Chapter 10
Nuclear Power Generation Research:
A Scientometric Analysis

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ABSTRACT

Nuclear technology uses the energy released by splitting the atoms of certain elements. Nuclear power provides over 11% of the world's electricity as continuous, reliable base-load power, without carbon dioxide emissions. Today, the world produces as much electricity from nuclear energy as it did from all sources combined in the early years of nuclear power. Scientometrics is the quantitative study of the disciplines of science based on published literature and communication. This could include identifying the emerging areas of scientific research, examining the development of research over time, or geographic and organizational distributions of research. In the present study, the authors have done the scientometrics analysis of nuclear power generation research, a significant growing area in the knowledge-driven world. This study aims to measure the research productivity of nuclear power generation (NPG) in international and national level contributions of publication output.

INTRODUCTION

Scientometric may belong to the discipline of the 'science of science' (Bernal, 1939; Price, 1963; Merton, 1973). The term science of science may understand, however, as an indication a discipline that is superior to others. In this respect, the relationships between scientometrics and other disciplines would be similar to that

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of philosophy as had been assumed earlier. However, scientometric not be regarded as a field of other scientific fields; scientometric is not the science of science but a science of science for science. Vinkler (2001) said 'Scientometric is a field of science dealing with the quantitative aspects of people or groups of people, matters, and phenomena in science and their relationships, but which do not primarily belong within the scope of a particular scientific discipline.' Scientometric covers different areas and aspects of all sciences. Therefore, its laws, rules of relationships cannot be regarded as being exactly like hard as those of the natural sciences, but also not as lenient like soft as those of some social science disciplines. The Scientometric relationship may be considered as statistical relationships, which are primarily valid for longer sets but with necessary limitations.

The essential aim of science is to produce and communicate scientific knowledge. Many methods have been suggested to evaluate the scientific productivity of the specific subject of a nation. Scientometric studies also derive the subject relationship that suggests a desirable general pattern of service coverage. Further, it also provides the structure of knowledge and pattern of communication. The need for new source of energy is increasing day by day because existing energy resources are being rapidly used up. The World Nuclear Association (WNA) stated that 90% of the world's electricity needs to be met by the burning of fossil fuels that emit dangerous gases. These gases cause global warming. Nuclear Power is a clean alternative that many countries are opting for today. Hence, it found it essential to study quantitatively the output of literature by applying scientometric tools/indicators.

REVIEW OF LITERATURE

Teli and Maity (2015) have analyzed the growth pattern of Higgs Boson literature during 2005-2014. The Scopus database has used to retrieve relevant data. Identified 4359 records contributed worldwide. The distribution of publications based on the year of production, country wise productivity, document type of the publications, Major subject categories, authors whose contribution is in the maximum level were studied. In India, the research in this field is infantile stage. The lacking on the contribution may be due to non- availability of international collaboration.

Sangam and Bagalkoti (2015) have analyzed the study of academic rankings of the National Assessment and Accreditation Council (NAAC) accredited 50 Indian Universities output of publications in India extracted from Scopus database. This study explores that, 108666 papers during the study period 2001-2010. The average output is 2173 papers, in comparison the largest Number of papers 6533 (6.01%) was published by Jadavapur University, followed by Banaras Hindu University 6249 (5.75%). A total 336027 citations received, with an average citation per paper as