

# Humanitarian logistics: bibliometric study from 2009 to 2023

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## Abstract

This paper presents a bibliometric study of the literature related to the topic of humanitarian logistics. The study consisted of an analysis of the relationships between documents related to the topic under study. The intention is to show the most relevant metrics regarding the publications in indexed journals from 2009 to 2023, it will serve as a guideline for forthcoming research. The paper presents an introduction, methodology, results, discussion and conclusions.

**Key words:** 1. Humanitarian Logistics, 2. Humanitarian Supply Chains, 3. Bibliometric Study

## Introduction

Humanitarian Supply Chains (HSC) is defined as the process of planning, implementing, and controlling the efficient, cost-effective flow and storage of both goods and materials (Flórez, 2008, p. 319), as well as the related information, from the point of origin to the point of consumption, with the purpose of alleviating the suffering of vulnerable people that arises from the need to optimize and speed up the care and recovery process for provide immediate care (Mateos, 2018, p. 21).

In the last decades, it has been discussed in international forums due to the interest of governments in providing a prompt and opportune response to events of an uncertain nature, for the most part, which put human lives at risk. Understanding a disaster for the purposes of this study as the definition proposed in the Disaster prevention guide of the National Civil Protection System in Mexico:

A disaster is defined as an event concentrated in time and space, in which the population, or part of it, suffers severe damage and incurs losses for its members, in such a way that the social structure is disrupted and compliance with the essential activities of society, affecting its vital functioning (SEGOB, 2007).

Thus, the proposal of this research focuses on a bibliometric study from the period 2009 to 2023 of the scientific documents published in relation to the topic "Humanitarian Logistics", for which the Scopus database and the Vosviewer software were used.

## 1. Methodology

### 1.1. Data source

Scopus database was used, which was selected because it is a very complete and easy-to-operate repository, quickly and effectively finds relevant and accredited research, in addition to having an option to generate the statistical analysis, all in one place.

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## **1.2. Inclusion and exclusion criteria**

The parameters used comprise from the year 2009 to 2023, only publications in journals and the complete phrase "humanitarian logistics".

The command entered in Scopus was: TITLE-ABS-KEY ( "humanitarian logistics" ) AND ( LIMIT-TO ( OA , "all" ) ) AND ( LIMIT-TO ( PUBYEAR , 2023 ) OR LIMIT-TO ( PUBYEAR , 2022 ) OR LIMIT-TO ( PUBYEAR , 2021 ) OR LIMIT-TO ( PUBYEAR , 2020 ) OR LIMIT-TO ( PUBYEAR , 2019 ) OR LIMIT-TO ( PUBYEAR , 2018 ) OR LIMIT-TO ( PUBYEAR , 2017 ) OR LIMIT-TO ( PUBYEAR , 2016 ) OR LIMIT-TO ( PUBYEAR , 2015 ) OR LIMIT-TO ( PUBYEAR , 2014 ) OR LIMIT-TO ( PUBYEAR , 2013 ) OR LIMIT-TO ( PUBYEAR , 2012 ) OR LIMIT-TO ( PUBYEAR , 2011 ) OR LIMIT-TO ( PUBYEAR , 2010 ) OR LIMIT-TO ( PUBYEAR , 2009 ) ) AND ( LIMIT-TO ( SRCTYPE , "j" ) )

## **1.3. Metrics and analytics**

The metrics used and analyzed in this study are:

- Number of documents published per year
- Journals and Magazines (in which they have been published)
- Authors
- Co-authors
- Affiliation
- Country/territory of the publication
- Document type
- Subject area
- Language
- Keywords

## **2. Results**

The presentation of results is done with the help of the analysis tool that is available in Scopus and the Vosviewer software. The results of the ten metrics defined in this work are shown below.

### **2.1. Number of documents published per year.**

For the period from 2009 to 2023, which 2009 is the initial year that is registered in Scopus with the topic "Humanitarian Logistics", we found a total of 341 documents that meet the criteria of having been published in indexed journals. See table 1 for the detailed frequency of publications per year.

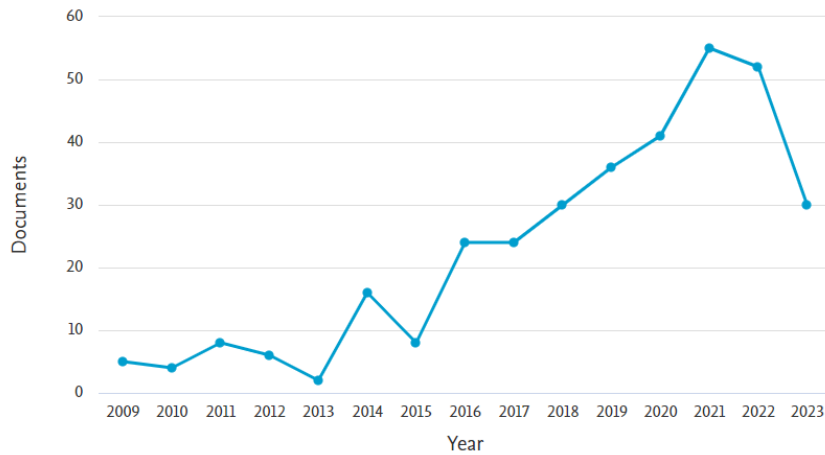
Table 1. Frequency of publications per year

Year	Number of publications
2009	5
2010	4
2011	8
2012	6
2013	2
2014	16
2015	8
2016	24
2017	24
2018	30
2019	36
2020	41
2021	55
2022	52
2023	30

Source: Scopus, 2023

In the following graph you can see the increase in the number of publications, the best year was 2021 and the year with the fewest publications was 2013.

Graph 1. Documents per year



Source: Scopus, 2023

## 2.2. Journals

64 journals were found in which the topic "Humanitarian Logistics" has been published, where the highest frequency has been 46 documents corresponding to "Journal of Humanitarian Logistics and Supply Chain Management ", in the lowest frequency there are 16 journals with only one post each. The following table shows only the top 10 of the most important journals.

Table 2. Journals/Magazines

Journals / Magazines	Number of posts
Journal Of Humanitarian Logistics and Supply Chain Management	46
European Journal of Operational Research	24
Annals of Operations Research	20
Sustainability Switzerland	12
Production And Operations Management	9
Disasters	8
Gold Spectrum	7
Mathematics	6
Partner Economic Planning Sciences	6
International Transactions in Operational Research	5

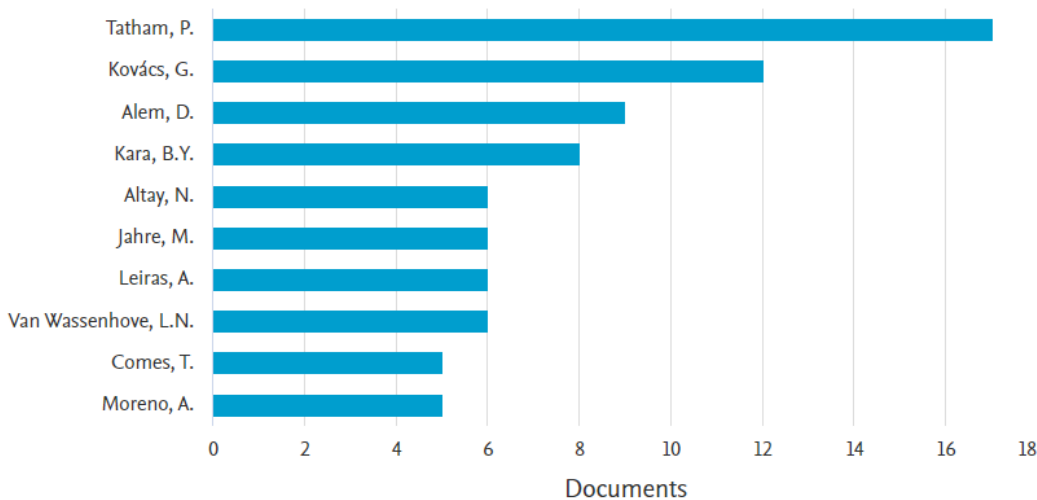
Source: Scopus, 2023

### 2.3. Authors

160 different authors were found, of which approximately 23% of the total publications correspond to 13 of them: Tatham, P; Kovacs, G; German, D; Kara, BY; Van Wassenhove, LN; Leiras, A; Jahre, M; , Altay, N; Wakolbinger, T; Spens KM; Rodríguez-Espindola, O; Moreno, A; and Comes, T.

The following graph shows the 13 authors with the highest number of publications:

Graph 2. Documents by author

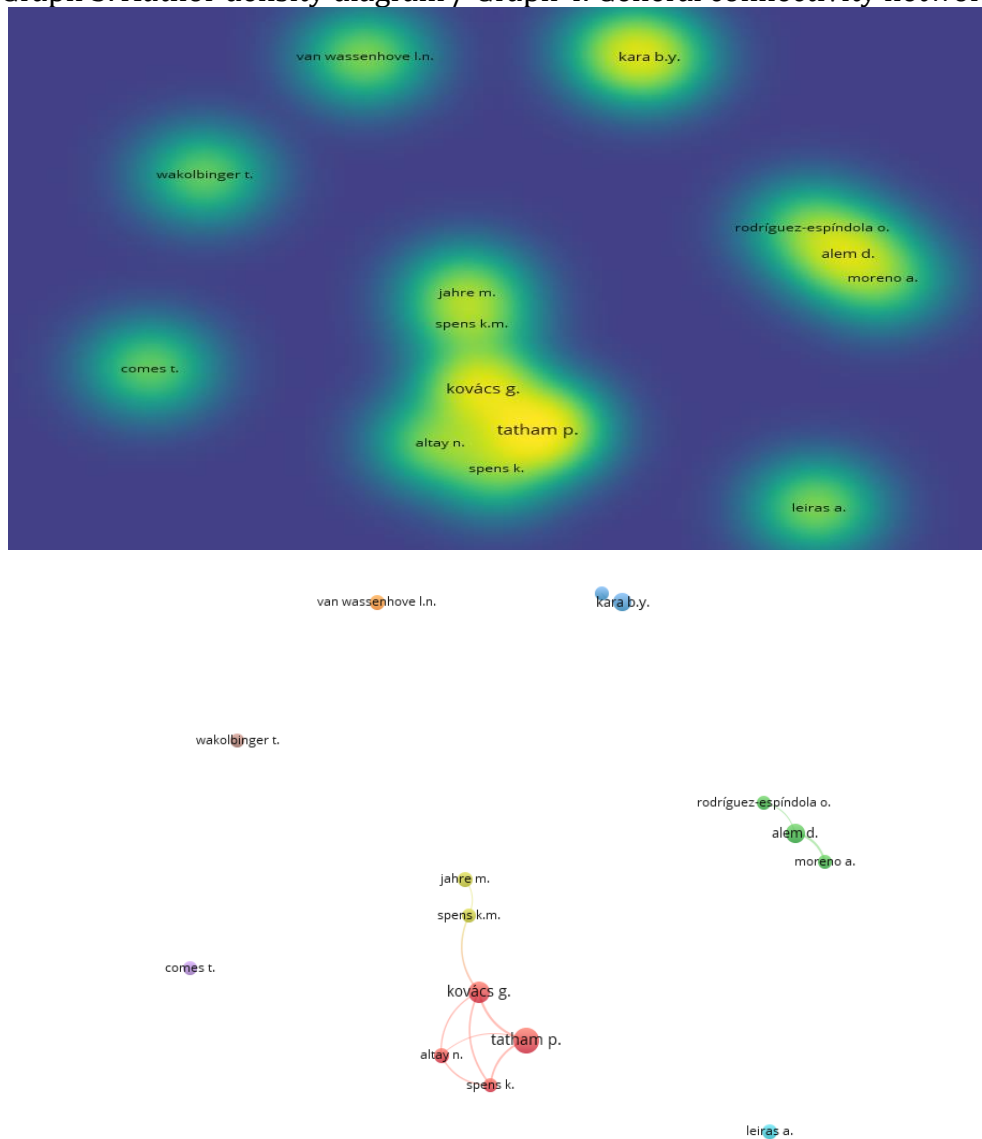


Source: Scopus, 2023

### 2.4. Co-authors

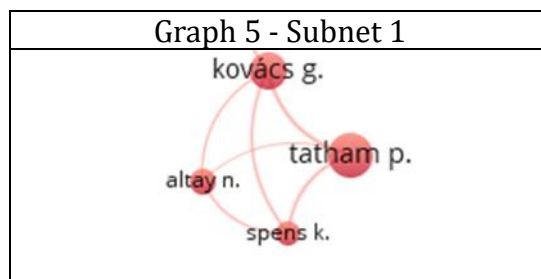
With the help of the Vosviewer software, it was found that 15 of the 160 authors do not have any type of connection or relationship with each other, and 6 of them are strongly related to authorship and co-authorship. The following graph shows the density of publications, and the following is a representation of the groupings of the relationships between them.

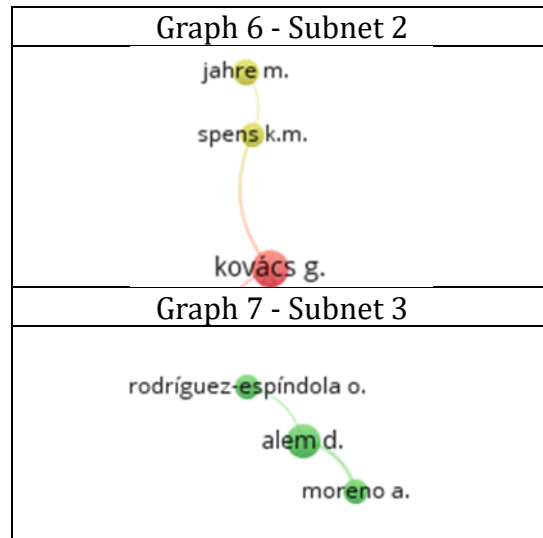
Graph 3. Author density diagram / Graph 4. General connectivity network



Source: elaboration with the support of Vosviewer (2023)

The longest network found is Kovas, G. – Tatham, P. – Spens, K. – Altay n. (see graph 5 - Subnet 1), in second place are tied the network: Kovas, G. – Spens, KM – Jahre, M. (see graph 6 - Subnet 2) and third network is: Moreno, A. – Alem, D. – Rodríguez- Espindola, O. (see graph 7 - Subnet 3).



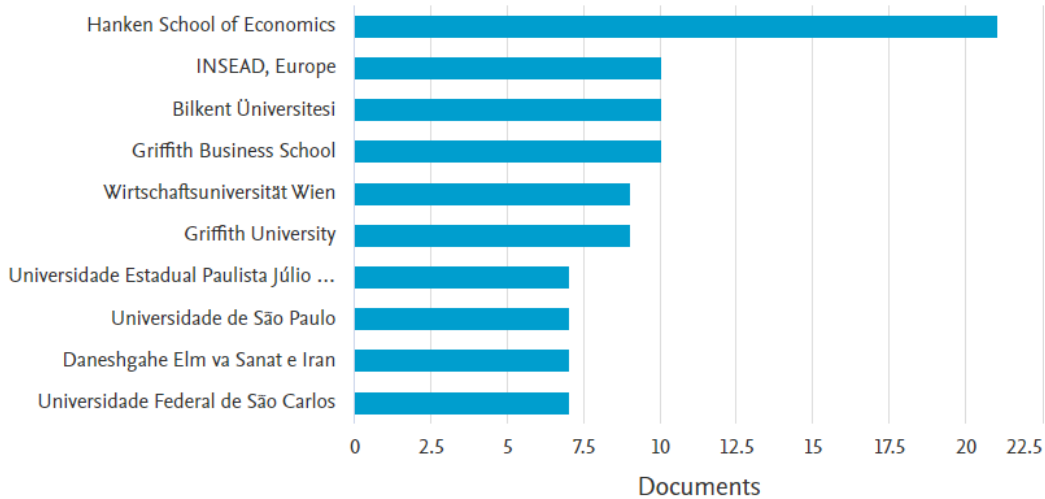


Source: elaboration with the support of the Vosviewer (2023)

### 2.5. Affiliation

The number of affiliation Institutions of the authors is equal to the number found of the same, that is, 160 different organizations in which the authors are affiliated or related in some way. The highest frequency corresponds to: Hanken School of Economics, with 17 authors coming from it. The lowest frequency is shared by: Japan Research Institute, Administrative Department of Science and United Nations World Food Program, with 1 author each.

Graph 8. Publications by affiliation



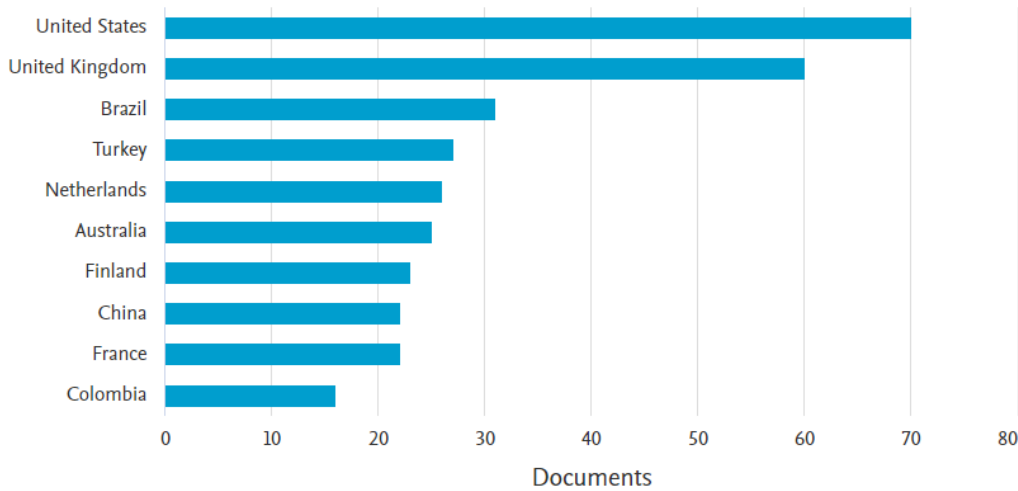
Source: Scopus, 2023

### 2.6. Country/territory of the publication

The country with the most publications on the subject of "Humanitarian Logistics" is the United States of America, followed by the United Kingdom, 70 and 60 documents, respectively. At the bottom end with only one publication are: Zimbabwe, Yemen, Ukraine,

Tanzania, Saudi Arabia, Qatar, Papua New Guinea, Oman, Nigeria, Nepal, Mozambique, Kenya, Israel, and the Czech Republic.

Graph 9. Publications by country or territory

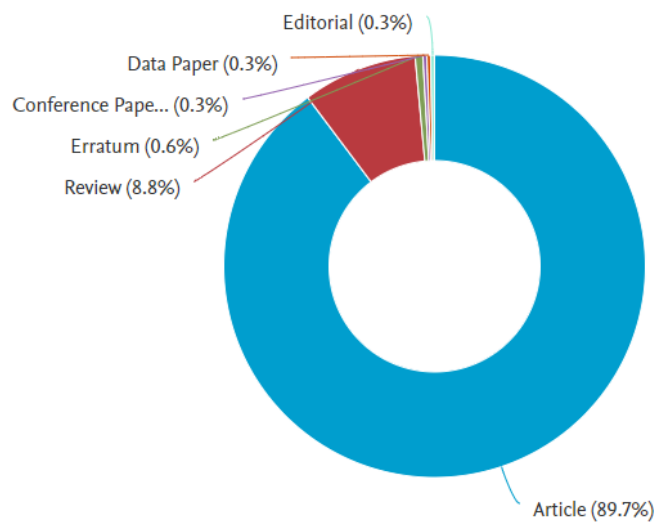


Source: Scopus, 2023

## 2.7. Document type

The Scopus database contains abstracts and citations of scientific journal articles, as well as documents contains more than 3,700 Gold Open Access indexed journals, 5,500 Articles in Press in 40 languages. In the search command there was no segmentation by language, it was only requested to select Journals as a priority. Where the result obtained is 89.7% correspond to articles. The lowest percentage is tied between Editorial and Conference Papers, with 0.3% each.

Graph 10 – Publications by type

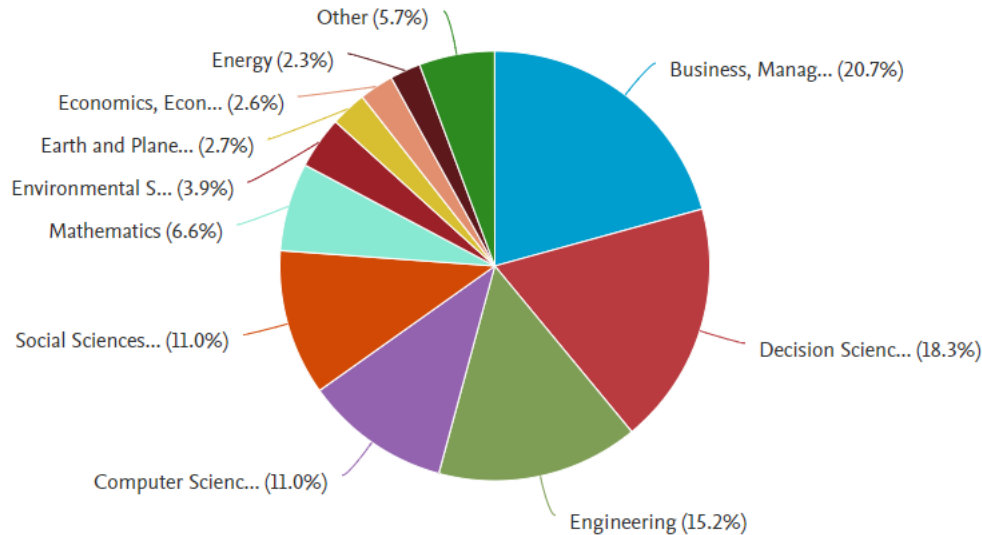


Source: Scopus, 2023

### 2.8. Subject area

The subject area most found was Business and Management (20.7%), followed by Decision Science (18.3%) and in third place Engineering (15.2%).

Graph 11. Publications by subject area



Source: Scopus, 2023

### 2.9. Language

The language with the most publications is English, 93% of the total found in Scopus. Portuguese and Spanish have only 1.12%, Turkish 0.58% and the remaining 3.6% correspond to other languages.

language	# document
English	319
Portuguese	4
Spanish	4
Turkish	2

Source: Scopus, 2023

### 2.10. Keywords

The most used keywords according to the results obtained in Scopus were "Humanitarian Logistics", which was found 261 times, followed by "Disasters" with 58 appearances, "Disaster Management" registered 48 times.

## 3. Discussion

The subject of humanitarian logistics is very extensive, as it has been observed in the analysis and results presented. The Scopus database showed that in the period from 2009 to 2023 there are 341 publications of which 13 are in the status "Article in Press", the complement are



already final works. Hence, the first data to comment is regarding the number of publications, it can be seen that the years with fewer publications were: 2013 (2), 2010 (4), 2009 (5), 2012 (6) and tied 2011 and 2015 (8), 2015 is the one that is relevant and worth commenting on since it is between two frequencies that are respectively double and triple, 2014 (16) and 2016 (24). On the opposite side, the year with the highest number of publications was 2021 (55) followed by 2022 (52) and 2020 (41), all three of which correspond to the period of the COVID19 pandemic, which would explain the interest in humanitarian logistics.

The favorite media to publish the subject is a young journal whose volume 1 was published in 2011, it is specialized in humanitarian logistics and supply chain management: "Journal of Humanitarian Logistics and Supply Chain Management". The second preferred journal by the authors is the "European Journal of Operational Research", founded in 1977 by the Association of European Societies for Operational Research. The third is "Annals of Operations Research" founded in 1984, which publishes 24 issues in a year. Its fundamental areas of study are theoretical, practical and computational aspects of operational research. From the above it can be inferred that humanitarian logistics has become so important that it became an independent area of study, if we consider that there are few areas of knowledge that have their own journal.

The author with the highest number of publications is Peter Tatham, who has been cited 3,164 times, while Gyöngyi Kovács, second with the highest number of publications, has been cited 8,260 times, and can also be considered the author with the most authorship connections. and co-authorship within the 341 documents found in Scopus on the subject of humanitarian logistics. This also coincides with the affiliation institution with the highest number of publications, which is the Hanken School of Economics, located in Helsinki, Finland, which is the university where Kovács is affiliated. The English language, in which both authors mentioned above are published, is neither relevant nor surprising given that it is currently the preferred language by researchers, as it is spoken, read and understood almost anywhere in the world.

Regarding the keywords, not much can be inferred because the study command was intentionally segmented in this way in the Boolean search engine, so the result obtained is as it was expected. The subject areas are also in agreement with the keywords chosen for the search in Scopus, which confirms that both the subject and the subject areas are aligned with the objective of this paper.

#### **4. Contribution to regional development and Territorial Management**

This research can contribute to the investigation of regional development or territorial management by providing insights into the current state of research on humanitarian logistics. The study identifies several areas of research that have not been studied in depth, such as the construction of efficient and effective location models, the use of information technologies in forecasting and diagnosing disasters, and the collaboration of local actors. These areas represent opportunities for further research that could help improve regional development and territorial management. Additionally, the study highlights the low number of articles and related documents on humanitarian logistics in Mexico, suggesting a need for further research in this area. Overall, this research provides valuable information for

researchers and policymakers interested in improving regional development and territorial management through humanitarian logistics.

## **Conclusions**

After analyzing the bibliometric data, the following can be concluded:

- There are large areas of research that have not been studied in depth, such as:
  - construction of efficient and effective location models,
  - the use of information technologies in the forecast and diagnosis of disasters,
  - the collaboration of local actors (governments, citizens, NGOs, etc.),
  - evaluation of the social, ecological and economic impact of humanitarian chains,
  - identification of vulnerabilities and resilience,
  - information flow analysis, among other issues that can be added to these proposals.
- In Mexico, which is the author's country of origin, the number of articles and related documents on the subject humanitarian logistics is very low considering that the study of disaster response is a relevant problem, only in 2022 in Mexico there were 509 events were recorded as disasters, under natural origin and derived from human activity, which represented an expense of 11 thousand 686 million pesos and 481 deaths (CENAPRED, 2023).
- There is an opportunity to integrate Artificial Intelligence programs to generate mathematical models with optimal response times.

Bibliometric studies help to understand how studied or saturated a topic of scientific research is, it is the first step to understand if the phenomenon or subject of study is relevant, known or has been addressed so many times that it is no longer attractive or whatever it can be said about it could become repetitive. This study will serve as a guideline for future research, it served to identify areas of opportunity for a new research question in the doctoral program where the author is in rolled.

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