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Araştırma Makalesi/Research Article

ANALYSIS OF THE STUDIES MADE IN THE FIELD OF DISASTER LOGISTICS BY BIBLIOMETRIC METHOD

Aziz YURTTAŞ[1] Mustafa DESTE[2] Turgay YILDIRIM[3]

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Abstract

In this work, studies conducted in the area of "Disaster Logistics" in the Scopus database between 2018 and 2023 have been analyzed using the bibliometric method. For this aim, 3.855 article types belonging to the said 5 years have been obtained in the "Scopus" database. The data obtained has been analyzed using the "Biblioshiny" interface of the R-Studio (Version: 4.1.3) program. Additionally, VOSviewer (Version: 1.6.18) program has been used to envisage the data. With the bibliometric analysis method, studies conducted by years and the distribution of these studies by country have been examined. In addition to these, the most used keywords, the journals that have done the most works, the authors that have done the most works, the organizations that have done the most works, the most cited countries, and the most cited articles have been shown. As a result of the analysis, it has been understood that the "Disaster Logistics" themed studies scanned in the "Scopus" database have been mostly carried out in 2022 and that the majority of participants have from the USA. In addition, it has been seen that the authors gave more importance to working collaboratively in this theme.

Keywords: Disaster logistics, Bibliometry, Scopus, Biblioshiny.

Jel Codes: M11, L9, R4, O18.

[1] **Corresponding Author:** Phd, The Ministry of National Defense, ORCID: 0000-0002-4443-3102, azizyurttas1987@gmail.com
[2] Associate Professor, Inonu Universty, ORCID: 0000-0001-5781-6543, mustafa.deste@inonu.edu.tr
[3] Phd. Student, Inonu Universty, ORCID: 0000-0003-2865-2599, turgayyildiriimm@gmail.com
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1. Introduction

In the last ten years, more than 2.6 billion people have been affected by natural events such as earthquakes, tsunamis, landslides, hurricanes, heat waves, floods and severe cold weather. These disasters cause mass deaths, which can strain local medical resources and prevent them from providing comprehensive and definitive medical care (WHO, 2023). A disaster is a natural or human-induced event that cannot be prevented from occurring. Disasters can be sudden, such as earthquakes and floods, or can develop slowly, such as drought and famine (Kapur, 2018: 7). Disasters around the world have always shown themselves from past to present and continue to show themselves. Some of these disasters are natural origins and some are human-caused (Köseoğlu, 2015: 6). World Health Organization (WHO) disaster; It is defined as "a sudden environmental (ecological) event that is of such severity and extraordinary magnitude that it requires external assistance" (Hogan & Burstein, 2002: 4). In the Annotated Dictionary of Disaster Management Terms of the Disaster and Emergency Presidency, disaster: "A disaster that causes physical, economic and social losses for the whole or certain segments of the society, stops or interrupts normal life and human activities, and the coping capacity of the affected society is not sufficient; nature, technology or human-induced event" (AFAD, 2021).

The United Nations Office for Disaster Risk Reduction (UNDRR, 2023) classifies disasters as minor, major, frequent and infrequent, slow and sudden onset disasters. A small-scale disaster is a type of disaster that only affects local communities and requires assistance beyond the affected community. A large-scale disaster is a disaster that affects a community and requires national or international assistance. Frequent and infrequent disasters depend on the probability of occurrence and return period of a particular hazard and its effects. The impact of frequent disasters may be cumulative or may become chronic for a community or society. A slow-onset disaster is defined as a disaster that emerges gradually over time. Slow-onset disasters, for example, drought, desertification, sea level rise, can be associated with epidemics. A sudden onset disaster is a disaster triggered by a hazardous event that occurs quickly or unexpectedly. Sudden onset disasters can be associated with, for example, earthquake, volcanic eruption, flash flood, chemical explosion, critical infrastructure failure, transportation accident.

Disasters of natural origin that negatively affect daily life are called natural disasters. Natural disasters continue to occur, increasing their impact and severity every day. It disrupts the social, cultural and economic activities of the society and causes loss of life and property (Kadıoğlu, 2020: 45). Natural disasters; earthquakes, floods, avalanches, landslides, etc. are

natural events. These events are disasters that occur within nature itself and are very difficult to prevent (Keçici, 1994: 24). Natural disasters are natural disasters that disrupt people's routine lives as a result of natural events (Dölek, 2021: 5).

2. Conceptual Framework

Some natural disasters that we can define as meteorological natural disasters are as follows: Flood and Inundation; floods and floods are often confused with each other. However, although there is a cause and effect relationship between them, floods are a situation that contains solid material and occurs in the upper basins, while floods are a situation that occurs in the valleys and lower basins and contains less solid material (Görcelioğlu, 1996: 11). Although the main factor of floods is precipitation, the geological and geomorphological conditions of the region are triggered by human actions that disrupt the hydrological balance, such as incorrect land use and opening of stream beds to settlement. Between 1998 and 2017, 45% of the number of people affected by natural disasters worldwide occurred in flood disasters (MGM, 2020). Disasters can be classified as natural and human-made disasters in terms of their causes, as shown in Figure 1 (Işık et al., 2012: 2).

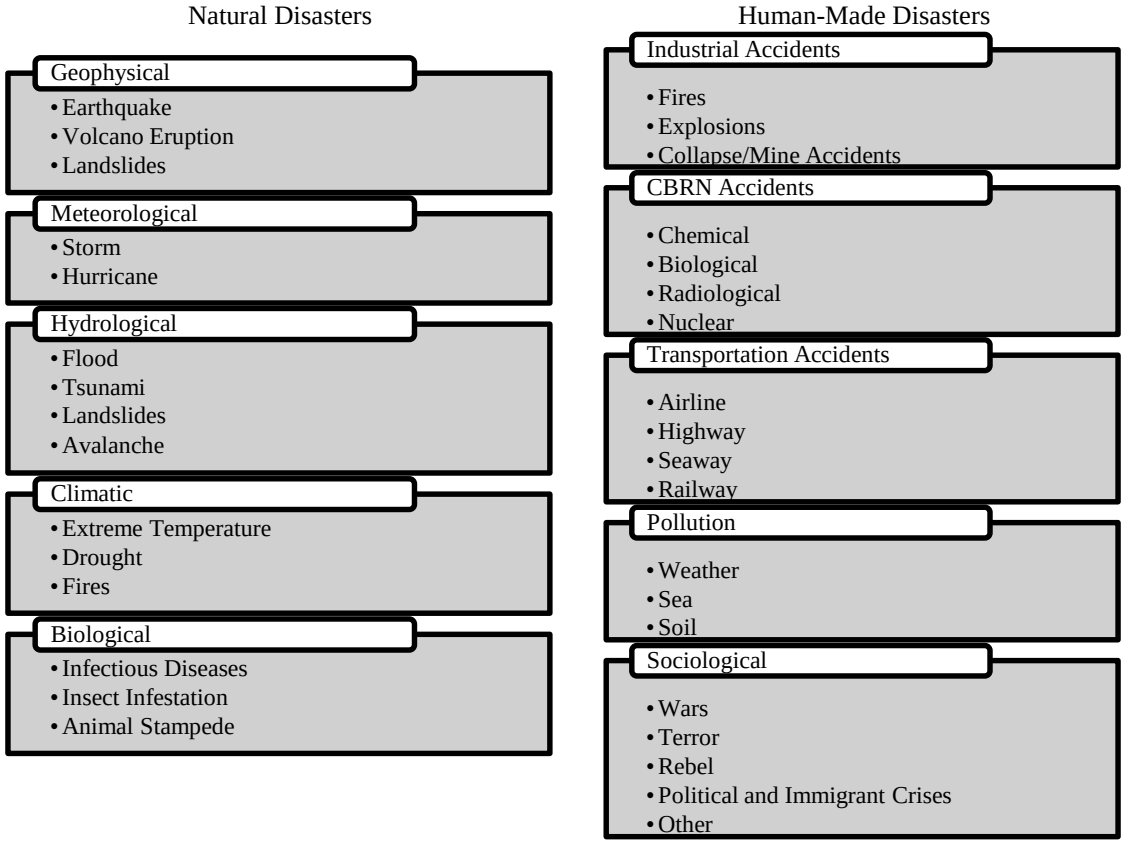

Figure 1.
Classification of Disasters
Source: Işık et al., 2012: 2.

Avalanche; it is a type of disaster that occurs as a result of the snow mass moving on the slippery surface and not being prevented by artificial or natural elements. When there is abundant snowfall, an avalanche may occur as a result of the downward movement of a large snow mass on the underlying snow layer, which is formed as a result of the wind lifting the fresh snow layer, which cannot fuse well with the old layer below, or when factors such as skiers and animals activate the unstable snow layer (AFAD, 2021). Avalanches usually occur in places with heavy snowfall, far from human population. With the development of technology, the easier transportation of people to the upper basins has led to an increase in winter tourism. Avalanche has become an important natural disaster event due to its impact on the roads used by people (Göl, 2005: 6).

Lightning; a sudden high-voltage electrical discharge that occurs within a cloud, between clouds, or between a cloud and the ground can be defined as lightning. Severe storms, dust clouds and volcanic eruptions can trigger lightning (Gökçekuş, 2018: 7). Whirlwind; it is defined as a tornado, a type of wind that moves in a cylindrical shape and has a large destructive effect, associated with cumulus clouds. Whirlwinds come in many shapes and sizes, but are generally funnel-shaped, touching the ground and often surrounded by a cloud of debris and dust. Under suitable surface and high atmospheric conditions, a severe thunderstorm can reach disaster proportions when one or more whirlwind develop (Türkeş, 2019: 6). We can also include forest fires in this group, even though some of them are human-caused. Let's examine in more detail some natural disasters that we can define as geological natural disasters.

Landslide; it is defined as the outward and downward movement of the slope, which consists of soil, rock, artificial fill material or a combination of these, under the influence of slope, water, gravity and other similar forces. Natural factors such as rainfall, geological structure, climate characteristics, vegetation and topography of the land affect landslides. Since landslides are the second most important natural disaster after earthquakes, they cause significant socio-economic damage such as cultural loss, loss of life, loss of natural heritage, economic damages and environmental impacts (Akıncı, 2015: 3). Landslides are generally seen in the Black Sea, Central and Eastern Anatolia Regions in Turkey. Although landslides are a part of natural disasters, in some cases human factors also have an impact. The main natural factors that trigger landslides are climate characteristics, geological structure and topography of the region, rainfall and vegetation. Unnatural human factors that triggered the landslide; population growth, uncontrolled illegal construction, unsuitability of zoning plans and road construction (Oktay, 2007: 8).

Volcanoes; Events where magma erupts from the surface of the earth are called volcanic eruptions. The effects of volcano eruptions occur depending on the structure, shape, eruption power of the volcano, chimney shape, erosion degree, lava rate, deformation, magma flow and tectonism conditions (Koçaklı & Zorer, 2020: 14). Research conducted by Hacettepe University and the French Blaise Pascal University in Turkey in 2006 determined that there are active volcanoes. It is concluded that Nemrut, Süphan, Erciyes, Ağrı, Tendürek and Hasan Mountains are still active. Especially seismic network studies conducted on Mount Nemrut have shown that Mount Nemrut has become active and the possibility of a volcano disaster is not remote (Aksoy, 2010: 15).

Earthquake; The case where the power released in consequence of the crushing of the ground cover due to crustal powers or magmatnic actions dissipates in the form of earth-shaking crimps and jerks the spheres and the earth they take place is called an earthquake (AFAD, 2021). Earthquake is a type of natural disaster that cannot be predicted in advance, where, when and how it will happen is unknown, and the damage it causes is quite large (Şengün, 2007: 33). Like most parts of the world, Turkey is exposed to many different types of natural disasters. The most common natural disasters in our country are earthquakes and landslides. Earthquakes are considered the most risky natural disaster due to their high destructive effect (Karancı *et al.* 2011: 7). Due to its location, our country is located on the Mediterranean-Alpine-Himalayan earthquake zone, one of the most active earthquake zones where approximately twenty percent of the earthquakes in the world occur, and 95% of our population lives in these regions. Therefore, 60% of the deaths resulting from disasters occur due to earthquakes. Between 1900 and 2020, 1,796 earthquakes with a magnitude of at least 5.0 were recorded in Turkey and its surroundings. In 2019, 23,646 earthquakes were recorded in our country and its surroundings, and when these earthquakes are evaluated according to their magnitude, most of them are too small to be felt; The largest earthquakes were observed as 164 earthquakes with magnitudes between 4.0 and 4.9, 18 with magnitudes between 5.0 and 5.9, and 2 earthquakes with magnitudes greater than 6.0. In 2023, 2 more major earthquakes occurred, 7.6 and 7.7 (AFAD, 2021). Türkiye is located on an important earthquake zone. On February 6, 2023, a double earthquake with a magnitude of 7.7 occurred at 4:17 in the Pazarcık district of Kahramanmaraş province and a magnitude 7.6 earthquake occurred at 13:24 in the Elbistan district of Kahramanmaraş province. Only 20% of earthquakes with a magnitude above 7.5 worldwide are double earthquakes. Among the double earthquakes in world history, the 6 February 2023 Kahramanmaraş earthquake went down in history as the double earthquake that caused the

highest loss of life (Kılıç Ekici, 2023: 9). Following the earthquakes, 7,184 aftershocks occurred. 14,740 personnel took part together with AFAD, law enforcement forces, NGOs and international search and rescue teams. 13,700 construction equipment worked in the region. 116 helicopters, 78 aircraft and 38 ships took part in aid activities (AFAD, 2023). It deeply affected Hatay, Adana, Osmaniye, Gaziantep, Şanlıurfa, Adıyaman, Diyarbakır, Kilis, a total of 10 cities, especially Malatya, which borders the province of Kahramanmaraş, which is the epicenter of the earthquake.

Human-made disasters are; Human disasters are divided into two groups: social and technological disasters. Social disasters are situations such as hunger, famine, terrorist incidents, forced migration and epidemics that cause problems in meeting people's daily needs. Technological disasters, on the other hand, are situations that result from mistakes in human use of the earth, that is, situations that lead to disasters such as the use of biological and chemical weapons, mining accidents, and major economic crises (Ünlü, 2019: 12). It occurs as a result of actions taken by individuals or a group of people (Yılmaz, 2003: 5). Both natural disasters and human-induced disasters cause serious geological and demographic changes in the geography where they occur.

It is not possible to prevent natural events from occurring. However, it is possible to reduce natural events becoming disasters and their subsequent effects. Again, the uncertainty of when disasters will occur requires always being prepared (Değerliyurt, 2013: 15). Natural disasters such as tsunamis, earthquakes, floods, hurricanes and human-made disasters such as terrorist attacks have the potential to seriously affect human life. Safe areas should be created to provide emergency care and basic needs to those whose homes are damaged or destroyed after the disaster. These safe shelter areas can meet the needs for short periods of time or serve disaster victims for long periods of time. For example, during Hurricane Katrina, many people were able to return to their homes eight years later. It is also important to build temporary housing where disaster victims can live until they return to their homes and permanent residences (Rakes et al., 2014: 160).

Although disaster management is defined with different words by many people in the literature, it essentially gives the same scope. Disaster management; It consists of the stages of mitigation, advance preparation, rescue and first aid, recovery and reconstruction in a disaster event, with the aim of preventing disasters and reducing damages. It is a multidimensional concept that requires all institutions and organizations of the society and resources to be directed towards this purpose in order to direct, coordinate and implement all the work that needs to be

donnee at these stages (Erkoç, 2001: 7). Therefore, the main goal and target in disaster management is to keep all possible negative effects of disasters at a minimum level. According to Kadıoğlu (2011: 9), these basic goals and objectives are summarized as follows:

• To prevent possible losses and risks by minimizing the risks that may cause loss of life and property.

• To save those who suffer primary damage from disasters.

• To protect property, natural environment, cultural and natural assets.

• To transform life after a disaster into something better than normal.

• Ensuring business continuity, continuity of services and sustainable development

In the pre-disaster period, risk factors are determined in the risk mitigation and preparation stages, and plans are made for infrastructure, capacity development and policy formulation. After disasters occur, processes such as health services provided to disaster victims by healthcare workers, meeting basic living needs such as food, water and shelter, and establishing food supply chains follow each other. During the reconstruction phase after the disaster, processes for debris removal, infrastructure, and construction of permanent shelters are carried out. Disaster management consists of successive processes. These processes are summarized in Figure 2.

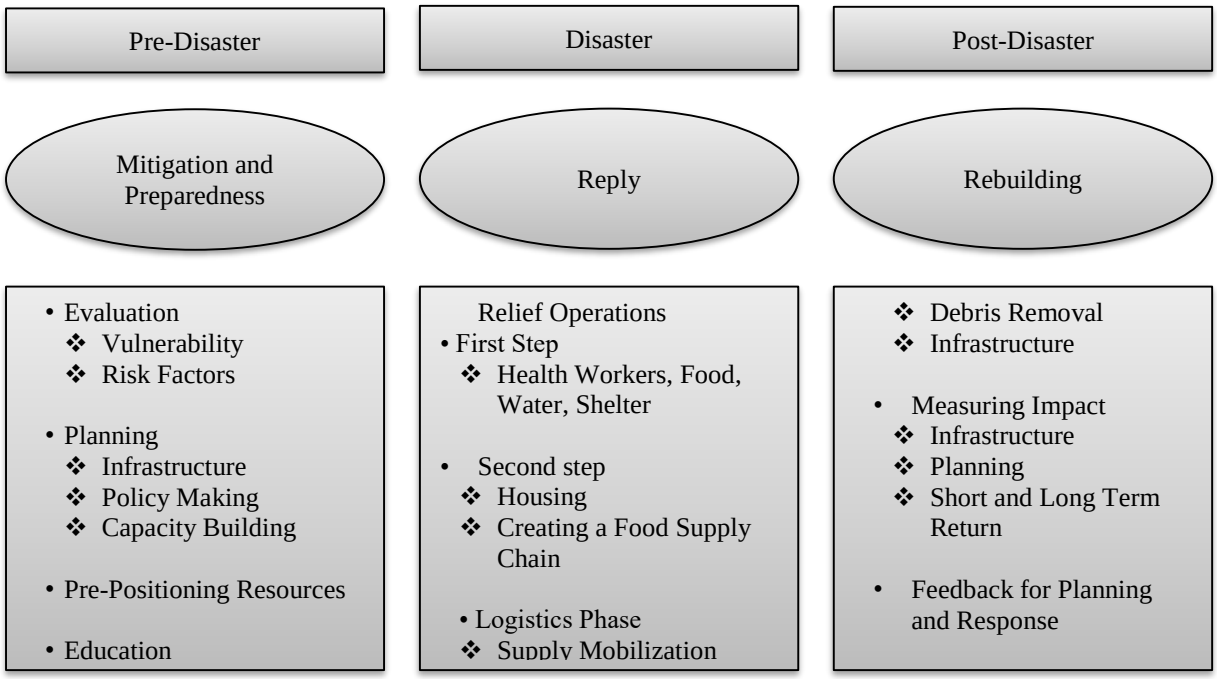

Figure 2.
Disaster Management Process
Source: Kumar & Havey, 2013: 6.

Logistics is defined as "effective and efficient planning and implementation of the transportation of all kinds of products, services and information flows from the point of origin to the point of arrival in order to meet the needs of people" (TDK, 2021). Strategies on how to provide logistics in the complex situation of the disaster should be included in disaster management. Disaster logistics needs to be planned completely and holistically in the decision-making system (Jung, 2020: 8). Legal legislation has a great role in supporting disaster-responsible urban planning decisions. Especially in developing countries such as Turkey, the priority issue is that disaster-related legislation should be addressed in a comprehensive and holistic way and that the cooperation between responsible institutions should be complete and strong within the framework of a holistic perspective in the implementation of plans (Erdin et al., 2017: 11).

Disaster logistics defines its area of responsibility as disaster preparedness, disaster process and aftermath; It is the effective and efficient planning, coordination, command, control and documentation of all measures for people and businesses directly or indirectly affected by the disaster to return to their normal lives, and the management of material, human resources and information (Tufinkgi, 2006). While the aim of business logistics is to increase profitability, the aim of disaster logistics is to help people and save lives. In this context, the general features of disaster logistics are shown in Table 1 (Çakır & Mutlu, 2020: 6).

Table 1.

General Features of Disaster Logistics

General Features	Explanations
Main purpose	To save lives and relieve the suffering of victims.
Other important purposes	To reduce the social, economic and environmental effects of disasters and to prevent epidemics.
Nature of the relationship between the parties	There is no commercial relationship between the victims who provide funds, engage in aid activities and receive aid.
Parties	Government, army, non-governmental organizations, aid agencies, media, disaster victims.
Logistics activity phases	Preparedness, Response and Recovery.
Basic features	The location, time and severity of the disaster cannot be predicted exactly. Supply and demand are uncertain and variable, the disaster environment is chaotic and there are coordination problems, and there has been no profit motive.
Supply network philosophy	Since the demands has not been clear at the beginning, aid organizations determine what the needs are themselves. During the construction phase, demands come from the event area and supply has been made accordingly.
Transport and infrastructure	Since the transportation infrastructure was damaged in the disaster, there has been a problem in delivering essential needs such as food and medicine.
Time impact	Delays can lead to death.
Execution activity with limited information	Although information on demands is insufficient at the initial stage, urgent action has been required. Supply networks need to be planned and activated immediately.
Supplier structure	Options are limited. It is necessary to work with suppliers that are not desired or that exist due to the pressure of resources.
Control mechanism	Due to emergency conditions, operations are not controlled from a single center.

Activities in disaster logistics are generally carried out in disrupted infrastructure conditions, such as damaged or heavily affected transportation infrastructure, electricity, gas and water outages. Due to the nature of natural disasters, it is not possible to predict the disaster that may occur. Therefore, it is very difficult to predict demand and meet it quickly. Therefore, the response process requires a well-planned and intensive logistics activity to the disaster area (Ersoy & Börühan, 2013: 5). The stages of disaster logistics are evaluated in three parts (Pektaş, 2012: 9). These stages are shown in Figure 3.

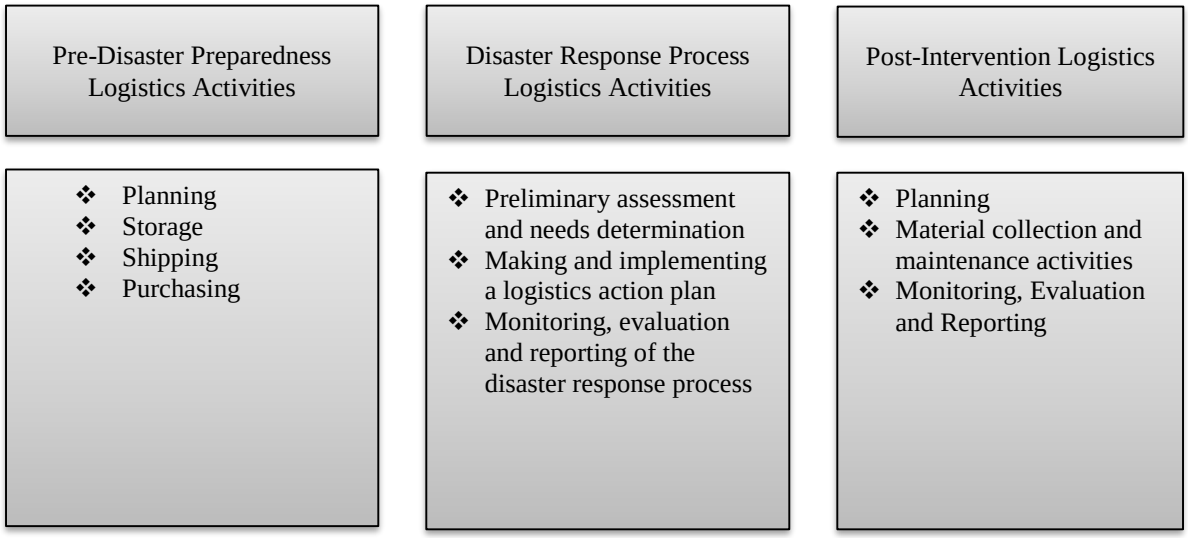

Figure 3.
Stages of Disaster Logistics
Source: Pektaş, 2012.

The logistics function of disaster management is at least as important as the operation. Disaster logistics is an area that is constantly being studied today and new approaches are being created. In particular, disasters should be viewed on an event-by-event basis. Because each disaster can have very different characteristics depending on its type, severity, time and geography when it occurs, and the sensitivity of that place. For these reasons, continuous measurement of risk and revision of disaster management plans are required, taking these criteria into account. Disaster management needs to be event-based and dynamic.

3. Scope and Methodology

In the work, a bibliometric analysis was conducted of scientific works produced from 2018 to 2023, all partaken in English. The data utilised in the analysis have been acquired from the "Scopus" data base. A dual-choice seek has been performed through "Scopus" to get the donne of the journal got out from 2018 to 2023. The title of the subject “Disaster Logistics” has been used as the first search criterion. When the search was made, a total of 11.794 studies were

found. However, this result is the number of all studies of the journal uploaded to "Scopus". In order to reach the studies conducted between 2018 and 2023, which constitute the purpose of the study, a second filtering has been made, taking into account the date. 4.686 studies conducted between 2018-2023 have been obtained. Subsequently, 3.855 studies published only as articles in these studies have been downloaded in plain text file (txt) format for analysis on November 21, 2023. Obtaining the data is visualized in the light of Figure 4.

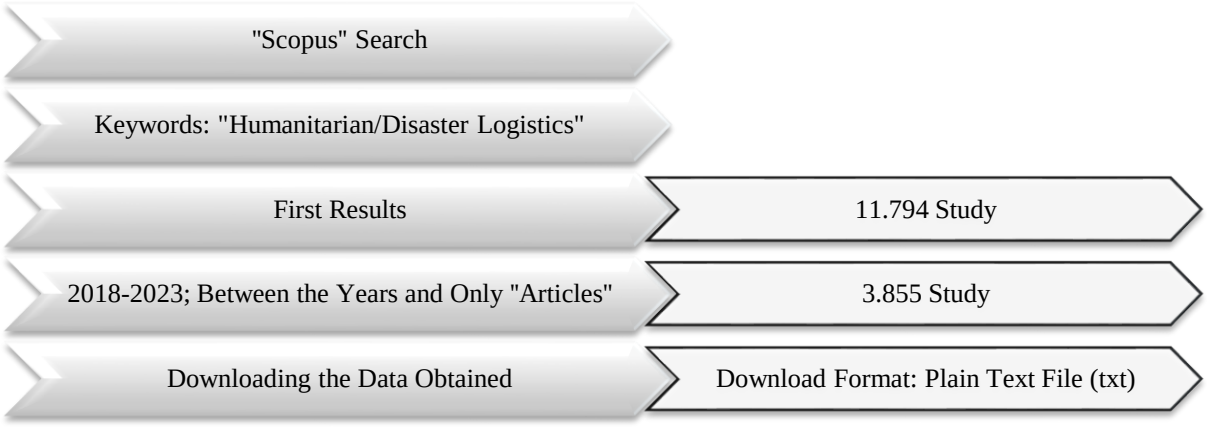

Figure 4.
Research Design

The examinations were made with the “biblioshiny” version of the R-Studio (version: 4.1.3) program, which is generally preferred in bibliometric studies (Aria, & Cuccurullo, 2017; Guleria & Kaur, 2021). Additionally, in order to appeal to the eye and ensure complementarity, VOSviewer (version: 1.6.18) developed by Nees Jan van Eck and Ludo Waltman (2010) was used in the research (Guleria & Kaur, 2021). Microsoft Office Excel 2016 was used to create the graphs that we used especially in the findings section.

General details of the sample studied were created with R-Studio. These details are presented in tabular form thanks to Microsoft Excel 2016. The articles included in the research are classified graphically by year. The countries where the articles were prepared are shown graphically. These countries are colored on the world map with R-Studio. Subsequently, the keywords mentioned in the articles published within the scope of disaster logistics were presented graphically. These keywords were added as a word cloud image via R-Studio. Subsequently, the keywords in question are presented as figures by relating them in terms of subject and time. In the continuation of the article, the journals and authors who published the most articles within the scope of the research topic from 2018 to 2023 were examined with R-Studio and presented graphically, name by name. Subsequently, information about the institutions that published the most articles within the scope of disaster logistics was examined

with R-Studio and presented graphically. Towards the last part of the article, the most cited countries and articles within the scope of the subject were examined with R-Studio and presented graphically.

Based on the bibliometric criteria comprehensively mentioned in the methodology section, in the findings section of the bibliometric study conducted in the "Scopus" database, general information about the studies has been shown and explained in a table under the general findings subheading. Then, together with the analysis of the data, the findings of the analysis of bibliometric criteria have been shown.

4. Findings

It was observed that 3,855 studies haev been published at the article level between 2018 and 2023. It has been designated that the total custom of citations was 133,326. The total number of sources for the studies has been determined as 1,213. There have been a total of 14,968 keywords belonging to the 3,855 studies in question. A total of 24,038 authors have been participated in the studies carried out in the field of "Disaster Logistics". 65 of these consist of single-authored studies and 3,790 of them consist of multi-authored studies. The general findings obtained after the analysis are shown in Table 2.

Table 2.
Summary of the Findings

Data	Results
Time period in which the study was carried out	2018:2023
Number of studies	3.855
Total number of citations	133.326
Number of Sources (Journals)	1.213
Number of keywords	14.968
Number of writers	24.038
Number of single-authored works	65
Number of multi-author works	3.790

When Figure 5 is examined, the numerical distribution of the studies conducted between 2018 and 2023 is seen. According to this figure, it has been seen that the most studies on the concept of "Disaster Logistics" have been conducted in 2022, with 700. In the light of this information, it is likely to say that the number of works conducted has increased and varied over the years, starting from 2018.

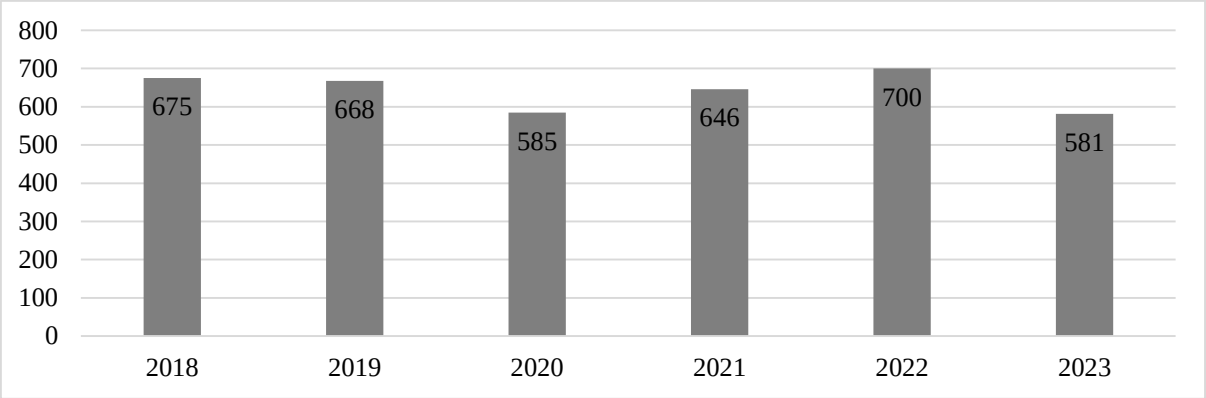

Figure 5.
Distribution of Studies by Years

When Figure 6 is examined, a comparison of the first 20 countries among the broadcasting countries is made. Among the countries working within this framework, there have been 8,423 participants from the USA. Additionally, China followed with 2,550 studies, UK with 1,665, and Japan with 1,264. Contrary to these countries, it has been observed that participation has been achieved at the level of Israel 242 and India 239. In the light of this information, it can be said that the interest levels of countries regarding the concept of "Disaster Logistics" are high. Figure 6 below shows the distribution of studies by country and number.

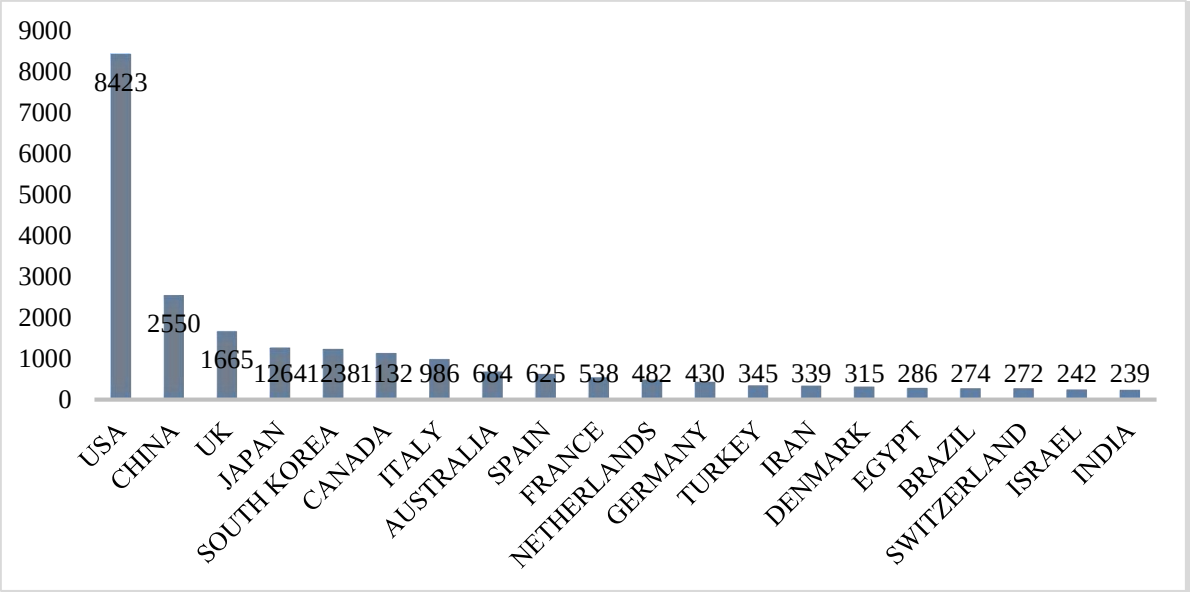

Figure 6.
Distribution of Studies by Country

Additively the biometric analysis donnee, the participation rates of countries for 3,855 studies published between 2018 and 2023 are also visually presented in Figure 7 below. The most intense participation is in the United States of America and Alaska, which belong to the North American continent. Again, it is seen that the attendance rate from the Asian continental

is at a good degree. Besides, unlike other continents, it has been determined that the level of attendance from the African continental is vile.

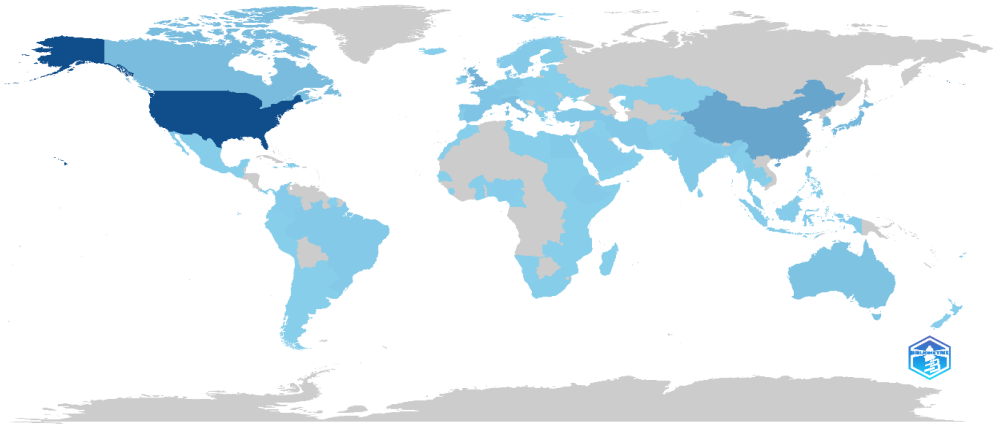

Figure 7.
Degree of Attendance of Countries in Works

When Table 3 is examined, the keywords used in studies on "Disaster Logistics" are shown. The 18 most frequently used keywords in the literature between 2018 and 2023 were discussed. It was observed that the most commonly used word among these words was female 4.495, male 4.352, adult 3.300, human 2.954, aged 2.672.

Table 3.
The Most Used Keywords

Başlık	**Frekans**
Female	4.495
Male	4.352
Adult	3.300
Human	2.954
Aged	2.672
Article	2.667
Middle aged	2.588
Humans	2.557
Major clinical study	2.260
Statistical model	1.554
Logistic models	1.519
Controlled study	1.512
Retrospective study	1.506
Emergency ward	1.298
Adolescent	1.286
Retrospective studies	1.180
Cohort analysis	1.058
Young adult	1.022

In addition to this information, the keywords used by the authors were visualized through the VOSviewer program and the connections between them were determined. The word cloud created with keywords is shown in Figure 8 below.

Figure 8.
Relationship Cloud Image of Keywords

Within the scope of the research, 270 articles with a common word count of 7 or more were investigated. As a result of the analysis, 9 clusters and 270 studies emerged. Figure 9 presents the Co-Linked Keyword Set. When the relevant figure is examined, the light red “cluster 1” consists of 60 studies. The green one, “cluster 2”, consists of 9 studies. The blue one, “cluster 3,” consists of 43 studies. The yellow one, “cluster 4”, consists of 31 studies. The purple one, "cluster 5", consists of 20 studies. The turquoise "cluster 6" consists of 20 studies. The orange one, "cluster 7", consists of 19 studies. The brown one, "cluster 8", consists of 17 studies. Finally, the pink one, “cluster 9”, consists of 10 studies. The first cluster covers studies on disease and emergency cases. The second cluster includes studies on the theme of COVID-19 and health, the third cluster includes joint studies on social and community health, and the fourth cluster includes studies on climate change, air pollution and health. The fifth cluster includes joint studies on the effects of disasters on children's health, the sixth cluster includes studies on health and social development, and the seventh cluster includes joint studies on artificial intelligence-based logistics. The eighth cluster includes studies on post-outpatient patient care and finally the ninth cluster; It includes joint studies on logistics models and telemedicine applications.

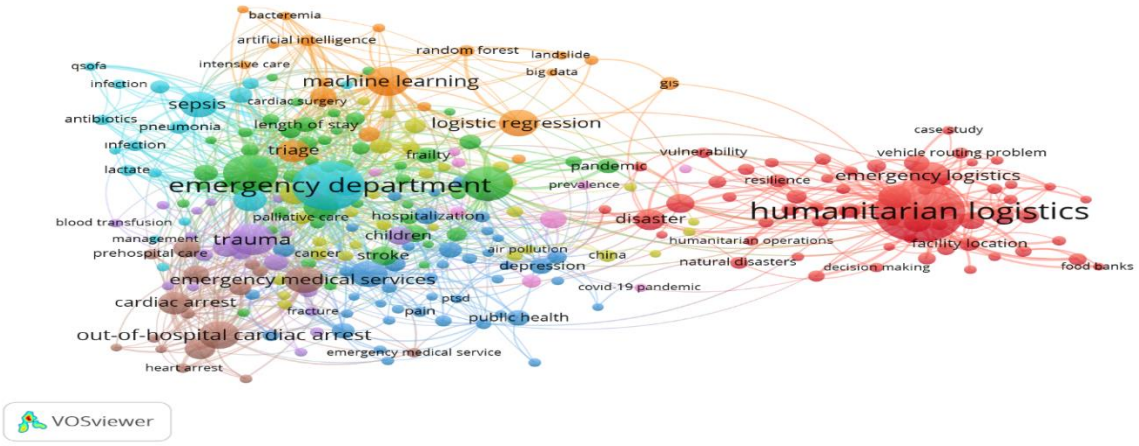

Figure 9.
Co-Linked Keyword Set

The historical usage of keywords between 2018-2023 is visualized in Figure 10. If the relevant figure is examined, the dark colors (purple and blue) show that the use of the words is older, in other words, before 2020, that is, convergent to 2018. As the colors become lighter, it becomes clear that the words are more current. Especially the words represented in yellow indicate the words used in the newest and current studies. Additionally, the darkest colors (purple and blue) represent the words epidemiology, emergency medical services, emergency department, disaster logistics. In the figure, as the colors become lighter, especially in the (green) colored cluster; It has been seen that the keywords include machine learning, description model, pandemic, uncertainty, earthquake. The words shown in 2021 and later (yellow) in the figure are; It has been observed that there are COVID-19, Sars-cov2, biomarkers, artificial intelligent and hospital mortality.

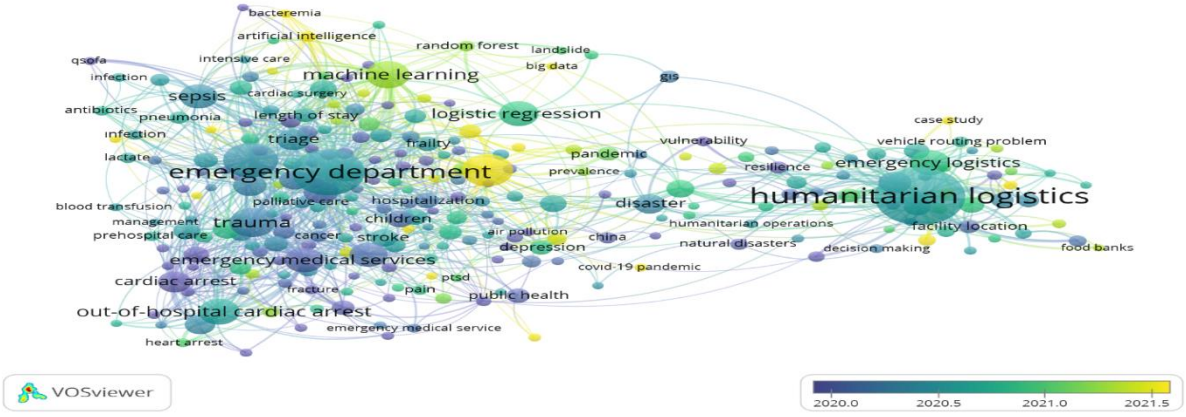

Figure 10.
Co-Linked Keyword Set Based on Date

The top 10 journals that have done the most studies on the theme of "Disaster Logistics" between 2018 and 2023 are shown in Figure 11. In line with Figure 11, it is seen that American Journal of Emergency 191, Plos One 121, International Environmental Research At Public Health 77 studies. Again, in line with the information given in the graph, it was determined that American Surgeon published 36 studies, European Journal Of Operational Research 38, Annals Of Operations Research 40 studies.

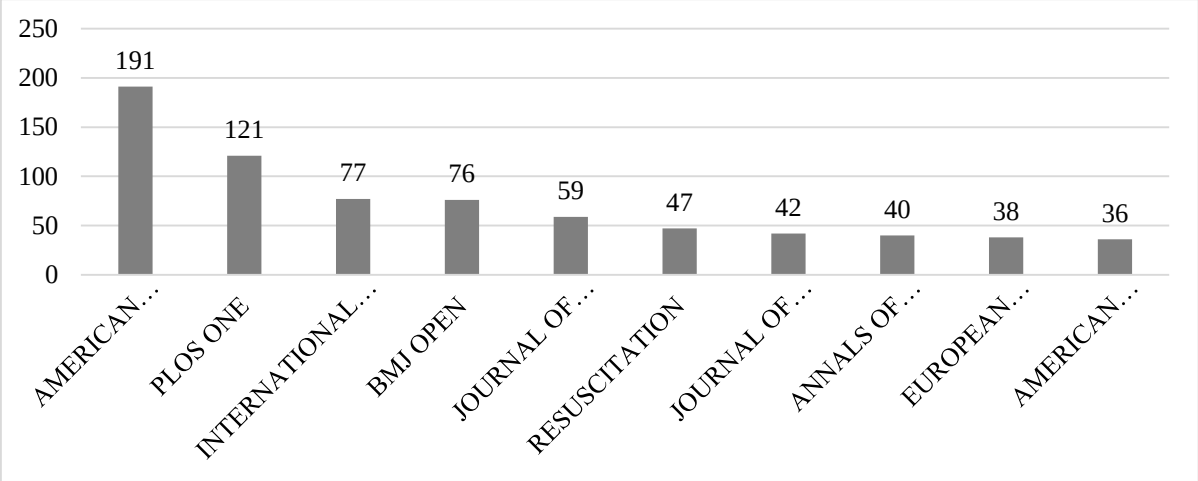

Figure 11.
Journals with the Most Works

The top 10 writers who have completed the most work between 2018-2023 are shown in Figure-12. In this list, Wang Y. was seen to be the leader with 40 studies. Following this order; Zhang Y. 39, JR 31, Shin SD 31, Ro YS. It was seen that there were 28. In light of the above information, it can be said that the authors are productive on the subject of "Disaster Logistics".

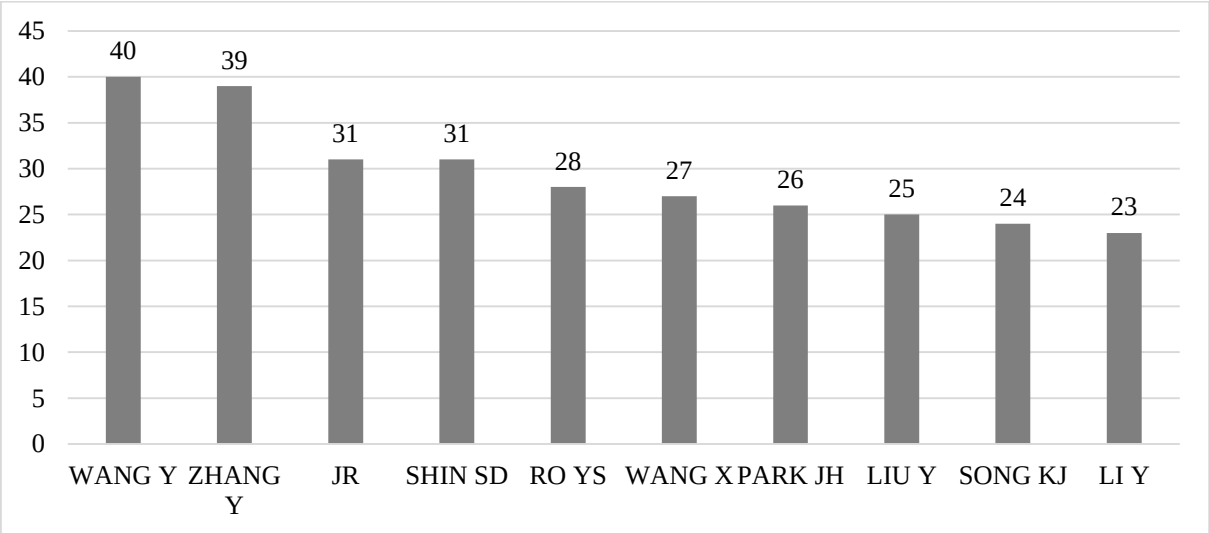

Figure 12.
Authors Who Have Created the Most Work

Information about the top 10 institutions that conducted scientific research on "Disaster Logistics" between 2018-2023 is shown in Figure 13. Harvard Medical School ranked first with 240 studies. This rank was followed by University of California with 191, Seoul National University Hospital with 129, and University of Toronto with 128. If a general evaluation is made, it can be said that the studies carried out by the institutions are scientifically valued.

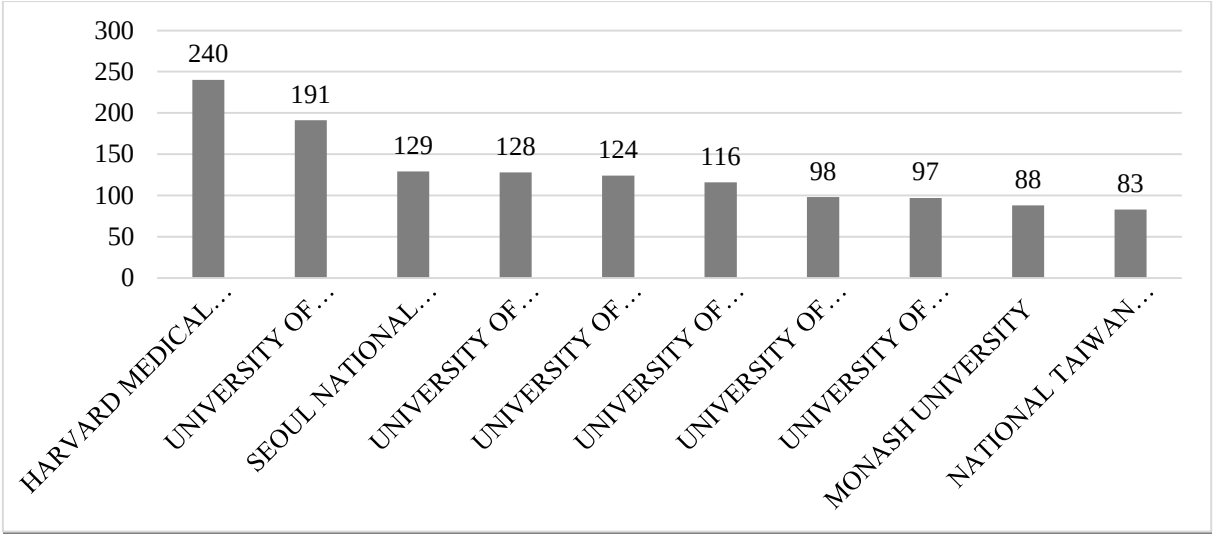

Figure 13.
Institutions That Have Done the Most Work

The amount and rates of citations received by the first 20 countries of 3,855 studies on the subject of "Disaster Logistics" between 2018 and 2023 are shown in Table 4. If the table is evaluated, it can be seen that USA ranks at the top with 14,478 studies and a rate of 12%. For this reason, it seems that USA's studies on the subject of "Disaster Logistics" are considered to be of superior scientific value. In addition, it is seen that China follows the list with 4,661 studies and a rate of 10.20%, United Kingdom with 2,606 studies and a rate of 16.50%, and Korea with 1,678 studies and a rate of 8.60%. From this perspective, we can say that the scientific research studies carried out by the 20 countries mentioned have contributed greatly to the relevant literature.

Table 4.
Most Cited Countries

Ülke	Atıf Miktarı	Atıf Oranı (Yıllara Göre)
USA	14.478	12,00
Chına	4.661	10,20
Unıted Kingdom	2.606	16,50
Korea	1.678	8,60
Canada	1.672	10,40
Iran	1.475	16,60
Italy	1.296	15,20
Japan	1.128	7,20
Spain	1.110	20,20
Australia	1.063	10,60
Netherlands	812	12,90

Ülke	Atıf Miktarı	Atıf Oranı (Yıllara Göre)
Turkey	802	10,70
France	610	9,70
Indıa	558	12,10
Germany	496	8,90
Swıtzerland	481	13,00
Sweden	434	11,40
Hong kong	417	20,90
Ireland	398	19,90
Denmark	364	7,90

The most cited studies on the concept of "Disaster Logistics" between 2018 and 2023 are shown in Table 5. In the list; Palaiodimos ranked first with 559 citations to his work in 2020 and a rate of 139.75%. Later, Nurmagambetov received 499 citations for his work in 2018 and a rate of 83.17%, Lipson Sk received 405 citations for his work in 2019 and a rate of 81%, Gupta Rs received 405 citations for his work in 2018 and a rate of 67.50%. Moreno-Perez was among the most popular studies with 368 citations for his work in 2021 and a rate of 122.67%, and Hong H was among the most popular studies with 256 citations for his work in 2018 and a rate of 42.67%. If the above table is generally summarized; It can be said that the studies carried out are considered scientifically valuable.

Table 5.
Quantile of Most Cited Works

Writer Information	Issue Information	Total Number of Citations	Citation Rate (Annual)
Palaiodimos et al., 2020	Severe obesity, increasing age and male sex are independently associated with worse in-hospital outcomes, and higher in-hospital mortality, in a cohort of patients with COVID-19 in the Bronx, New York	559	139,75
Nurmagambetov et al., 2018	The Economic Burden of Asthma in the United States, 2008 – 2013	499	83,17
Lıpson et al., 2019	Increased Rates of Mental Health Service Utilization by U.S. College Students: 10-Year Population-Level Trends (2007–2017)	405	81,00
Gupta et al., 2018	The Public Health Impact of Parent-Reported Childhood Food Allergies in the United States	405	67,50
Moreno-Pérez et al., 2021	Post-acute COVID-19 syndrome. Incidence and risk factors: A Mediterranean cohort study	368	122,67
Hong et al., 2018	Application of fuzzy weight of evidence and data mining techniques in construction of flood susceptibility map of Poyang County, China	256	42,67
Cartenì et al., 2020	How mobility habits influenced the spread of the COVID-19 pandemic: Results from the Italian case study	223	55,75
Lei et al., 2019	Resilient Disaster Recovery Logistics of Distribution Systems: Co-Optimize Service Restoration with Repair Crew and Mobile Power Source Dispatch	197	39,40
Raita et al., 2019	Emergency department triage prediction of clinical outcomes using machine learning models	187	37,40
An et al., 2020	Prevalence of depression and its impact on quality of life among frontline nurses in emergency departments during the COVID-19 outbreak	169	42,25

5. Results

In emergency situations such as natural disasters, transportation accidents, industrial accidents and terrorism, which are the fate of our country as well as our world, it is necessary to intervene as quickly as possible in order to save lives and limbs and prevent a social crisis. The biggest actor of this intervention; it will be logistics with its players such as material supply, storage, fair distribution, transportation, human resources, and health service provision. In order to ensure high efficiency for disaster stakeholders and to use scarce resources to save more people's lives, it is necessary to reduce costs while increasing efficiencies through investments in basic technologies and training of human resources. It has been considered that state and civil institutions should work together in coordination, and at the same time, efforts should be made to increase public awareness and increase capacities. Systems should be designed to measure the performance of logistics systems in a transparent and evidence-based manner, and finding the financial resources needed during the preparation stages should be facilitated.

Works and investigate conducted by academicians and area authorities demonstrate that take care of the subject of disaster logistics has extended and increased considerably year by year. For this reason, it is very crucial to examine in depth the works carried out in the area of disaster logistics in asmuch as see the high level review and augment situational awareness. In line with this objective, when a search has been made based on the research topic, a total of 11,794 studies have been found. However, since this result has been the number of all studies of the journal uploaded to "Scopus", a second filtering has been made by taking the date into account to reach the studies conducted between 2018 and 2023, which constitute the purpose of the study. 4,686 studies conducted between 2018-2023 have been obtained. Later, 3,855 studies published only as articles have been included in the review.

In consequence of the analysis, it was designated that the studies were quite well-liked with 133,326 citations. It was designated that 65 published articles had a single author and 3,790 articles had multiple authors. According to this assignation, it can be told that the writers opt for corporate work rather than individuum work. The dispensation of the articles brought out in our study by years is expensed in a table. As for that this scene, it would not be false to tell that today the topic of disaster logistics is given more crucial than in former years. Then, the dispensation of articles by country, the most in requested keywords in the retrieval engine, the dispensation by journals, the dispensation by writers, the dispensation by the most cited writers and the dispensation by the most cited countries are included. These data are shown in tables.

In our study, relationship analyzes were made considering the co-citation connections of the works, the connections between the countries where the articles were published, and the connections between the journals where the works were gotten out, using "R Studio" and "VOSviewer" package programs. On the other hand, analyzes were made and visualized by looking at the links between the words searched in search engines.

The analysis of our study was carried out by making the factors and distinctions generally used in such articles. In this regard, since too many and various amounts of variables were already used in our study, no other variables were deemed necessary. The important findings from the article are as follows:

• In the context of the study, it can be said that the concept of disaster logistics has made progress since 2018. In addition, it was observed that disaster logistics continued in those years despite the COVID 19 epidemic. Again, in the earthquake of February 6, 2023 in our country, it was understood how important disaster logistics is, and disaster logistics continued in those difficult days.

• In the context of the study, it, it was determined that 3,855 of the 4,686 works handled on disaster logistics between 2018-2023 were conducted at the article level and the USA was the leading country with 8,423 studies.

• In the context of the study, it was observed that the year in which the most research was handled was 2022, with 700 works from 2018 to 2023, and the journal that conducted the most studies in the said period was the American Journal of Emergency with 191 articles.

• In the context of the study, it was designate that the author who published the most works between 2018-2023 was Zhang Y. with 39 studies, and the institution that produced the most studies was Harvard Medical School with 240 studies.

It is thought that the research will support the authorities in the future about what has been donnee in the past and the current situation in the context of disaster logistics. Considered in this way, it is evaluated that the article will provide a perspective for government officials, voluntary organizations, aid associations and those working in this field. In other words, it is estimated that this study will provide the opportunity to compare future studies within the scope of disaster logistics. In subsequent articles, the geographical locations, technological levels, national income per capita, and measures taken against disasters of the countries interested in disaster logistics can be researched and analyzed in detail. Additionally, for the purpose of such bibliometric analysis, programs other than those used in this article can be used, if available. In

order to contribute to the development process of researchers and research, it is considered that it would be useful to conduct research with research ideas in future studies, such as what the distribution of future studies should be according to topics and determining the journal indexes of the studies.

By conducting like wide ranging link article, this work provides a general perspective on the field of disaster logistics and reveals how important it is.

Peer-review: Externally peer-reviewed.

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