references for 20,414,117 of original research for the period of 1967 to 2006; the Economist issued

79,274 original articles from 2002 to March 2006 (Dialog, 2006). There is also an exponential increase of scientific information available from the Internet (Brander, 2006).

How can we effectively identify the trends of technology innovation and scientific research and disseminate the work of the experts, for example, various technical, and science information becomes a challenge.

The increasing power of microcomputers, Moore's law (Moore, 1965), and software in data mining provide the facilities to make automatic information analysis, for example, Bibliometry Analysis (Rostaing, 1996) possible. The analysis is also known as text mining, idea mining, knowledge recovery, or information mapping. Many software tools for such analyses have been developed and have the functionality to provide users with the best possible picture of large amount of information in various formats, for example, lists, matrix, maps, and networks.

The aim of this chapter is to provide an insight on the techniques of using bibliometry software to mine intelligence from both formatted and unformatted data sources. The examples used will be patent information analysis based on formatted bibliographic patent data source, which is available in the public domain, commercial database references analysis, and Internet data analysis.

This chapter demonstrates how bibliometry information can add value to the intelligence process. It also provides for the readers an overview of the bibliometry software, as well as the treatments and the results, which would be useful to competitive intelligence practioners.

The chapter is organized as follows: the second section will present the data sources that can be used for bibliometry analysis, with the differences between formatted and unformatted (full text) data. The third section describes the technique of bibliometry and the treatments available through bibliometry processing. This is followed by three examples of using bibliometry software to conduct bibliometry analysis. The implementation issues

of using bibliometry software, such as cost are discussed in the fourth section. The chapter is concluded with a summary of the key features of biblometry technique for technical and scientific intelligence mining. A review of relevant software and their use are available in the appendix.

FUNCTIONALITIES OF BIBLIOMETRY TECHNOLOGY

An overview of bibliometry techniques is available from the work presented by the CRPHT (Public Center of Research Henri Tudor) (Dubois, 2004): "*Bibliometry is the application of mathematics and statistical methods to bibliographic references*" (White, 1989). The bibliometry is different of bibliometrics which is strongly related to library and documentation studies as well as to citation analysis. In this chapter the bibliometry technique provide a way to "see" the hidden information present in large amounts of data (e.g., formatted references) by using statistical methods. Questions such as, "Who is doing what?, Where?, With whom? What are the main research trends?, What are the key institutions and their research potential?, What are the institutions which collaborate together?, What are the new actors in one field?, What is or are the network(s) of competencies involved in one subject?", and so forth can be answered promptly.

Bibliometrics are mainly used to measure the science level of publications or to rank some scientific journals with the determination of their impact factors, and so forth. One database the "Science Citation Index" is widely used to measure the impact and trend of science research (Moed, 2005). The field of bibliometry applications is different and can be apply to almost all subjects if there are formatted data available in this field. This is the reason why people use sometimes the general term: data mining (which is applied to full text data most of the time) when they speak of bibliometry.

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