



Interdisciplinary relations in some high-priority fields of science and technology

An analytical study

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Abstract

Purpose – The purpose of this research is to investigate the interdisciplinary relations in some high-priority fields of science and technology based on ISI data.

Design/methodology/approach – This is an applied study using scientometric, citation analysis and network analysis methods. The study population consists of scientific articles of Iranian researchers in five fields that have been indexed in “WOS” database. These fields are included nanotechnology, biophysics, nuclear physics, sociology and communication. After identifying and extracting data from “WOS” (included 1,777 records), in order to determine the interdisciplinary relations and the evolution of these relationships, the citations of these records (41,080 citations) have been extracted and analysed.

Findings – The results indicate all the studied scientific fields have self-citation and other-citation. Depending on the type of field, the rate of intra-disciplinary and extra-disciplinary citations is various. There is a positive correlation between co-authorship and interdisciplinary approach in all the studied fields. There is no significant relation between the number of citations and interdisciplinary approach. Overall, the results showed the use of only a bibliographic method cannot specify all aspects of interdisciplinarity of the scientific field. Simultaneous use of different analysis methods such as citation analysis, co-authorship analysis and bibliographic coupling is necessary in order to data exchange between fields.

Originality/value – The analysis and mapping of interdisciplinary relations in a scientific field can provide useful information regarding connectivity and interdependence among areas. Through such studies, the status of cooperation between disciplines and the evolutionary trend of it is well defined. The results of these studies would also be useful in developing the interdisciplinary collaboration among professionals and understanding their information needs and plan to meet these needs.

Keywords Citation analysis, Co-authorship, Interdisciplinary relations, Scientific map, Scientometry

Paper type Research paper

1. Introduction

Interdisciplinarity has been encouraged in science policy both by creating multidisciplinary centres and units and by funding multidisciplinary research projects. Many science policy documents have expressed high expectations of the benefits of

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