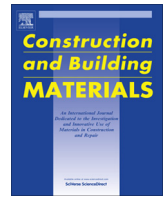




Contents lists available at ScienceDirect

Construction and Building Materials

journal homepage: www.elsevier.com/locate/conbuildmat

Bibliometric analysis in the international context of the “Construction & Building Technology” category from the Web of Science database



Ignacio Cañas-Guerrero*, Fernando R. Mazarrón, Cruz Calleja-Perucho, Ana Pou-Merina

PADOC Research Group, Polytechnic University of Madrid, Madrid, Spain

HIGHLIGHTS

- Characterize research activity in the field of “Construction & Building Technology” in the last 15 years.
- Study focus on “Construction & Building Technology” category from 1997 to 2011 from the Web of Science.
- Analyze all the articles and reviews through bibliometric analysis.
- Establish a ranking of leading countries and research centers in this field.
- Analyze the evolution of the most important research topics.

ARTICLE INFO

Article history:

Received 3 January 2013
 Received in revised form 28 October 2013
 Accepted 31 October 2013
 Available online 14 December 2013

Keywords:

Bibliometric
 Construction technology
 Building technology
 Web of Science
 Research activity

ABSTRACT

This study analyzes the evolution of publications in the category of “Construction & Building Technology”, the research activity carried out by countries and the most productive research institutions, and the internationalization and diffusion of the journals of this category. Reference levels have been designated for productivity indicators, diffusion, and impact, which must be taken into account for the evaluation of the merits of researchers and research institutions. Research trends within this category have also been identified, allowing us to identify current themes, as well as those that have ceased to arouse the interest of journals and researchers. The characterization of productivity and publication quality of each country makes it possible to compare the importance of each study in the construction sector to other countries. This may be useful for evaluation of the effectiveness of national policies and investment in this sector. The characterization of productivity and quality of the research institutions could prove to be highly useful in analyzing the effectiveness of the strategies being carried out by each center. Moreover, this will help researchers in selecting quality research institutions for collaboration and work. Journal analysis could be useful for editors when comparing their effectiveness of diffusion and internationalization to the work of other journals.

© 2013 Elsevier Ltd. All rights reserved.

1. Introduction

The boom of scientific activity in the last few years has also increased the interest of researchers and institutions in publishing their studies [1]. The number of journals and publications in ISI databases increases every year. The ISI databases, particularly the Science Citation Index, are used for measuring research performance [2]. The articles published in journals of the Science Citation Index and the derived bibliometric indicators are parameters utilized in the majority of international rankings of universities and research centers. They are also used by national accreditation organisms, which makes it necessary for potential candidates to have a sufficient number of articles published to have access to

certain posts and professional promotions. On the other hand, it is essential for indexed journals to increase the diffusion of articles that are published since by increasing the number of citations they will succeed in increasing their impact factor and international importance.

In spite of the importance that is granted to these indicators, few tools exist for researchers, research institutions, and countries to evaluate the weighted productivity and impact of the whole of their work with respect to others in an area of specific knowledge and in a temporal context and specific territory. This information could be useful to design and evaluate their strategies, investments, or investigative policies.

In order to analyze globally the previously mentioned parameters, it is necessary to resort to bibliometric analysis. Bibliometric analysis includes quantitative and visual processes to identify patterns and dynamics in scientific publications [4]. Bibliometric analysis has been guided by the objective of revealing global trends

* Corresponding author. Address: ETSIA, Avenida Complutense S/N, 28040 Madrid, Spain. Tel.: +34 913365767; fax: +34 913363688.

E-mail address: ignacio.canas@upm.es (I. Cañas-Guerrero).

in certain areas of research [5–7]. Current research mainly intends to fulfill three objectives: reveal author trends, institutions, countries, and research categories; summarize research trends from other perspectives; and offer a sample of research development that may serve as a guide for future research [6,8–10].

In the area of construction and building technology, research results are articulated at a global scale through the “Construction & Building Technology” category in the Web of Science database. According to the definition of Thomson Reuters, “Construction & Building Technology includes resources that provide information on the physical features and structure design (e.g., buildings, dams, bridges, tunnels) and the materials used to construct them (concrete, cement, steel). Other topics covered by this category include heating and air conditioning, energy systems, and indoor air quality”. According to data from the Journal Citation Reports (JCR), in 2011 the “Construction & Building Technology” category included the publications of 56 journals, with an IF between 0.085 and 3.382. In this category, there is only one prior bibliometric

study, which limits its study to one country (Spain) and a 10-year time period [3].

In this context, we introduce the methodology of research analysis carried out in the construction and building technology sector that will be of use in filling the existing information gap. For this reason, a bibliometric analysis of the information contained in the Web of Science for the last 15 years (1997–2011) has been undertaken. More specifically, the research carried out characterizes the global evolution of research published; analyzes the evolution of thematic research during these 15 years, identifying new areas of interest, as well as those that have suffered decline; analyzes the evolution of weighted production and the impact of publications identified through the impact factor and number of citations received; establishes a rank of countries and research centers leading in construction and building technology; analyzes collaboration among different countries and research institutions; and studies the nationality of researchers that publish in each journal and its relation to quality indicators.

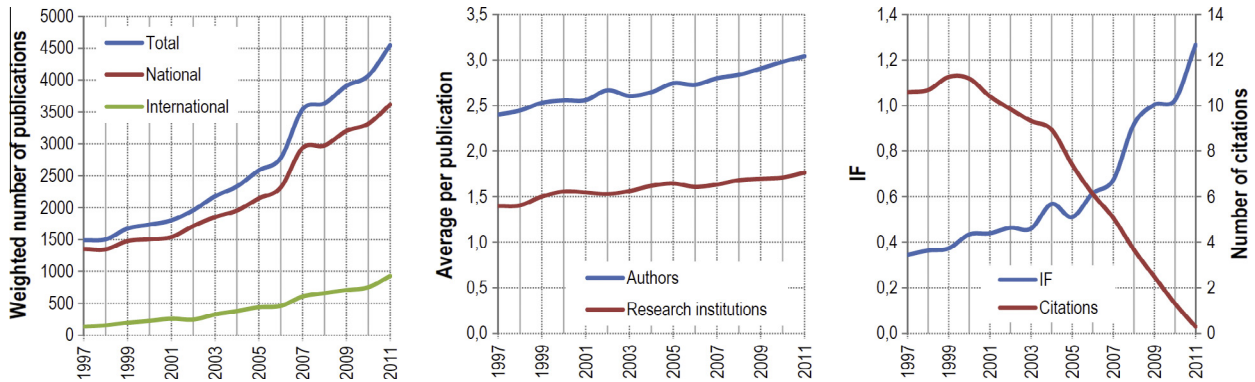


Fig. 1. Evolution of average weighted number of national and international publications, IF per article, number of citations, authors, and centers.

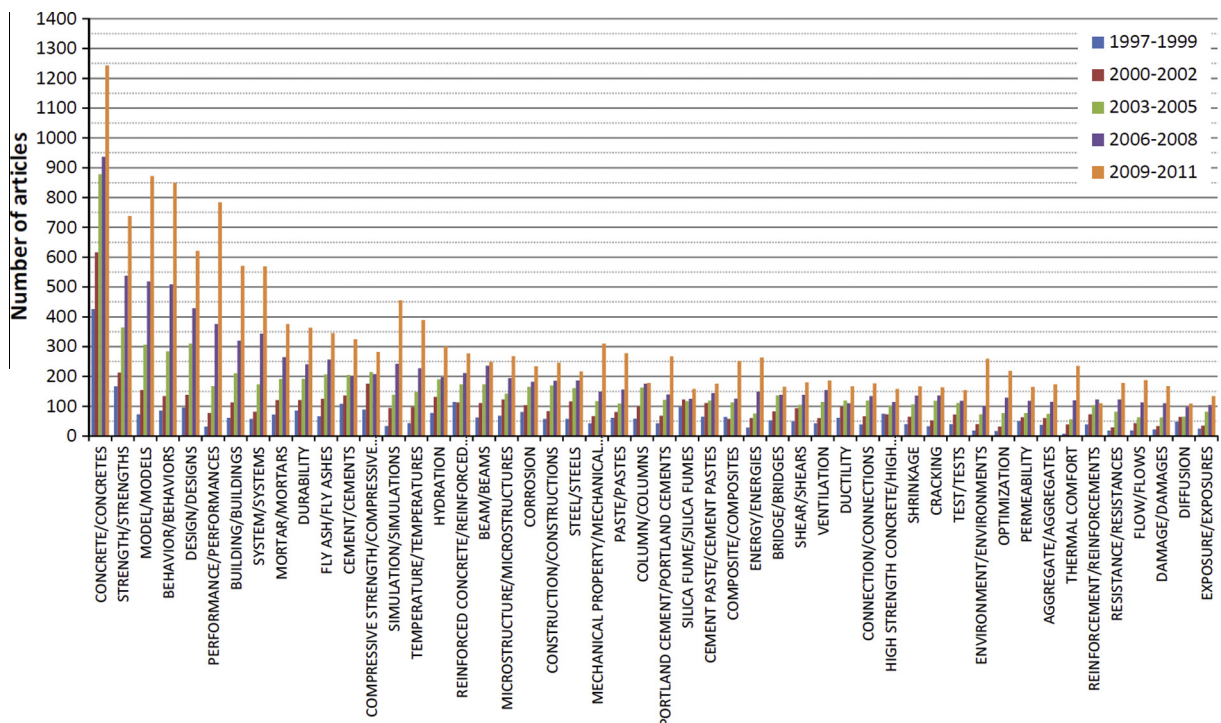


Fig. 2. Evolution of the number of research articles with appearance of most frequently used keywords between 1997 and 2011. Terms are analyzed without distinction between simple and compound keywords.

Download English Version:

<https://daneshyari.com/en/article/257727>

Download Persian Version:

<https://daneshyari.com/article/257727>

[Daneshyari.com](https://daneshyari.com)