Chapter 17

Information Security: A Scientometric Study

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ABSTRACT

Scientometrics is the quantitative and qualitative evaluation of scientific literature. Information security is the art, science, and technique of securing the computer’s systems, the data and information stored in computer systems, computer networks, and also the information security management. Information security is critical while designing an information system or an information service. Data related to information security research are downloaded from the Web of Science and analyzed for literature growth, top productive country, institution, and author, top funding agency, top contributing source title, and the area of research. This chapter reveals USA is the top contributing country while China is also making rapid strides in this field. Chinese funding agencies fund most of the research. However, English is the preferred language of communication.

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INTRODUCTION

With the advent of computers, a need arose to physically secure them from outside threats. This was called computer security. Later, the concept of computer security underwent an evolution and has been transformed into information security. Information security originally meant the process of physically securing the computer systems and the various documents and files stored in them. However, in modern terms due to the developments in the Information and Communication Technology (ICT) and World Wide Web, Local Area Networks, Wide Area Networks, etc., it means more than the mere security of the computers. Information security includes the information security management, data security, and the network security. The Committee on National Security Systems (CNSS) defines information security as the protection of information and its critical elements, including the systems and hardware that use, store, and transmit the information (National Security Telecommunications and Information Systems Security, 1994).

SCIENTOMETRICS

The metrology of scientific literature varies from the librametrics to webometrics. In between, there are bibliometrics, scientometrics, informetrics, cybermetrics, altmetrics, etc. However, a closer observation of this metrology reveals a significant overlap which has been illustrated by Björneborn and Ingwersen (2004). Scientometrics is the quantitative study of scientific literature (Chen, Dubin & Schultz, 2014); scientific and technological progress (Nalimov & Mulchenko, 1969); science of science, communication in science, and science policy (Wilson, 2001).

Scientometrics is one of the measuring and evaluating techniques used by the Library and Information Science professionals. Scientometricians use various mathematical and statistical techniques for the evaluation of scientific research. Scientometrics is a quantitative and qualitative measuring technique for evaluation and interpretation of science and its different activities such as productivity, progress, organization and management (Jeyasekar, 2018).

REVIEW OF LITERATURE

G. F. Khan et al. (2011) studied the growth pattern of e-government literature. The study showed that e-government studies pertaining to developing countries issues/topics have rapidly increased during the last decade; covering a range of topics/issues studied from socio-technical aspects. Frank Stech (2011) analyzed the concepts of deception, counter-deception, and deception detection in the cyber-space domain. Their objective was to conduct scientometric analyses of these concepts in the cyber-space domain. They observed that although various deceptive tactics are addressed in the cyber-security literature, it appears they are characterized more from the standpoint of technology than from their social, behavioral, or cognitive elements.

Paul Benjamin Lowry, et al (2013) conducted a scientometric study to make significant strides toward correcting the limitations in the ranking of mainstream Information System (IS) journals. Robert E. Crossler (2013) purpose of study is to highlight future directions for Behavioral Information Security
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