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A STUDY ON: HUMANITARIAN LOGISTICS

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Abstract:

The purpose of this study is to assess the applicability and development of the "Humanitarian logistics" concept on literature found in the Scopus database. By searching for the keywords "Humanitarian logistics" in the Title, Keywords, and Abstract fields, we were able to locate 487 articles from the time period (2019–2023). Based on bibliometric analyses, 1024 writers were found for this work, with Chowdhury S. being the most well-known of them all. There are the most publications overall. The United States, India and Finland were the three most productive nations. Journal of Humanitarian logistics Studies was the journal with the most current content. VOS Viewer software is used to perform analysis and visualization. The comprehensive review of Humanitarian logistics as a cutting-edge instrument for consumer interaction provided by this bibliometric study aids scholars, practitioners, and marketers in understanding the significance of Humanitarian logistics and its implications. The concept of "Humanitarian logistics" is old and is still in its infancy. As a result, Indian research on Humanitarian logistics is somewhat underrepresented in the global perspective.

Keywords: Humanitarian logistics, logistics, disaster management, supply chain management, Bibliometric analysis, VOSViewer.

Introduction

Humanitarian logistics is a vital area of study in the field of logistics and supply chain management. It involves the planning, coordination, and execution of activities related to the movement of goods, services, and people during humanitarian crises, such as natural disasters, armed conflicts, and epidemics. Humanitarian logistics play a critical role in ensuring that aid reaches those in need and that the response is timely, efficient, and effective.

In recent years, the importance of humanitarian logistics has become more apparent due to the increasing frequency and intensity of natural disasters and conflicts around the world. The United Nations Office for the Coordination of Humanitarian Affairs (OCHA) reports that in 2019, 168 million people were in need of humanitarian assistance and protection, and the number is expected to increase due to the on-going COVID-19 pandemic.

The field of humanitarian logistics faces several challenges, such as limited resources, complex supply chains, and the need to respond rapidly to emergencies. In addition, humanitarian logistics involves a range of actors, including international organizations, non-governmental organizations (NGOs), governments, and local communities, which can lead to coordination issues and communication breakdowns.

Despite these challenges, the importance of effective humanitarian logistics cannot be overstated. A well-functioning logistics system can help save lives, alleviate suffering, and support long-term recovery efforts. Therefore, it is crucial to understand the key principles, challenges, and best practises in humanitarian logistics to ensure that aid reaches those who need it most.

Humanitarian logistics and supply chain management play a crucial role in preparation for, and response to, both disasters and global health emergencies, and the alleviation of the suffering of vulnerable people. Importantly, the challenge facing the humanitarian supply chain managers is, arguably, more complex than that found in the 'for profit' environment given its multiple stakeholders and the prominence of non-government organisations (NGOs), United Nations agencies and the Red Cross movement, and governmental actors (Kovács & Falagara Sigala, 2021). Humanitarian organisations face an unknown demand regarding location, quantity, and timing as well as physical and communications infrastructure challenges. Additionally, there is a need for agility and swift-trust as the failure of the supply chain can lead to death or unnecessary suffering rather than simply reduced profits (Dubey et al., 2020; Tatham & Pettit, 2010). These characteristics lead to volatile and unstable supply chains with multiple actors which, at least in theory, need to coordinate their response to gain agility (Dubey et al., 2021, 2022).

Natural disasters have increased dramatically in recent decades owing to global population growth and urbanization trends, causing human suffering and death. According to Magrath (2007), the annual number of disasters nearly quadrupled between 1980 and 2006. Although the destructive effects of disasters are inevitable, as the number of disasters will increase five-fold over the next 40 years (AS Thomas, 2005), they could be alleviated by appropriate disaster operations, a set of activities performed before, during, and after a disaster.

Humanitarian logistics (HL), particularly inventory management and relief distribution, is a critical challenge in disaster operations. Humanitarian organizations (HOs) in general need to design appropriate HL, a process of planning, managing, and controlling efficient flows of relief and information from origin to destination to meet urgent needs. ((2006), 2005) stated that the Sumatra Earthquake in 2004 demonstrated HL as the costliest and most significant component of disaster operations. Furthermore, Holguín-Veras et al. (2007) stated that

inefficient relief inventory-distribution models had significant negative consequences on operations by HOs in the aftermath of Hurricane Katrina. These real cases demonstrate the need to formulate inventory-distribution strategies to alleviate the impact of disasters on humankind.

Review of literature

Humanitarian logistics leaders could be helped by performance measurement in their decision-making. Performance measurement could boost the effectiveness and efficiency of relief actions, display supply chain performance, and increase the accountability and transparency of operations (Sakamoto, 2016).

"Humanitarian Logistics: Enabling Disaster Response" by (Melamed, 2012) discusses the challenges and opportunities in humanitarian logistics, including the importance of coordination, communication, and technology in improving aid delivery during disasters.

"Humanitarian logistics: Review and future directions" by (Kovács, 2009) provides a comprehensive literature review on humanitarian logistics, including its history, challenges, and opportunities for improvement.

"Humanitarian Logistics: Enabling Disaster Response" by (Oloruntoba, 2013) provides an overview of the key principles and challenges in humanitarian logistics, including the need for collaboration, the role of technology, and the importance of risk management.

Effective coordination and collaboration among stakeholders is key to successful humanitarian logistics (Keely L. Croxton, 2019). This is supported by Alles et al. (2016), who emphasize the importance of information sharing and communication in humanitarian supply chains.

Logistics and the supply chain are the foundation of processing the humanitarian crisis. Humanitarian organizations should provide aid at the appropriate time and place at a reasonable cost (b, 2022)

Humanitarian aid related to the accuracy of the items and quantities and responded to the speed and cost. To balance those works, it needs a method to measure the supply chain performance (Sahebjamnia, 2014).

The performance of the humanitarian organization after the disasters and perception of the organization's performance are the key factors of humanitarian logistics. The ability to provide proper supplies to acceptors at the accurate time, number, and place is a core competency of an organization (Russell, 2004).

Humanitarian supply chain management and performance measurement are still in the early stages. Researchers determined that the best several framework and indicators are still inconclusive. Compared to the commercial sector, the total number of papers in the specific area of performance measurement and management in the humanitarian supply chain is still very low (Mike Kennerley, 2005).

Guidelines related to performance measurement were suggested. First, the measurement needs to consider the regional, national, and global levels for disaster management. Typically, each level might implement different activities. It has to be reflected in the humanitarian performance framework and the long-term and short-term management and measurements (Saeyon Roh, 2011)

Optimized the last-mile using a two-phase model framework, where all possible combinations of demand locations are considered for a route in the first phase and for each such combination, the route with the minimum travel time is found by solving the Traveling Salesman Problem (TSP) in the second phase (JOUR, 1 2008).

Bibliometric Analysis

Bibliometric analysis uses statistical and other measurement methods to assess and project current and future research directions (Yu, 2017). Therefore, bibliometrics can be utilised to reveal patterns in the subject of employee turnover. A collection of methods called "bibliometrics" is used to analyse published data in terms of the text and details about the author, affiliation, co-citation, citations, and keywords utilised. (Norton, 2000). The use of bibliometric analysis as a method of evaluation aids in determining the relationship and influence that technology has on an author's productivity and charts the evolution of research activity through time. A computer application called VOSviewer was created for creating and viewing bibliometric maps. The scientific community has free access to Vosviewer. This application is used to create author and journal maps based on co-citation data and keyword maps based on co-occurrence data (Vosviewer, 2023).

"An Introduction to Bibliometrics" by (Bautista-Bernal, 2022) provides a comprehensive review of the literature on bibliometric analysis, including its history, methods, and applications in various fields.

"Bibliometric Analysis: A Review" by (B.M. Gupta, December 2020) provides an extensive review of the literature on bibliometrics. The article covers the history, methodologies, and applications of bibliometrics in various fields, including science, social science, and the humanities."

Bibliometric analysis is becoming increasingly popular in many fields of research as a tool for analyzing scientific output and identifying research trends (Alonso, Cabrerizo, Herrera-Viedma, & Herrera, 2010). In recent years, there has been a growing interest in bibliometrics and scientometrics as means of evaluating and monitoring research productivity and impact (Abramo, 2013)

Methodology

The concept of the Humanitarian Logistics is highly projected topics in the literature but still, the bibliometric perspective of this approach is not effectively addressed. So exploratory research had been conducted to fill the gap found through the literature review. In addition to this research will be helpful in upgrading the knowledge on this concept.

Humanitarian logistics has been widely discussed in the literature, but the bibliometric analysis of this approach is still lacking. To address this gap, an exploratory research study was conducted, which aims to provide a comprehensive analysis of the current state of research on humanitarian logistics from a bibliometric perspective. The results of this study will not only contribute to the existing literature on the topic but will also be useful for researchers and practitioners seeking to deepen their knowledge of humanitarian logistics and its impact on the field of logistics and supply chain management.

Research Objectives

The study tried to add knowledge to the subject of Humanitarian logistics and related topics by presenting the new knowledge.

- To identify the most significant journals in Scopus on "Humanitarian logistics".
- To identify the most relevant authors in Scopus on "Humanitarian logistics".
- To identify the Country's contribution in Scopus on "Humanitarian logistics".
- To examine collaboration networks on "Humanitarian logistics".
- To know the Annual research papers published in Scopus on "Humanitarian logistics".

Data Collection

The study used the published Scopus database. Scopus database is the premier database with high-quality research journals in the field of Management. Scopus database is used for the study due to its quality research being found missing from many of the well-known sources like Google Scholar. The initial search was made with the Scopus database by entering the keyword "Humanitarian logistics" OR "HL". Further, based on the exclusion of the subject area, document title, source title, and language, the study found 487 articles for further analysis. Final 487 articles CSV file imported to VOSviewer. Further analysis is used for analysing the relationship between authors, countries, author citations, journals, sponsors and common keywords.

Analysis and Results

Overview of the Data

The data provided indicates that a significant amount of research was carried out over the course of 5 years and involved a wide range of organizations and countries. There were 487 published articles, which suggests that the research covered diverse subject areas. The participation of 1024 authors indicates that many researchers were likely involved, possibly collaborating across different institutions or fields.

The involvement of 942 organizations suggests that this research was conducted on a large scale, possibly through multiple partnerships. Additionally, with 60 countries participating, the research may have implications for various cultures and regions.

Finally, the large number of cited authors (23,199) suggests that this research had a considerable impact on the broader research community and may influence future research in the field. Overall, this data provides valuable insights into the scope and magnitude of the research conducted during the 10-year period.

Particulars	Result
Total Articles	487
Total Authors	1024
Time Frame	5 Years
Organisations	942
Countries	60
Total Journals	58
Reference	23534
Cited Sources	9281
Cited Authors	23199

Table 1 Overview of the Data

Year wise Publication

There are 218 articles in the dataset, which represents the number of papers published over a five-year period, from 2019 to 2023.

45 publications were published in 2019, the dataset's first year, accounting for 9.24% of all articles. A total of 58 articles were published in 2020, accounting for 11.91% of the total. The number of papers published increased the next year, in 2021, with 61 pieces making up 12.53% of the total.

The number of papers published fell slightly in 2022, with 53 articles accounting for 10.88% of the total. It's important to note that the decline is not considerable and that there will still be more papers published in 2022 than there were in 2018.

Year	Articles	% (N=218)
2019	45	0.206
2020	58	0.266
2021	61	0.288
2022	53	0.243
2023	1	0.004

Table 2 Year wise Publication and Average

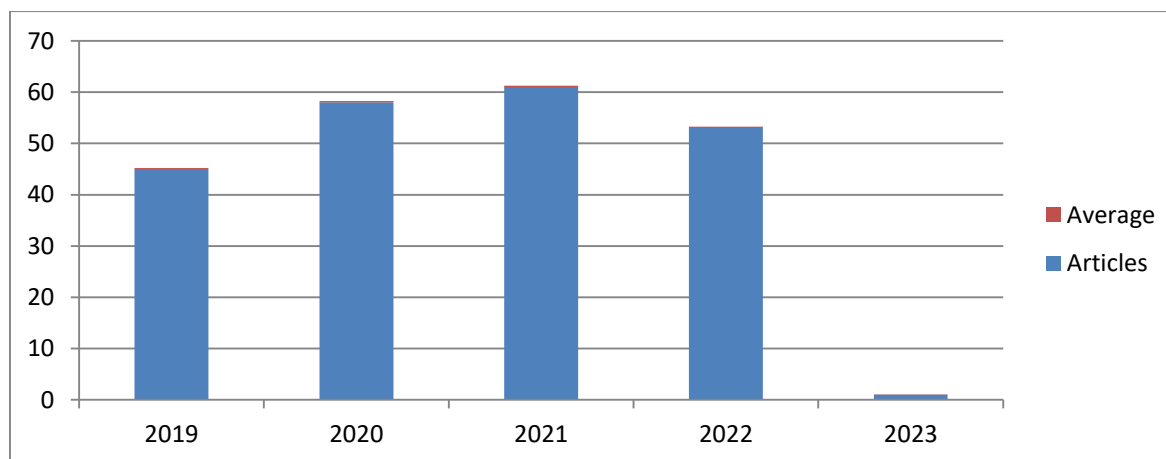


Figure 1 Publication Details

Author Analysis

Table 3 represents the having more than 100 citations for their research focusing on the “Humanitarian logistics” during the years 2012 to 2022. The leading authors for research in the domain are chowdhury s. (2017), gupta s. (2016), ransikarbum k. (2016), ahmadi m. (2015) ,huang k. (2015), leiras a. (2014), holguín-veras j. (2012). The articles for the year 2018 and 2019 got higher citations due to long time span compare to the recent publications. Table 3 identified that the leading authors with higher citation while table 4 with authors having higher articles.

Author	Citations
Chowdhury S.	150
Gupta S.	144
Ransikarbum K.	93
Ahmadi M.	172
Huang K.	120
Abidi H.	119
Leiras A.	197
Kunz N.	110
Altay N.	134
Gralla E.	112
Scholten K.	279
Rennemo S.J.	133
Davis L.B.	133
Holguín-Veras J.	294
Holguín-Veras J.	346
Kunz N.	169
Kovács G.	99
Cozzolino A.	106
Akhtar P.	115
Van Wassenhove L.N.	142

Table 3 Top Authors based on Citation

Table 4 represented the number of articles published by the individual authors concentrating on “Humanitarian logistics”. Authors such as de souza r., jahre m., goh m., cantillo v., pazirandeh a., bowles m. are having more publication in the field of “Humanitarian logistics. cantillo v. has highest 307 citation focusing on the “Humanitarian logistics”. de souza r. iwas in National University of Singapore, Department of Business Administration.

The provided data shows the number of documents and citations for 11 authors. The top three authors with the highest number of citations are Goh M. with 307 citations, Jahre M. with 274 citations, and Altay N. with 184 citations. While de Souza R., with 11 documents, has the lowest number of citations at 259. This data suggests that these authors have made significant contributions to their respective fields and their work has been influential in the research community.

Author	Documents	Citations	Average Citation
De Souza R.	11	259	23.54
Jahre M.	8	274	34.25
Goh M.	7	307	43.85
Cantillo V.	6	134	22.33
Gupta S.	6	134	22.33
Pazirandeh A.	6	161	26.83
Altay N.	5	184	36.8
Batta R.	5	145	29
Bowles M.	5	113	22.6
Davis L.B.	5	94	18.8
Klumpp M.	5	127	25.4

Table 4 Authors with Publications

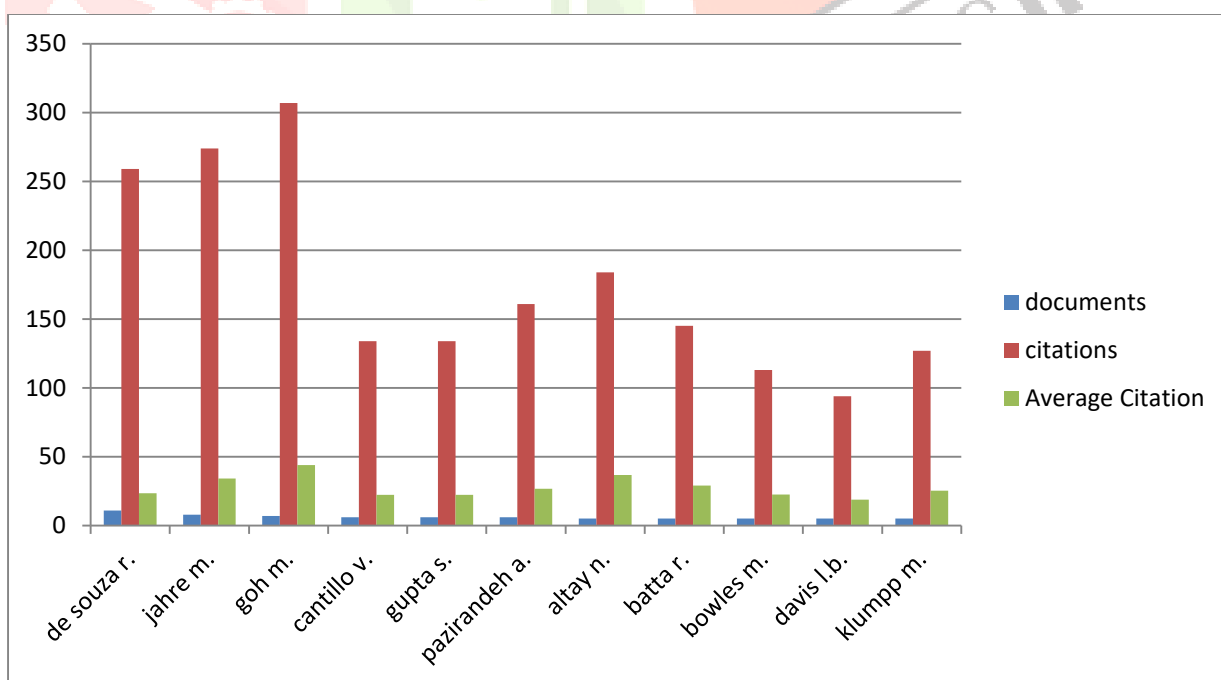


Figure 2 Authors with Publication Details

Table 5 represents the information related to journals that published maximum articles focusing on the “Humanitarian logistics”. The journals published the research papers. All these journals are managed by top-class publication houses like Emerald Group Holdings Ltd., Elsevier Ltd., Nova Science Publishers, Inc. etc.

Source	Documents	Citations	Average Citation
Journal Of Humanitarian Logistics And Supply Chain Management	134	2728	20.35
Socio-Economic Planning Sciences	27	836	30.96
Production And Operations Management	23	925	40.21
Transportation Research Part E: Logistics And Transportation Review	20	962	48.1
Springer Proceedings In Business And Economics	14	10	0.714
International Journal Of Production Economics	11	655	59.54
Proceedings Of The International Conference On Industrial Engineering And Operations Management	10	6	0.6
The Palgrave Handbook Of Humanitarian Logistics And Supply Chain Management	10	28	2.8
International Transactions In Operational Research	8	325	40.62
International Journal Of Emergency Management	7	28	4
International Journal Of Production Research	7	312	44.57
Managing Humanitarian Logistics	7	17	2.42
International Journal Of Logistics Management	6	55	9.16
International Journal Of Operations And Production Management	6	113	18.83
International Journal Of Supply Chain Management	6	43	7.166
International Series In Operations Research And Management Science	6	101	16.83
Journal Of Operations Management	6	831	138.5
Omega (United Kingdom)	5	153	30.6
Supply Chain Management	5	594	118.8

Table 5 Journals with number of Documents

Table 6 represents the total citation of the journals. The leading journals with citations are Humanitarian supply chain performance management, humanitarian setting, humanitarian action qualifications framewok, Disaster Prevention and Management.

The data shows the number of citations for various journals related to operations research, supply chain management, and disaster risk reduction. The highest number of citations is for the Journal of Humanitarian Logistics and Supply Chain Management, followed by the International Journal of Physical Distribution and Logistics Management and the European Journal of Operational Research. Some journals have multiple variations in name, which may cause some confusion in tracking citations.

Source	Citations
Annals Of Operations Research	222
Disasters	198
Eur J Oper Res	123
Eur. J. Oper. Res.	235
European Journal Of Operational Research	486
Int. J. Prod. Econ.	109
International Journal Of Disaster Risk Reduction	126
International Journal Of Physical Distribution & Logistics Management	550
International Journal Of Physical Distribution And Logistics Management	334
International Journal Of Production Economics	489
International Journal Of Production Research	204
Journal Of Business Logistics	245
Journal Of Humanitarian Logistics And Supply Chain Management	987
Journal Of Operations Management	331
Journal Of Supply Chain Management	142
Journal Of The Operational Research Society	192
Or Spectrum	127
Prod. Oper. Manag.	128
Production And Operations Management	217
Socio-Economic Planning Sciences	172
Supply Chain Management: An International Journal	284
Transportation Research Part E: Logistics And Transportation Review	209

Table 6 Journals with highest citation

Table 7 represents the organizations which promoted the research in the field of “Humanitarian logistics”. coggin college of business, university of north florida, humanitarian research group, insead, fontainebleau, humlog institute, hanken school of economics, faculty of science and technology, Sophia, department of management, nottingham business school, nottingham trent university, department of logistics management, izmir university of economics are leading supporter for the research in the domain of Humanitarian logistics.

Organization	Documents	Citations
Coggin College Of Business, University Of North Florida, Jacksonville, Fl, United States	4	134
Department Of Accounting, Auditing And Business Analytics, Bi Norwegian Business School, Oslo, Norway	3	89
Department Of Industrial Engineering, Clemson University, Clemson, Sc, United States	3	178
Department Of Industrial Management And Logistics, Lund University, Lund, Sweden	8	185
Department Of Information, Logistics And Innovation, Vu University Amsterdam, Amsterdam, Netherlands	3	175
Department Of International Business And Asian Studies, Griffith Business School, Griffith University, Gold Coast, Australia	8	184
Department Of Logistics Management, Izmir University Of Economics, Izmir, Turkey	3	34
Department Of Management, Nottingham Business School, Nottingham Trent University, Nottingham, United Kingdom	3	180
Faculty Of Science And Technology, Sophia University, Tokyo, Japan	4	144
Hanken School Of Economics, Helsinki, Finland	3	16
Hanken School Of Economics, Humlog Institute, Helsinki, Finland	3	16
Humanitarian Research Group, Insead, Fontainebleau, France	3	641
Humlog Institute, Hanken School Of Economics, Helsinki, Finland	7	237
Humlog Institute, Hanken Svenska Handelshogskolan, Helsinki, Finland	4	34
Naval Postgraduate School, Monterey, Ca, United States	3	13
Newcastle Business School, The University Of Newcastle, Callaghan, Australia	3	87
School Of Business, Galway Mayo Institute Of Technology, Galway, Ireland	4	36
School Of Industrial Engineering, College Of Engineering, University Of Tehran, Tehran, Iran	6	166
School Of International Economics And Business, Yeungnam University, South Korea	3	25

Table 7 Organisation wise publications

This data shows the number of humanitarian logistics documents and citations in various countries. It is interesting to note that France has the highest average citation (41.7), while India has the lowest at only 4.7. The United States has the highest number of documents and citations, followed by France and the United Kingdom. It is clear that some countries are more active in the field of humanitarian logistics than others. This data can be useful for researchers and practitioners to understand the current state of the field and to identify areas where more research is needed. Additionally, it can help policymakers identify countries that are leaders in this area and learn from their best practices.

Country	Documents	Citations	Average Citation
Australia	32	708	22.12
Finland	31	582	18.77
France	41	1710	41.70
Germany	18	523	29.05
India	41	195	4.75
Iran	26	724	27.84
Ireland	13	538	41.38
Italy	20	417	20.85
Netherlands	26	895	34.42
Norway	19	419	22.05
Sweden	19	452	23.78
Switzerland	10	412	41.2
Turkey	20	489	24.45
United Kingdom	30	1038	34.6
United States	130	3917	30.13

Table 8 Country wise Publication

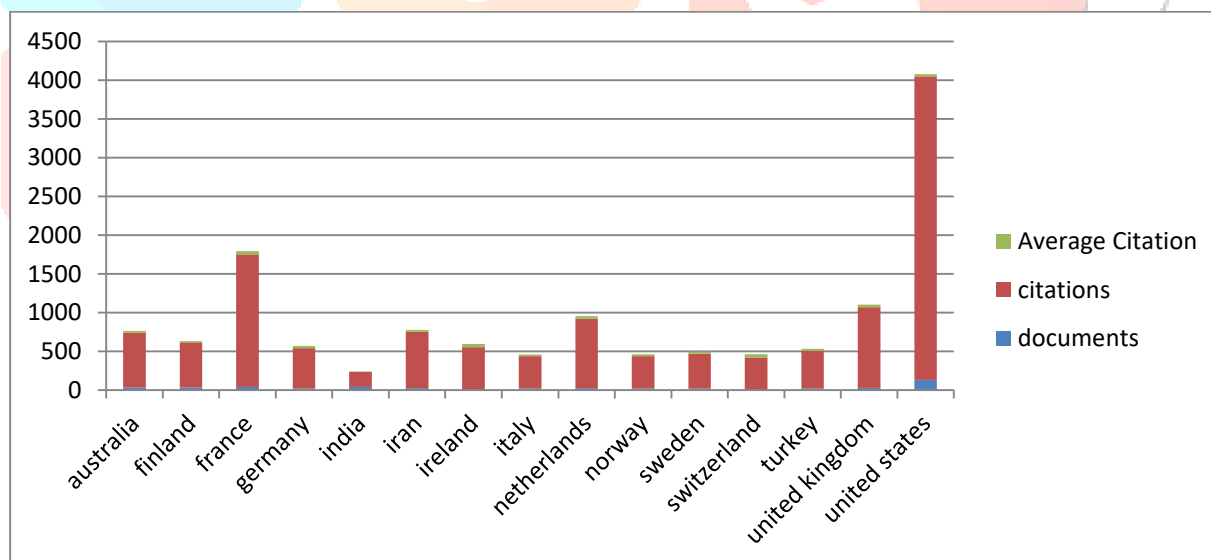


Figure 3 Country wise Publication Details

Co-occurrence Analysis

This section of the study focuses on examining and analyzing the co-occurrence network map of keywords. The co-occurrence of keywords is an accurate way of reflecting research hotspots in different fields of study. The VOSviewer software was used to build a network of keyword co-occurrences, where the nodes represent the weight of the keywords, with larger nodes indicating greater weight. The distance between the nodes shows the relationship between them, with words closer together having a stronger relationship. The frequency of co-

analysing co-authorship is crucial in evaluating the level of research on a particular topic and understanding the role of different countries in advancing the field.

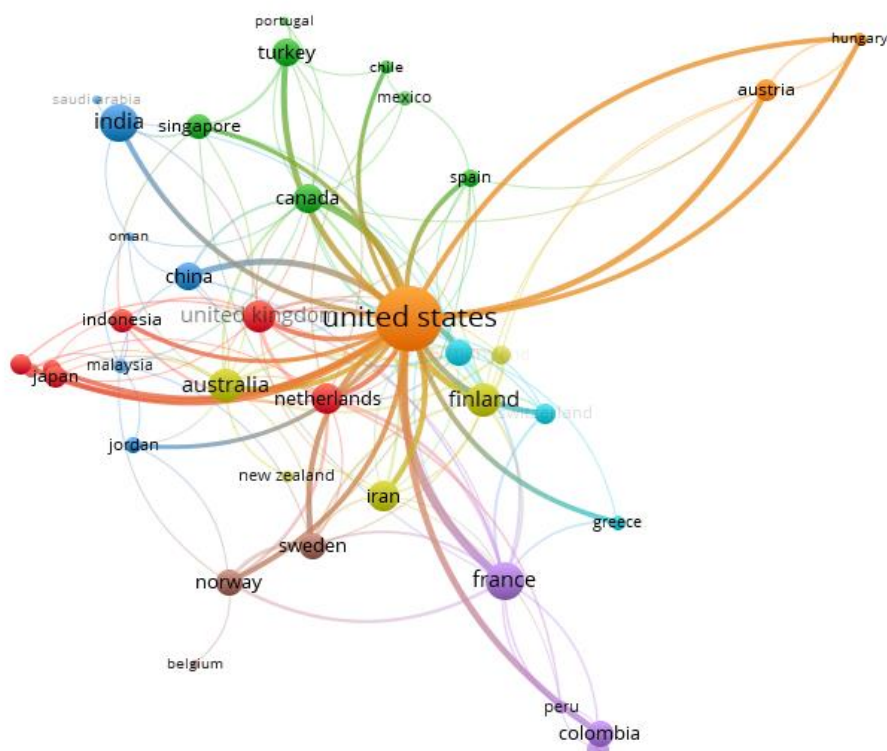


Figure 5 Country wise Co Authorship Network

Conclusion

This study presents the results of a bibliometric analysis of articles on humanitarian logistics from 2019 to 2023 that were indexed in the Scopus database. In the paper, the co-occurrence of keywords has also been investigated. Between 2019 and 2023, there were roughly 487 country-of-origin documents. Over time, there has been a growth in the number of authors and references. The United States of America, India and France are three of the nations in this region with the fastest economic growth.

In terms of Total Publications across time, the United States of America consistently held the top spot. The university with the highest output is WSB University, Poland, and with more than 7 universities has the second highest number. The most fruitful journal in the area of the country of origin is the International Journal of International Business. Both the institutions and the authors have fairly high rates of international cooperation.

The most popular terms in the research paper are "disaster management," "disaster prevention," and "optimization," Either the title, abstract, or keywords contain these words. This research paper may be helpful for the researchers to understand humanitarian logistics from a large perspective. In the future, we wish to analyse all the publications texts to identify the current trends and development of future trends in this field.

Limitation

Although several limitations of this study can be identified, the bibliometric analysis performed in this study to analyse the material on the humanitarian logistics can provide information that is beneficial to scholars and practitioners. Future studies can choose a bigger number of alternative journals, as well as conference proceedings and books from various domains, for example, as the top 5 journals mentioned here don't reflect the complete body of the humanitarian logistics research. Both extending and reducing the time range might improve the outcomes. Future research on the country of origin can look into the authorship of the paper, including the influence the author has on the field, and look into the ramifications of each issue and the theories that have been employed and put to use in those studies.

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