BIBLIOMETRIC ANALYSIS OF ISO 45001 OCCUPATIONAL HEALTH AND SAFETY MANAGEMENT SYSTEMS

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Abstract:
181 documents were obtained in the general search; after eliminating duplicates and applying certain inclusion and exclusion criteria, 76 papers were used for this review. This study provides three main conclusions(Stevens and Bamber 2017; Uhrenholdt Madsen et al. 2020): During the period 1995-2023, academic interest in this topic has increased and the keywords ISO 45001, policy, occupational health and safety, management system, human; a list of authors who have conducted scientific work on the basis of ISO 45001 is compiled; and the top 10 countries that conducted scientific work based on ISO 45001 are presented based on geographical analysis. VOS viewer software was used to investigate the bibliometric research method and bibliographic display map. There are three phases to the bibliometric research process, they are search criteria and source identification, software and data extraction, and then data analysis and interpretation. To our knowledge, no bibliometric comparative reviews of ISO 45001 have been published. This research will serve as a foundation for future research(Maksymiuk 2000).

Keywords: Bibliometrics, ISO 45001:2018, OH&S policy, occupational health and safety, management system, Scopus.

Introduction

ISO 45001:2018 specifies requirements for an occupational health and safety (OH&S) management system, and gives guidance for its use, to enable organizations to provide safe and healthy workplaces by preventing work-related injury and ill health, as well as by proactively improving its OH&S performance(Wahyudin, Rimawan, and Suroso 2020).

ISO 45001:2018 is applicable to any organization that wishes to establish, implement and maintain an OH&S management system to improve occupational health and safety, eliminate hazards and minimize OH&S risks (including system deficiencies),

take advantage of OH&S opportunities, and address OH&S management system nonconformities associated with its activities.

ISO 45001:2018 helps an organization to achieve the intended outcomes of its OH&S management system. Consistent with the organization's OH&S policy, the intended outcomes of an OH&S management system include:

1. continual improvement of OH&S performance;
2. fulfilment of legal requirements and other requirements;
3. achievement of OH&S objectives.

ISO 45001:2018 is applicable to any organization regardless of its size, type and activities. It is applicable to the OH&S risks under the organization's control, taking into account factors such as the context in which the organization operates and the needs and expectations of its workers and other interested parties(Stevens and Bamber 2016).

SO 45001:2018 does not state specific criteria for OH&S performance, nor is it prescriptive about the design of an OH&S management system.

ISO 45001:2018 enables an organization, through its OH&S management system, to integrate other aspects of health and safety, such as worker wellness/wellbeing.

ISO 45001:2018 does not address issues such as product safety, property damage or environmental impacts, beyond the risks to workers and other relevant interested parties.

ISO 45001:2018 can be used in whole or in part to systematically improve occupational health and safety management. However, claims of conformity to this document are not acceptable unless all its requirements are incorporated into an organization's OH&S management system and fulfilled without exclusion(https://www.iso.org/standard/63787.html).

Method
The Scopus search engine was used to find a comprehensive literature on the oee of the theory. Scopus is one of the most comprehensive databases of citations and abstracts for peer-reviewed literature. Based on Figure 1, there are three steps in the bibliometric research process, which are search criteria and source identification, software and data acquisition, and then data analysis and interpretation. Step 1, source identification with search criteria and bibliometric analysis, consists of scientific database retrieval and publication information collection from the Scopus database. In the search process, we initially identified documents with the terms "ISO 45001". As a result of the bibliometric search, 181 documents were found, and when

we synthesized them for the years 1995-2023, 76 documents were identified(Pacaiova and Nagyova 2019). Bibliometric analysis was performed on the basis of 76 document.
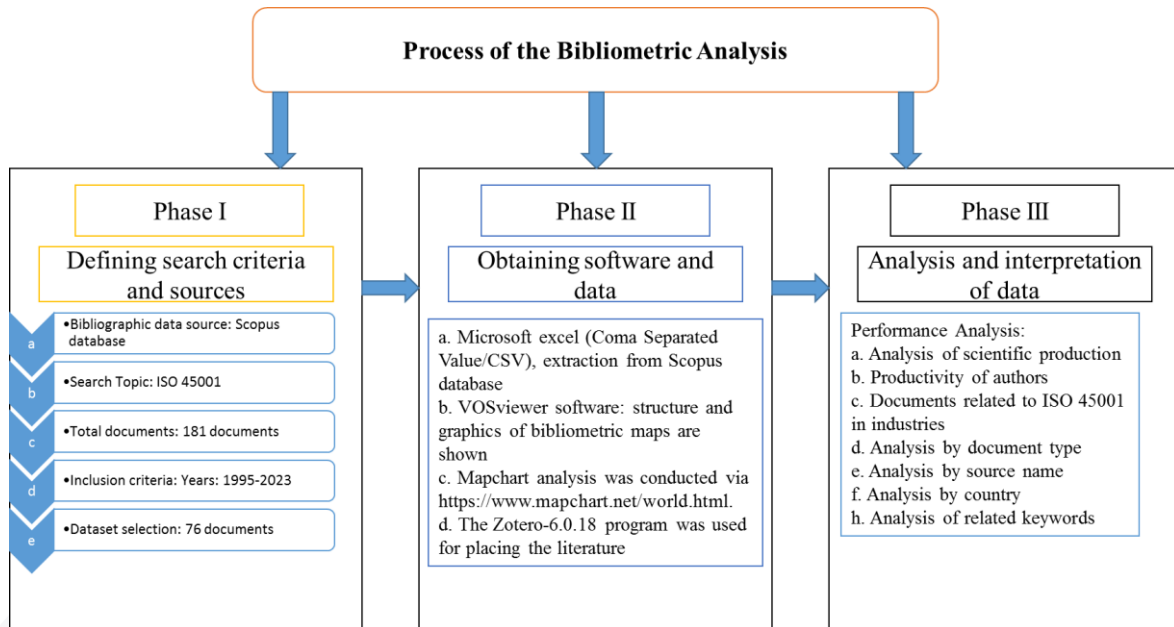

Figure 1. Process of the Bibliometric Analysis

In Phase 2, the results were downloaded from the Scopus database in three different formats. The following data was received in CSV format for data viewing through Microsoft Excel: Authors, affiliations, titles, publication years, cited publications, abstracts, author keywords and other important bibliographic information are included in the downloaded metadata, which must be examined and improved(Nagyova et al. 2018). The use of bibliometric approaches to describe the knowledge structure of ISO 45001 project is illustrated. The outcome of VOS viewer software analysis, such as Bibliometric coupling; includes co-citation analysis and keyword co-occurrence(Monika and Alena 2019).

The site www.mapchart.net was effectively used in the formation of analyzes by countries. Zotero software was used to compile the list of references. The results obtained in the Phase 3rd stage were analyzed.

Result and Discussion

We can see the development dynamics of scientific research on determining ISO 45001 between 1995 and 2023 through Fig.2.

Between these years, 76 scientific researches were conducted, and these indicators are growing year by year. In particular, the maximum increase point of the indicators is 11 in 2022.(www.scopus.com).
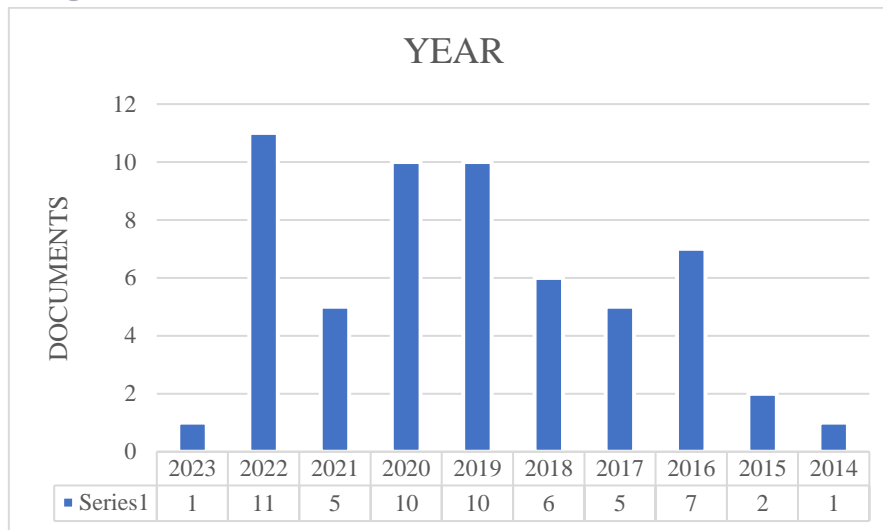
Figure 2. Growth of scientific production relating to ISO 45001.

More than 80 authors have researched "ISO 45001" in the Scopus database, and the top 10 authors are identified according to Figure 3.

Fig. 3 is built on the basis of the diagram, and we can see the obtained results at the same time in percentages(Komppa 1996).

Fig.3 shows us that " Sampaio, P." is considered to be the most effective among the authors who conducted research on ISO 45001, and he is on the first place with 4 indicators.

The second place is occupied by the following three authors with 3 indicators: Arezes, P.M., Nagyova, A, Nagyova, A.
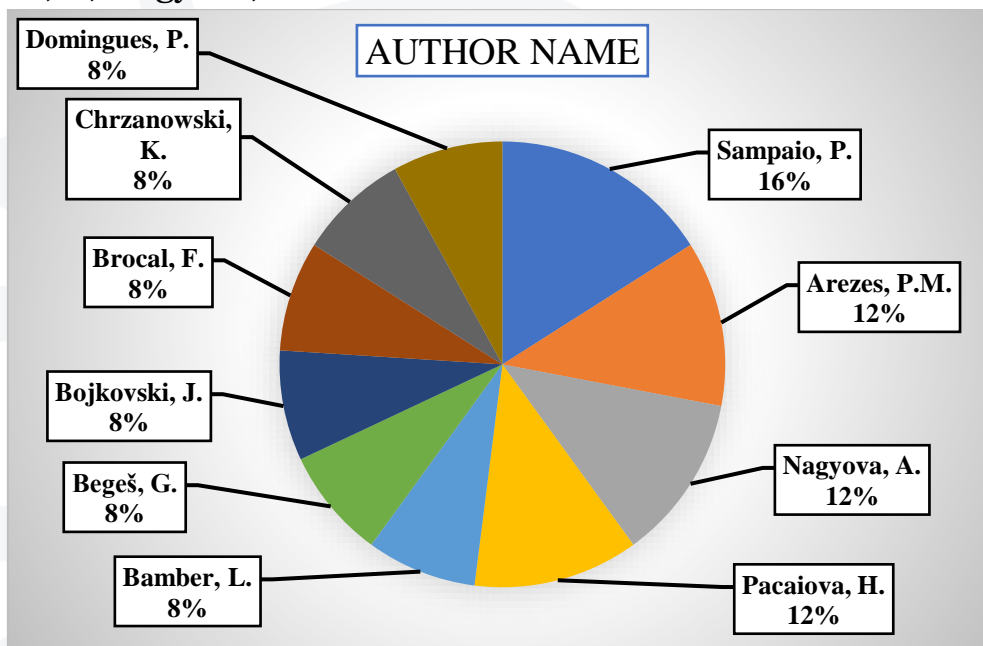

Figure 3. Top-10 authors (www.scopus.com)

In the Scopus database, scientific works were carried out in 17 directions on the "ISO 45001", and Fig. 4 shows the top 10 of them.

The total number of scientific works was 196, and 76 of them were conducted in the field of Engineering. In the field of Computer Science, there are 19 students.
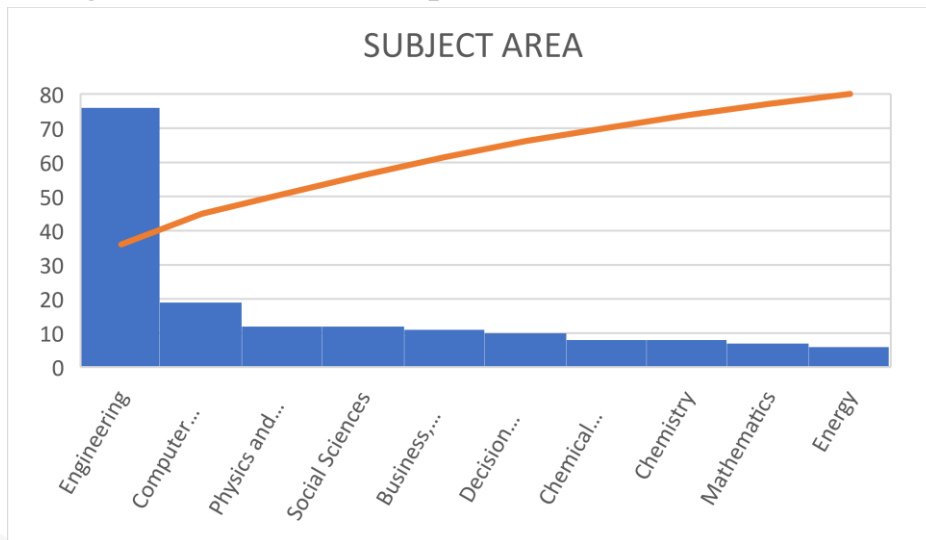

Fig. 4. Analysis of ISO 45001 research by subject area. Through Figure 5, we can see how the work performed on ISO 45001 in the Scopus database is distributed by source.

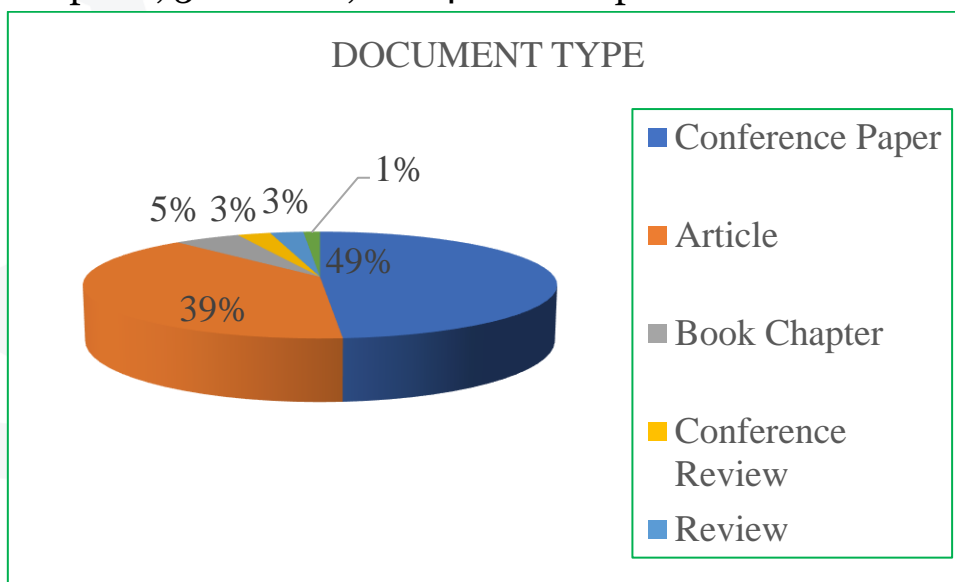37 conference reports, 30 articles, and 4 book chapters are the main results.

Fig.5. Analysis by document type.

Figure 6 was formed on the basis of data obtained from the Scopus database. The site www.mapchart.net was used to create the world map and place the data.

Figure 6 shows which countries are active in ISO 45001 research. About 40 countries have conducted research on ISO 45001(ASSE Professional Development Conference

and Exposition 2016 2016). When we determined the top ten in this regard, Portugal took the top 3 places with 11 %, Poland with 10 %, and the United States with 8 %.
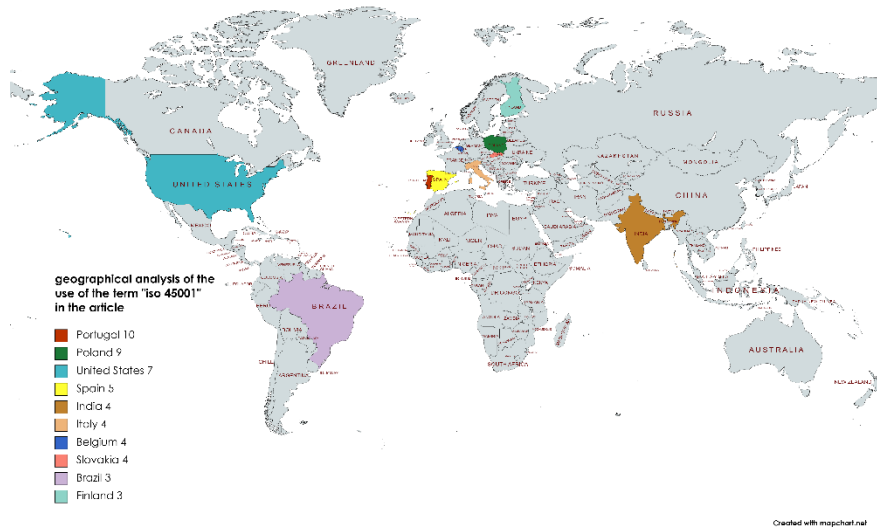

Fig.6. Geographical analysis of research on ISO 45001. (www.mapchart.net)

I used VOSviewer to view statistics related to keywords. I saved the keyword data from the Scopus database in "Ris" format. The total number of keywords was 220, and when the keywords with the least number of repetitions were selected five times, 130 keywords were selected. These keywords were analyzed according to the correlation index (Fig. 7).
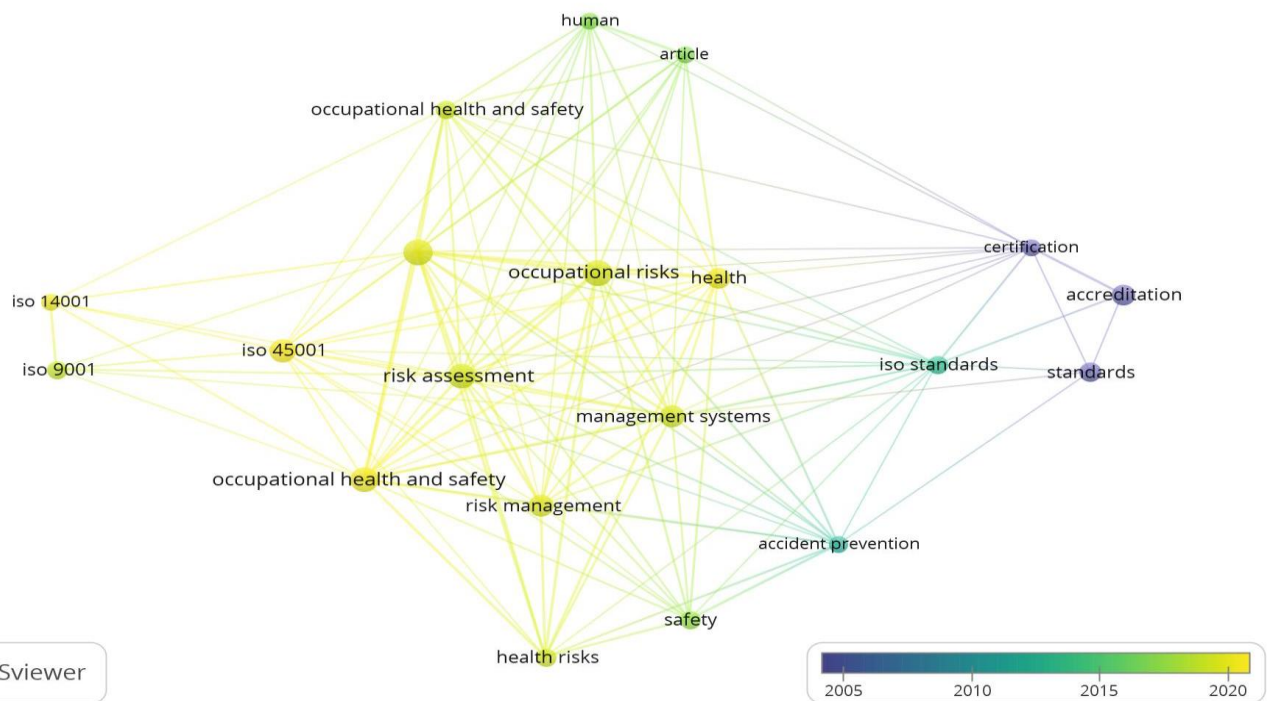

Fig.7 Analysis of the interaction of authors in scientific research.

Conclusions

Using bibliometric and network analysis, this paper provided an overview of the distribution of ISO 45001 publications(Maksymiuk 2000). A collection of 76 published articles was retrieved by querying the Scopus database with predefined keywords. There are three steps, the first is search criteria and source identification, the second is software and data collection, and the third is data analysis and interpretation. In conclusion, the results of the research on ISO 45001 were determined using the VOS Viewer.

In fact, the ISO 45001 standard is important in every industry.

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