Article

Scientometric study regardings ethics in professional activities

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Rezumat: *Interesul pentru etică în activitățile profesionale a crescut. Au apărut noi cerințe în tot mai multe domenii. Cercetarea scientometrică oferă modalități de a analiza interesele de publicare ale cercetătorilor. Un studiu scientometric în domeniul eticii a fost creat folosind baza de date Clarivate Analytics Web of Science. Au fost generate criteriile de includere și excludere a documentelor din baza de date. Toate documentele publicate în domeniul Eticii din ultimii 2 ani au fost incluse în studiu. Doar articolele au fost analizate folosind software-ul WOS Viewer. Au fost generate cinci direcții de cercetare rezultate din analiza termenilor folosiți de autori în titlu și rezumat.*

Cuvinte cheie: *Etică; scientometrie; Clarivate analytics; Web of Science; VOS Viewer*

Abstract: *Interest in ethics in professional activities has increased. New requirements have emerged in more and more areas. Scientometric research provides ways to analyze the publication interests of researchers. A scientometric study in the field of ethics was created using the Clarivate Analytics Web of Science database. The criteria for the inclusion and exclusion of documents from the database were generated. All published documents in the field of Ethics from the last 2 years were included in the study. Only the articles were analyzed using the WOS Viewer software. Five directions of research resulting from the analysis of the terms used by the authors in the title and summary were generated.*

Keywords: *Ethics; scientometrics; Clarivate analytics; Web of Science; VOS Viewer.*

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1. Introduction

With the help of scientometric research we can get an objective picture of the evolution of science in a given field, analyse and appreciate the currency, as well as indicate research opportunities in the field.

Some of the techniques used in scientometry are listed below:

Co-word analysis is a technique that captures the frequency of word pairs or phrases in and between documents. It is used to track the links between words and to understand the development of scientific fields. A map of content in a given domain can be made in terms of word pairs used in titles and article summaries, providing an overview or "remote reading". Remote reading is an applied term to analyse large amounts of text and identify patterns. Even though software cannot understand the content of texts, software tools can be used to organise large amounts of text in semantic maps based on grouping algorithms, translating the results into visualisations that can provide specific directions.

Co-citation analysis is an analysis that uses multivariate techniques to analyse the frequency with which two documents are cited together. It is considered that if two authors are cited in the same studies, then their works provide a common knowledge base. (e.g. authors quoted more than 20 times)

Citation networks are targeted networks with nodes representing works and links representing citations from one work to the other. The total number of citations received by a work represents the degree of the node in the citation network. The outer degree of a cloud describes the number of references a work has (Zeng, 2017). One of the most common types of networks analysed is the network of citations between journals (Guerrero-Bote, 2012). The centrality of a node in this type of network can measure the influence of a journal (González-Pereira, 2010).

For the analysis of citations to be effective, the sources from which the data are extracted must be comprehensive and accurate. Web of Science (WoS) has been the first source providing citation indexing and for many years remained the only source available. Today WoS database indexes over 21400 journals, also books and works presented at conferences. (Web of Science, 2021) Since 2004 a similar, also curated database called Scopus has emerged, as well as a completely different one offered by Google Scholar. Although Google Scholar is more inclusive in coverage than other databases, the quality of indexed works may be much weaker (Mingers, 2015).

2. Material and method

Basic research was carried out in the WoS database using the term Ethics. 171432 results were achieved. These results have been refined by the limits: last 2 years (2020, 2021 and 2022), articles in the WoS domain of Ethics. After refining, 2328 results were obtained from the Web of Science Core Collection.

The records were exported as a plain text set for further processing. With the help of VOS Viewer software, scientometric analysis was carried out.

Several scientometric analyses have been performed:

2.1. Co-authorship — authors

The requirement that the minimum number of documents for an author was 2 documents was set. Of the total of 5235 authors, 503 met the requirement. The authors' visualisation map has been generated. (Figure 1)

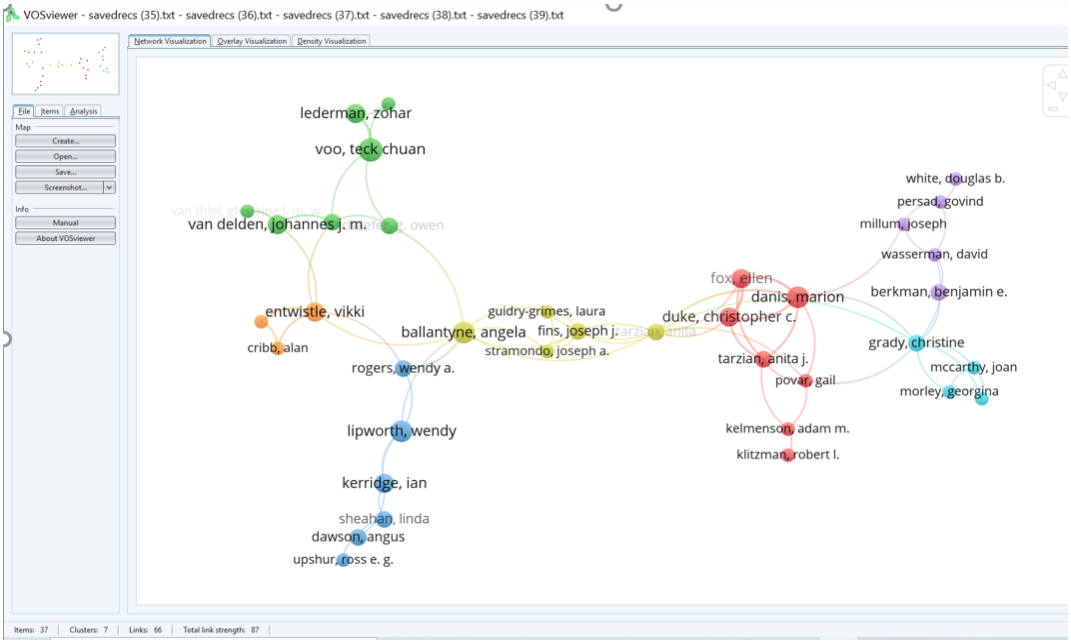

Figure 1. Author view map

2.2. Co-authorship - organisations

The requirement for the minimum number of documents for an organisation to be 2 documents was selected. Of the 2097 organisations, 668 met the requirement.

The visualisation map has been generated. (Figure 2)

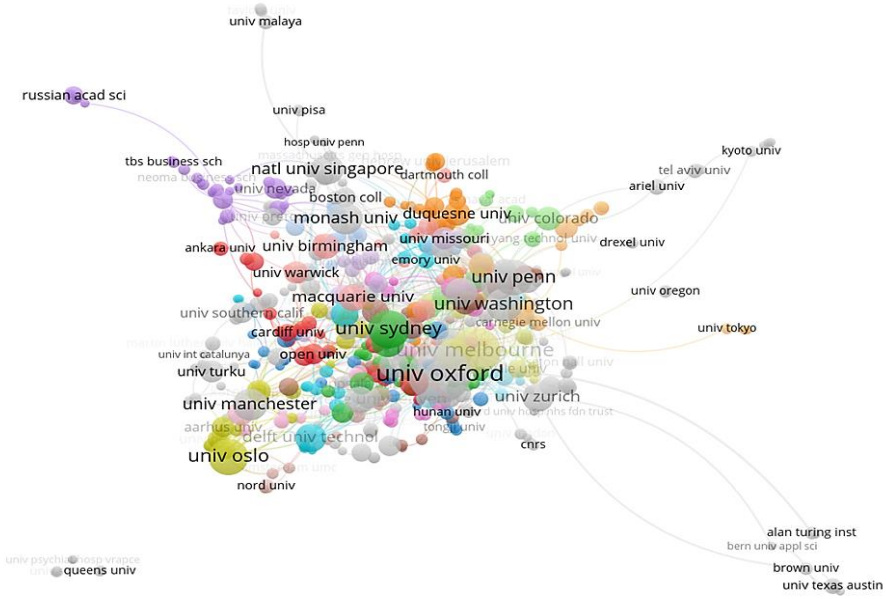

Figure 2. Organisation view map

2.3 Co-authorship - countries

The requirement for the minimum number of documents per country to be 2 documents has been selected. Of the 96 countries, 78 met the requirement. The visualisation map has been generated. (Figure 3)

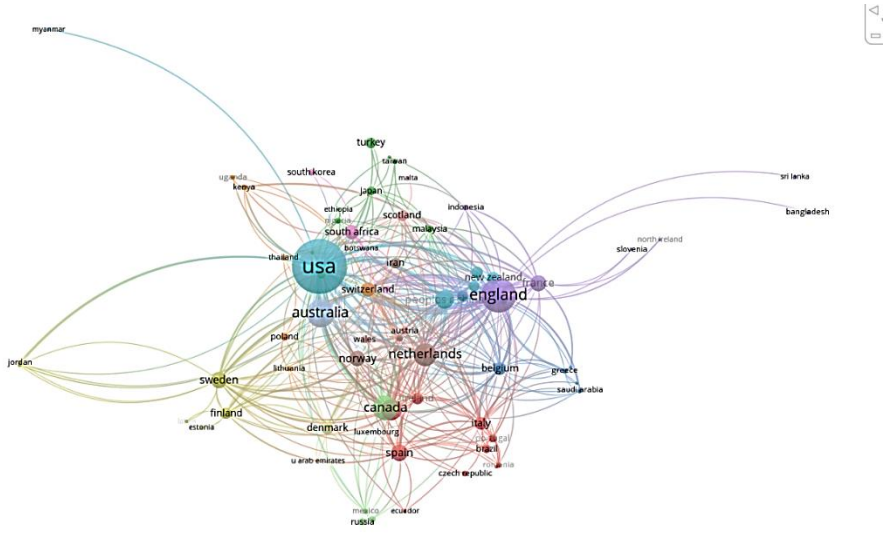

Figure 3. Most productive countries view map

2.4 Citations-documents

The minimum number of citations for a document has been selected to be at least 1 citation. Of the 2328 documents, 1144 fulfilled the requirement. The visualization map has been generated. (Figure 4)

Figure4. Visual map of most cited documents

2.5 Citations-sources

The minimum number of citations for a source has been selected as a minimum of 2 citations. Of the 108 sources, 93 met the requirement. The visualisation map has been generated. (Figure 5)

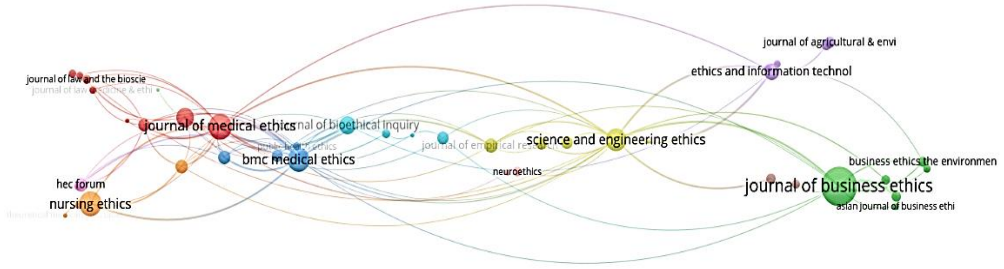

Figure 5. Visual map of quoted sources

2.6 Citations-terms

The requirement for the minimum number of occurrences of a term to be 10 occurrences has been selected. Of 38813 terms, 1073 met the requirement. Vos Viewer calculated a score of relevance, selected the most relevant terms, and resulted in 644 terms. The visualisation map has been generated. (Figure 6)

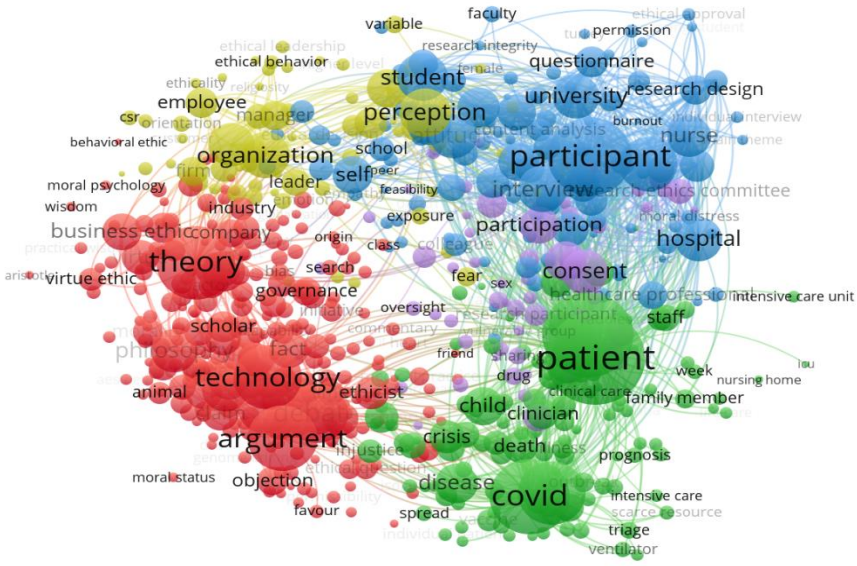

Figure 6. View map of the most relevant terms

3. Results and discussion

The methods of scientometric analysis give us the opportunity to quickly have a clear picture of the area addressed regarding the research interest, as well as the directions addressed in the literature. The visual maps created provide a better picture of the most productive countries, organizations, and the most productive authors, in the chosen field but also the collaboration networks formed by citations. The analysis of citations highlights the impact of the most important sources and documents.

The Ethics domain in the Web of Science collection has a high dynamic, 2328 articles have been published in the last 3 years.

Networks of authors have collated into 7 clusters, see Figure 1.

Oxford University is the most productive university, followed by Sydney University and Oslo University. The geographical distribution of organizations with scientific production in the field of Ethics is wide, in all large and representative universities in the world are published in this field.

Analyzing the visual map of the most productive countries, USA, UK and Canada are the most active countries.

The documents already quoted from 2020 belong to the authors: Dunn, Maneli, Lynch, Jamroz.

The most popular journals that have published articles in the field are Journal of business ethics, Journal of medical ethics, BMC medical ethics, Nursing ethics, Science and engineering ethics, Ethics and information technology, Journal of agricultural and environment.

Concerns about ethics are noted in all areas.

Analyzing the terms used by authors themselves in their descriptions of the articles (in titles and summaries and keywords), the terms are found to form 5 clusters in various research directions. Patient, child, disease, COVID, ventilator create the cluster where the topic of Ethics is treated.

Another direction is formed by the terms: theory, argument, technology, animal, governance, ethics.

The third direction is formed by the terms: University, questionnaire, student perception, research design.

Another direction consists of the terms: organizations, employees, ethical behavior.

The fifth direction consists of the terms: oversight, consent, drug.

In conclusion, the 5 directions identified in this study are: ethics generated by conditions during the pandemic, ethics through governance policies, ethics in scientific research, ethics in organizations, ethics in medication.

The scientometric research method presented can be replicated in other areas as well. Ethics, the topic addressed in this field have been identified in an easy but well-grounded way, on the scientific production of the last 3 years in WoS.

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