Research Article

Mapping the Landscape of Disaster Research: A Comprehensive Bibliometric Analysis*

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Abstract: In the event of a disaster, the resulting material and moral damages are inevitable. Therefore, it is crucial to implement effective disaster management strategies to mitigate the impact of such occurrences. In order to achieve this, it is essential to conduct comprehensive examinations of both qualitative and quantitative studies on various disasters. This process allows for the identification of methodological changes, the assessment of needs, and the formulation of suggestions in the field of social sciences related to disasters during the disaster period (short term; long term). In this context, it is crucial to understand the studies conducted before and after disasters, as well as the effects of disasters on successful disaster management. This study aims to conduct a meta-analysis of disaster studies in the literature and to reach a general conclusion by evaluating the results of the studies obtained in the literature. In this context, the study aims to reach general conclusions about the effects of disasters by qualitatively and quantitatively examining the studies related to the subject in the journals scanned by WOS through keywords such as disaster, COVID-19, flood, and natural disasters.

Keywords: Disaster, Bibliometric Analysis, Social Science, Disaster Policy
Jel Codes: H84, Q54, Q58

Afet Araştırmalarının Haritasını Çıkarmak: Kapsamlı Bir Bibliyometrik Analiz

Öz: Bir afet durumunda, ortaya çıkan maddi ve manevi zararlar kaçınılmazdır. Bu nedenle, böyle olayların etkisini azaltmak için etkili afet yönetim stratejilerinin uygulanması çok önemlidir. Bunu başarmak için, çeşitli afetler üzerine yapılmış niteliksel ve niceliksel çalışmaların kapsamlı bir şekilde incelenmesi gereklidir. Bu süreç, afet döneminde afetlerle ilgili sosyal bilimler alanında metodolojik değişikliklerin belirlenmesine, ihtiyaçların değerlendirilmesine ve önerilerin formüle edilmesine olanak tanımaktadır. Bu bağlamda, afetlerden önce ve sonra yapılan çalışmaları ve afetlerin başarılı afet yönetimi üzerindeki etkilerini anlamak önemlidir. Bu çalışma, literatürdeki afet çalışmalarının bir meta-analizini yapmayı ve literatürde elde edilen çalışmaların sonuçlarını değerlendirerek genel bir sonuca ulaşmayı amaçlamaktadır. Bu bağlamda, çalışma, WOS tarafından taranan dergilerdeki afet, COVID-19, sel ve doğal afetler gibi anahtar kelimelerle ilgili çalışmaları niteliksel ve niceliksel olarak inceleyerek afetlerin etkileri hakkında genel sonuçlara ulaşmayı amaçlamaktadır.

Anahtar Kelimeler: Afet, Bibliyometrik Analiz, Sosyal Bilimler, Afet Politikası
Jel Kodları: H84, Q54, Q58

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1. Introduction

Disasters, whether they arise naturally or result from human activities, are highly intricate occurrences that create various stressors. These stressors interact with various aspects of individuals and their surroundings, leading to diverse outcomes that unfold

* This study is derived from the doctoral dissertation in progress, titled "The Impact of Disasters on Surveys: Research in Times of Disaster".

over time (Norris, 2006). Disasters are also formidable challenges that test the ability of societies and nations to protect their populations and infrastructure effectively, minimize the loss of both lives and property and recover rapidly (Altay & Green, 2006). They can be triggered by natural phenomena such as earthquakes, floods, and hurricanes or by human causes like pandemics, wars, and acts of terrorism (Keya et al., 2023). Disasters can have devastating economic, social, and environmental impacts, leading to complex, long-term challenges for affected communities. Additionally, they can have psychological effects on individuals, families, and communities, resulting in anxiety, depression, and post-traumatic stress disorder. It is crucial to have resources and support available to aid these communities in recovery and reconstruction. This includes access to mental health services, financial assistance, job training, and housing support. Disaster response teams should also prioritize providing relief through food, water, and shelter.

Disasters, which were often attributed to a divine power in ancient times, encompassing natural phenomena such as earthquakes, floods, and volcanic eruptions, prompted societies to develop greater resilience against disasters in the Middle Ages. Particularly after the Second World War, efforts were made to mitigate the devastating effects of disasters through the establishment of international aid organizations and disaster management agencies. For a considerable period, the most concerning disasters for humanity have been epidemics. However, it was not until the 19th century that scientific knowledge was empirically applied to the study of these disasters. In 1854, the British physician John Snow investigated the London cholera outbreak using cluster analysis of the geographical distribution of cases and implemented control measures based on the results of his research (Arcos González & Cernuda Martínez, 2023).

John Snow's work in 1854 emphasized the importance of geographic analysis in understanding and controlling epidemics. By studying the geographical distribution of disease cases, Snow determined the relationship between a particular water source and the disease, thus identifying the source of the epidemic. Geographic analysis has become a critical tool for understanding how diseases spread, identifying risk areas, and implementing effective measures. Today, the lessons learned from this study are influencing modern disaster management and epidemic control strategies. Geographic analysis is used as a key tool in monitoring patterns of disease spread and determining public health measures. Additionally, the use of scientific information and data to respond quickly and effectively to such incidents has become even more important today.

Natural disasters have increased by over 200% in the last decade, affecting more than two billion people (Pennell et al., 2014). The widespread belief that climate change, especially with global warming, negatively affects disasters suggests that humanity will struggle with disasters and crises in the coming years. Crisis and disaster studies have made significant progress in the last two decades and have attracted the attention of researchers. Wolbers et al. (2021) considered a two-decade systematic view of crisis and disaster research. They determined that the evolving literature focuses on disaster risk reduction, crisis communication, crisis informatics, and community resilience. While it is emphasized that research on crisis and disaster generally focuses on single case studies and exploratory research and that comparative case studies and explanatory research have increased in crisis research, it is argued that methodological diversity is limited. However, it is seen that new methods, such as experimental studies and discourse analysis, are also used, albeit limited. The authors argue that future research should demonstrate development to respond to the challenges faced by new technologies, climate change and geopolitical dynamics and emphasize the need to go beyond individual case studies.

Current disaster research includes identifying and characterizing the population exposed to or at risk of disaster and studying and creating an exposure model for each specific type of disaster. It is developed for various purposes, such as estimating the incidence and prevalence of different types of disasters and measuring their effects in the short, medium and long term. Assessing needs planning appropriate and effective types

of assistance. Research is also being carried out in disasters to model and predict occurrence and design adequate and effective prevention, preparedness, mitigation, and rehabilitation strategies (González et al., 2023).

In this study, the studies in the literature on disaster research in social sciences in the journals indexed by Web of Science are examined by meta-analysis method and methodological changes, needs and suggestions in the studies related to disasters in the disaster period (short and long term) are revealed. Through the general results in the literature, it is aimed to reveal the methodological change in disaster studies over time and the gaps in the literature on disaster studies. Finally, policy recommendations are made in line with the results obtained.

The remainder of the study is organized as follows. First, a literature review is conducted by examining disaster studies in the journals scanned in the Web of Science. In the second stage, a conclusion section is presented that makes policy recommendations in line with disaster policies, based on the information obtained from the literature review.

2. Literature Review

Bibliometric analysis is a research method involving quantitative analysis of academic literature, typically using bibliographic data. Bibliometric analysis aims to evaluate and measure various aspects of scientific and scholarly activity within a particular field or discipline. This method relies on statistical and mathematical techniques to assess publication patterns, collaboration, and citation within a body of literature. Bibliometric analysis is widely used in various academic disciplines to evaluate the productivity, impact, and trends in research. Researchers, institutions, and policymakers use the results of bibliometric analyses to make informed decisions, assess the significance of research output, and identify emerging trends within a given field.

There is a long history of work in bibliometrics dealing with bibliometric networks, such as coauthorship, bibliographic coupling, and cocitation networks (Perianes-Rodriguez et al., 2016). These methods have been used to identify influential authors and papers and to analyze the evolution of scientific fields. Bibliometric networks have also been used to study the dynamics of scientific collaboration and identify research topics. It is a quantitative method for studying bibliographic material and is a valuable tool in various fields. Donthu et al. (2021) provides a comprehensive overview and guidelines for conducting this type of analysis, emphasizing its utility in exploring and analyzing scientific data (Donthu et al., 2021). Merigó & Yang (2017) and Merigo & Yang (2014) both demonstrate the application of bibliometric analysis in finance and operations research, respectively, by identifying influential authors, institutions, and trends in these fields. Sengupta (1992) further contextualizes bibliometric analysis within the broader library and information science framework, highlighting its potential for problem-solving in this domain (Sengupta, 1992). Critical components of bibliometric analysis include:

1. *Publication Analysis:* Examining patterns of publication output, such as the number of publications over time, distribution across journals, and geographic locations of authors.
2. *Authorship Analysis:* Investigating author-related metrics, such as the number of authors per publication, collaboration patterns, and the identification of prolific authors.
3. *Citation Analysis:* Analyzing the citations that a particular set of publications receives can provide insights into the influence and impact of specific works or authors.
4. *Journal Analysis*: Assessing the impact factor and ranking of journals in a specific field and analyzing the distribution of publications across different journals.
5. *Keyword Analysis*: Identifying and analyzing the keywords used in publications to understand the key themes and topics within a field.
6. *Institutional Analysis*: Examining the contributions and collaborations among different institutions or research organizations.

Bibliometric analysis is a popular and rigorous method for exploring and analyzing large volumes of scientific data (Donthu et al., 2021). Bibliometric indicators are significant for researchers and organizations (Durieux & Gevenois, 2010). For instance, citation analysis can show what journals, organizations, and even countries have a high impact in different research fields. Bibliometric methods will complement meta-analysis and qualitative structured literature reviews for reviewing and evaluating scientific literatüre (Zupic & Čater, 2015).

In order to use bibliometric methods, it is necessary to analyse the data obtained from prestigious databases such as Web of Science (WOS) or SCOPUS. The data used in this study were obtained from the WOS Core Collection database. The Web of Science Core Collection is a curated and high-quality database of scholarly literature. It is a part of the more extensive Web of Science platform, widely used for bibliometric and citation analysis. The Core Collection includes a selection of journals, conference proceedings, and other scholarly content considered highly impactful and significant. Therefore, researchers, institutions, and libraries use the Web of Science Core Collection to access high-quality scholarly literature, conduct citation analysis, and stay informed about developments in their respective fields. In this context, the raw data obtained were visualised through Vosviwer software. The variants made through the software in question are as follows:

Table 1. Vosviwer Anaysis Types

Citation	**Bibliographic Coupling**
Documents	Documents
Sources	Sources
Authors	Authors
Organisations	Organisations
Countries	Countries

The study discussed the concept of "disaster research" in the WOS Core Collection database, and a search was made within the scope of all fields. As a result of the search, 2,590 studies were found. The data obtained were subjected to word mining, citation and matching analyses through Vosviwer software.

When the data obtained from the WOS Core Collection are analysed, it is seen that geosciences produce a great majority of disaster studies. Accordingly, approximately 72% of the studies belong to Geosciences Multidisciplinary. The second and third rankings are Environmental Studies and Environmental Sciences, with 6.5% and 6%, respectively. Table 2 shows the studies according to the field titles.

Table 2. Top Ten Disaster Research Publications by WOS Categories

Web of Science Categories	**Record Count**	**%**
Geosciences Multidisciplinary	1,860	71.815
Environmental Studies	168	6.486
Environmental Sciences	155	5.985
Social Sciences Interdisciplinary	136	5.251
Public Environmental Occupational Health	135	5.212
Meteorology Atmospheric Sciences	102	3.938
Water Resources	97	3.745
Ecology	63	2.432
Management	58	2.239
Psychiatry	42	1.622

Source. WOS Core Collection, 2023.

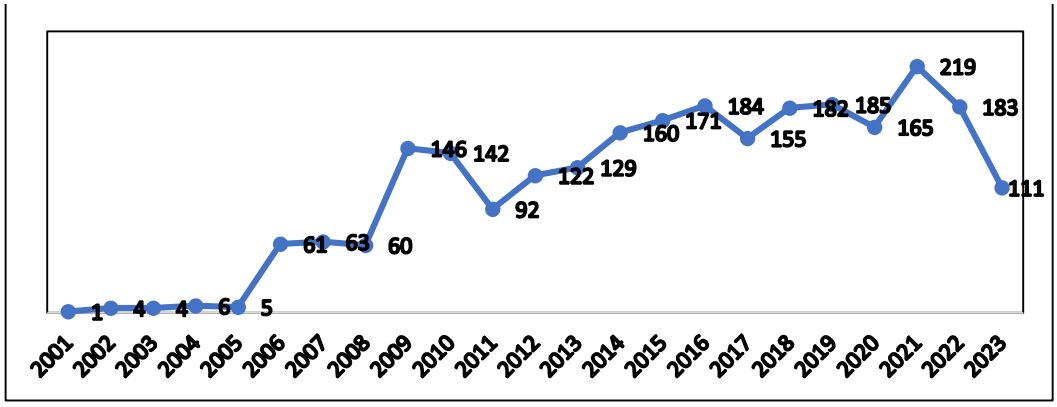

Figure 1. Disaster Research Publications by Years (**Source.** WOS Core Collection, 2023.)

Figure 1 shows the number of disaster research publications by year from 2001 to 2023. The graph has a blue line and circular data points. The x-axis is labeled with years from 2001 to 2023. The y-axis is labelled "Record Count" and ranges from 0 to 219. The highest number of publications is in 2021, with 219 publications. The lowest number of publications is in 2001, with one publication. As can be seen in Figure 1, the interest in disaster research has been increasing in the last 20 years.

Table 3. Top Ten Used Disaster Keywords

Web of Science Categories	Occurrences	Total Link Strength
Disaster	112	192
Tsunami	91	128
Climate Change	72	73
Covid-19	66	72
Disasters	61	85
Earthquake	58	103
Resilience	55	116
Disaster Research	53	83
Vulnerability	45	93
Evacuation	38	48

Source. WOS Core Collection, 2023.

When we look at the most frequently used keywords in publications related to Disaster Research, the disaster with 112 repetitions, the tsunami has 91 repetitions, and climate change has 72 repetitions, covid-19 with 66 repetitions, disasters with 61 repetitions, earthquakes with 58 repetitions, resilience with 55 repetitions, disaster research with 53 repetitions, vulnerability with 45 repetitions and evacuation with 38 repetitions are in the top ten. Regarding total connection power, disaster, tsunami, and climate change are the most vital expressions. As a result of the analysis made with 205 observation units that were seen at least five times and had a relationship between them, a total of 16 clusters and 6827 keywords were determined. Figure 2 shows the connection network in question.

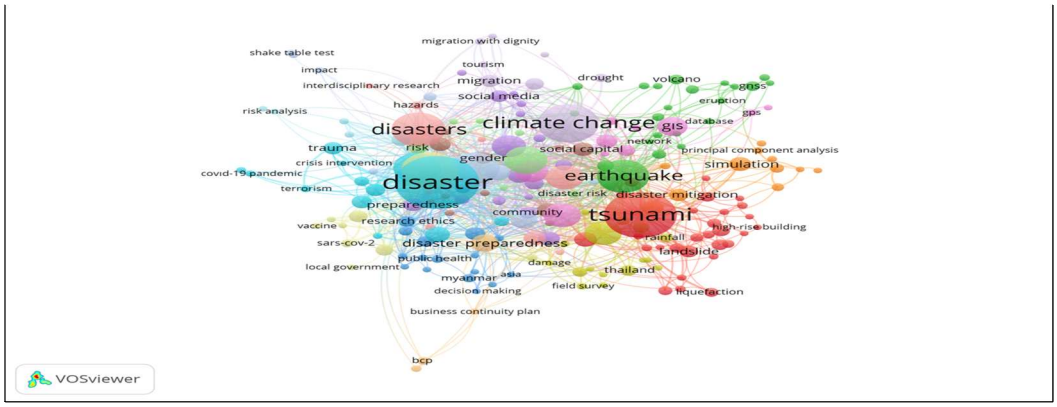

Figure 2. Most Frequently Used Keyword Links

When the network map of the keywords frequently used in disaster research studies is examined over the years, it is striking that the COVID-19 process has a predominant place in the studies. Accordingly, keywords such as COVID-19, pandemic, sars-cov-2, disaster management, social media, disaster risk management, and emergency management are mainly included in the studies after 2018. Figure 3 shows the distribution of the most common keywords in disaster research studies by year. On the other hand, Figure 4 shows the concentration map of keywords. Accordingly, it has been determined that keywords such as disaster, climate change, tsunami and earthquake are used extensively in studies.

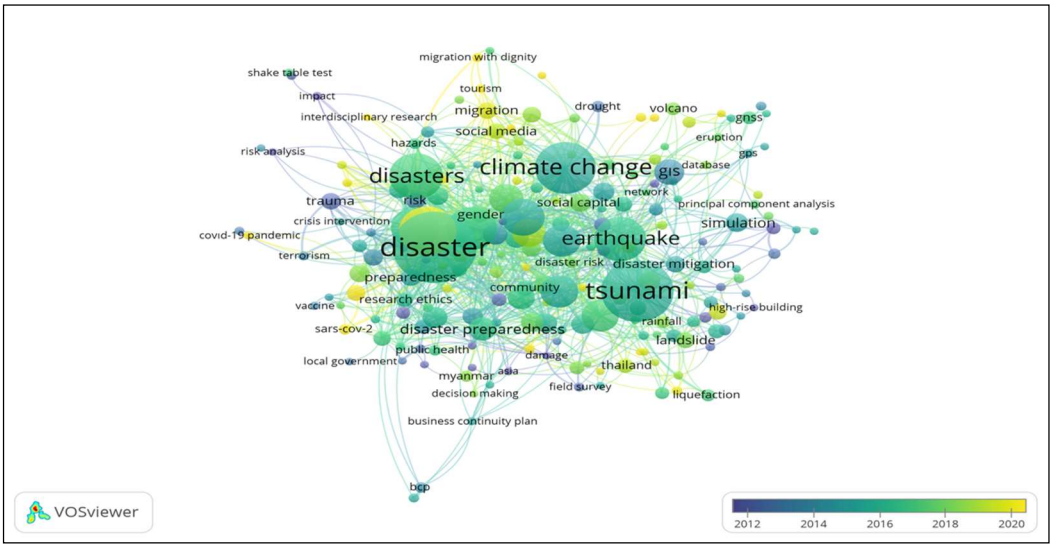

Figure 3. Most Frequently Used Keyword Links by Years

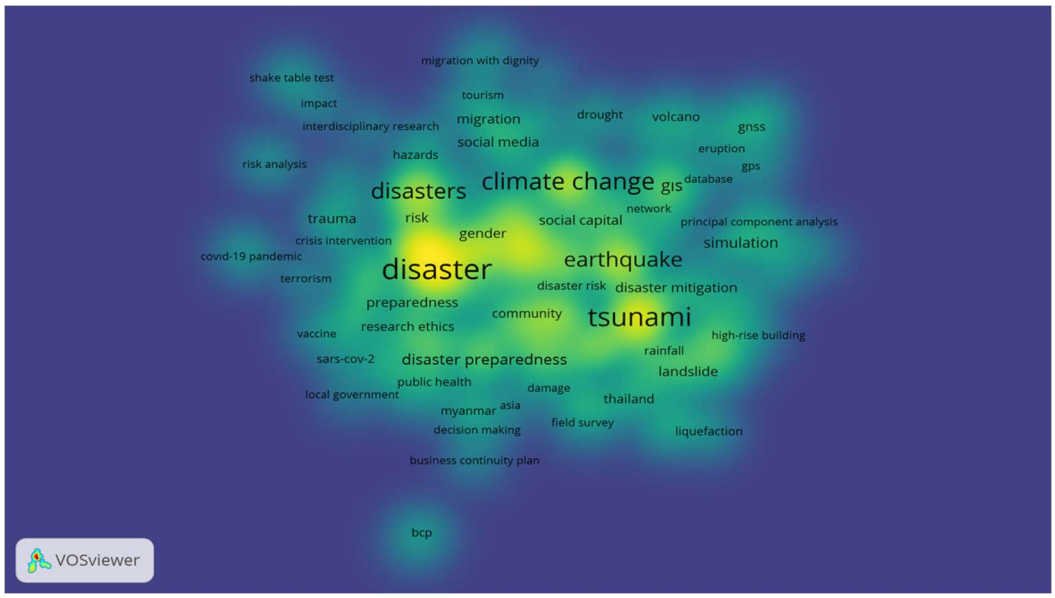

Figure 4. Most Frequently Used Keyword Links by Density

Table 4. Top Ten Disaster Research Publications and Citations by Authors

Web of Science Categories	Documents	Citations
Hayashi, Haruo	82	140
Imamura, Fumihiko	40	244
Koshimura, Shunichi	40	443
Kimura, Reo	31	128
Fujiwara, Hiroyuki	30	172
Sasaki, Daisuke	24	69
Tamura, Keiko	23	43
Ono, Yuichi	22	74
Meguro, Kimiro	22	39
Watanabe, Kenji	20	69
Leelawat, Natt	19	74

Source. WOS Core Collection, 2023.

When we look at the authors of the studies on disaster research in the Web of Science databases, it is seen that Haruo Hayashi ranks first with 82 studies. Fumihiko Imamura is second with 40 studies, and Shunichi Koshimura is third with 39 studies. As can be seen in Table 3, most of the disaster research studies were carried out by Japanese researchers.

In order to determine the most collaborating authors according to the co-authorship status of the authors, a network map was created in line with the criteria of at least one publication and at least 1 citation. Accordingly, according to the examination made among the names with the highest connection, it was determined that 1660 authors in 59 clusters made connections. According to the clusters obtained, the four authors with the most connections are Hiroshi Fukuyama, Hideo Katsumata, Kuniyoshi Sugimoto and Kenji Yonezawa. The network map obtained as a result of the analysis is shown in Figure 5.

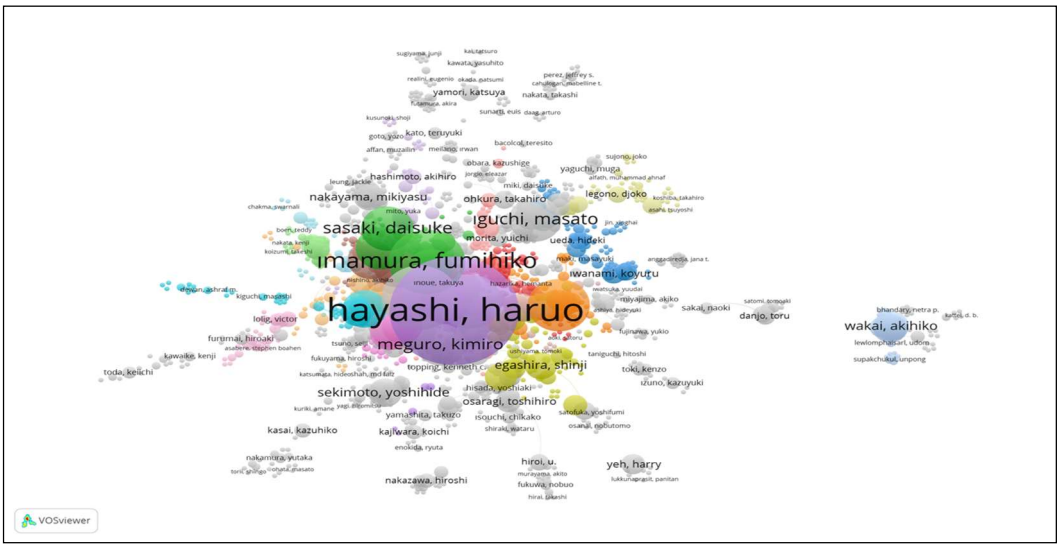

Figure 5. Collaboration Between Authors

A citation network map was created to analyze the citations to the authors' works. Accordingly, 59 clusters were determined due to the examination of the related authors with at least five publications and at least 10 citation criteria. The three most cited authors are Song Guo (1227 citations), Shunichi Koskmura (443 citations) and Fumihiko Imamura (244 citations). The citation network map showing the citation links of the authors is shown in Figure 6.

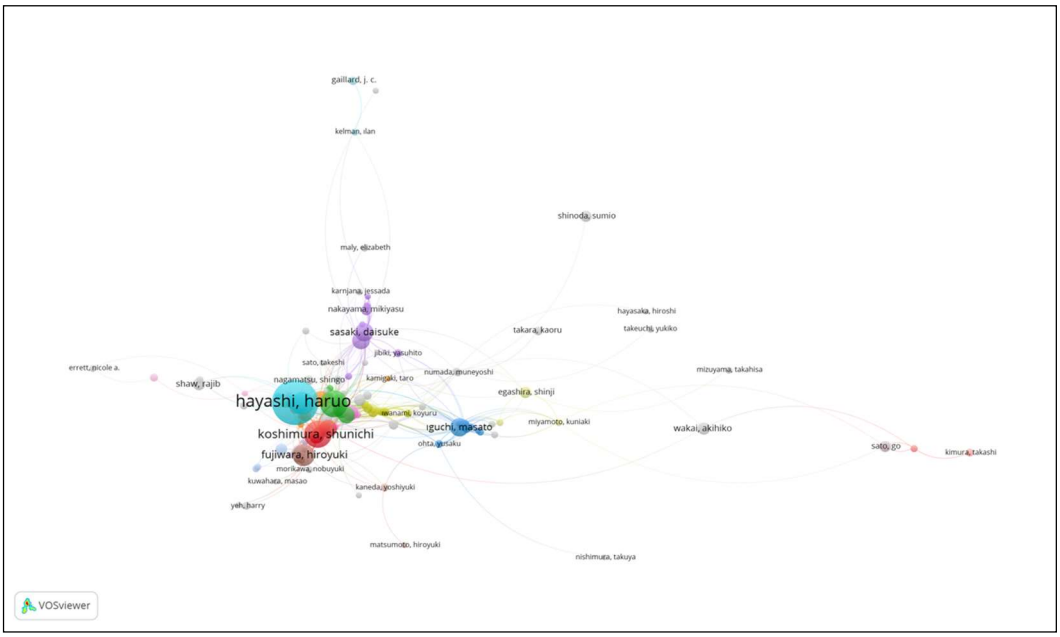

Figure 6. Authors' Citation Network

Regarding the citations of the publications according to the source country, according to the relationship network obtained by a country according to the criteria of getting at least one publication and at least 1 citation, the highest number of publications belongs to Japan with 1.555 works, the USA with 409 works in the second place and China with 140 works in the third place. However, when we look at the citations received by the works, it is seen that the USA ranks first with 8.396 citations. Japan ranks second with 6.692 citations, and China ranks third with 2.539 citations. When we focus on works of Turkish origin, it has been determined that six works have obtained 103 citations. In this context,

Turkey ranks 38th among a total of 81 countries according to the criteria subject to examination. The top ten most cited works are shown in the table below. Accordingly, Manyena (2006) ranks first with 885 citations, Fothergill et al. (1999) ranks second with 425 citations, and Oliver-Smith (1996) ranks third with 421 citations. However, the authors of the most cited studies do not rank high in the author network analysis shown above; in other words, they are not among the most related authors.

Table 5. The Top Ten Most Cited Publications

Authors	Study	Citations
Manyena (2006)	The concept of resilience revisited	885
Fothergill et al. (1999)	Race, ethnicity and disasters in the United States: A review of the literature	425
Oliver-Smith (1996)	Anthropological research on hazards and disasters	421
Charil et al. (2010)	Prenatal stress and brain development	389
Immerzeel et al. (2014)	High-resolution monitoring of Himalayan glacier dynamics using unmanned aerial vehicles	320
Zeng et al. (2016)	Joint Optimization of Task Scheduling and Image Placement in Fog Computing Supported Software-Defined Embedded System	288
K. J. Tierney (2007)	From the margins to the mainstream? Disaster research at the crossroads	280
Furr et al. (2010)	Disasters and Youth: A Meta-Analytic Examination of Posttraumatic Stress	255
Gu et al. (2017)	Cost Efficient Resource Management in Fog Computing Supported Medical Cyber-Physical System	253
K. Tierney (2012)	Disaster Governance: Social, Political, and Economic Dimensions	249

Source. WOS Core Collection, 2023.

Bibliographic matching refers to a joint work cited by two independent sources. Bibliographic matching is a valuable tool for verifying sources' accuracy and identifying potential plagiarism. It is also helpful in detecting possible research gaps and tracing the development of ideas over time. For instance, if two independent sources cite the same book, this could indicate the book's accuracy or relevance.

According to the bibliographic match analysis, in which 826 works were selected with at least five citations and had connections, there were 331 clusters, 7816 links and 12168 connection strengths. Publications with the highest number of bibliographic matches: Manyena (2006) has 883 citations, Fothergill (1999) has 422 citations, and Oliver-Smith (1996) has 418 citations. The bibliographic matching links obtained from the examination are shown in the figure below.

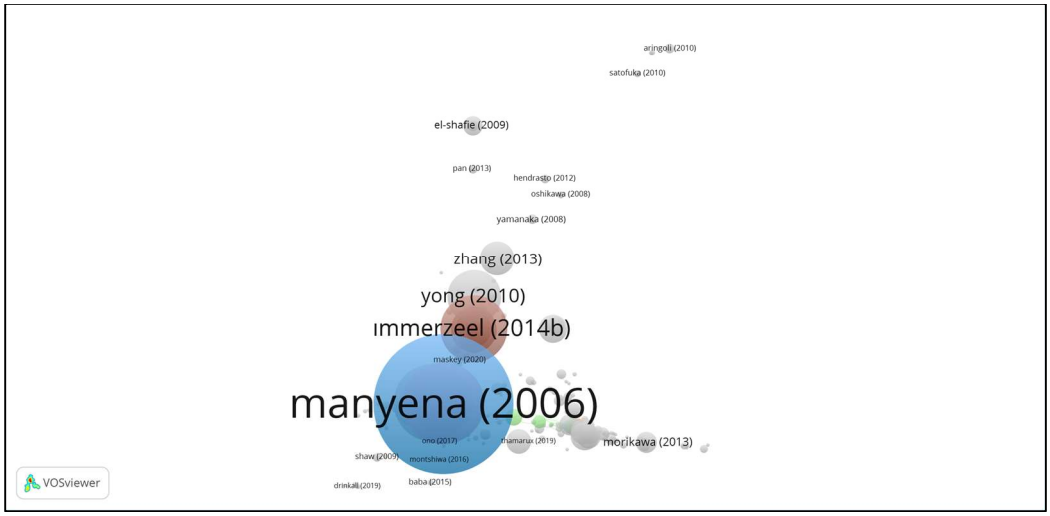

Figure 7. Bibliographic Match Links of the Documents

Different sources cited in a publication are called co-citation. Co-citation measures how frequently two sources appear together or refer to the same subject. It is used to identify relationships between sources or measure a source's importance. Co-citation analysis can also be used to identify influential or influential sources. For example, a literature review may include frequently mentioned sources, which could indicate a strong relationship between the two sources.

Ninety-one authors were identified in the analysis on the criteria determined, with the number of citations being at least 30. Accordingly, the most co-cited authors are Norris (133), Cutter (131) and Japan Meteorological Agency (129). Figure 7 shows the network map density obtained due to bibliometric matching.

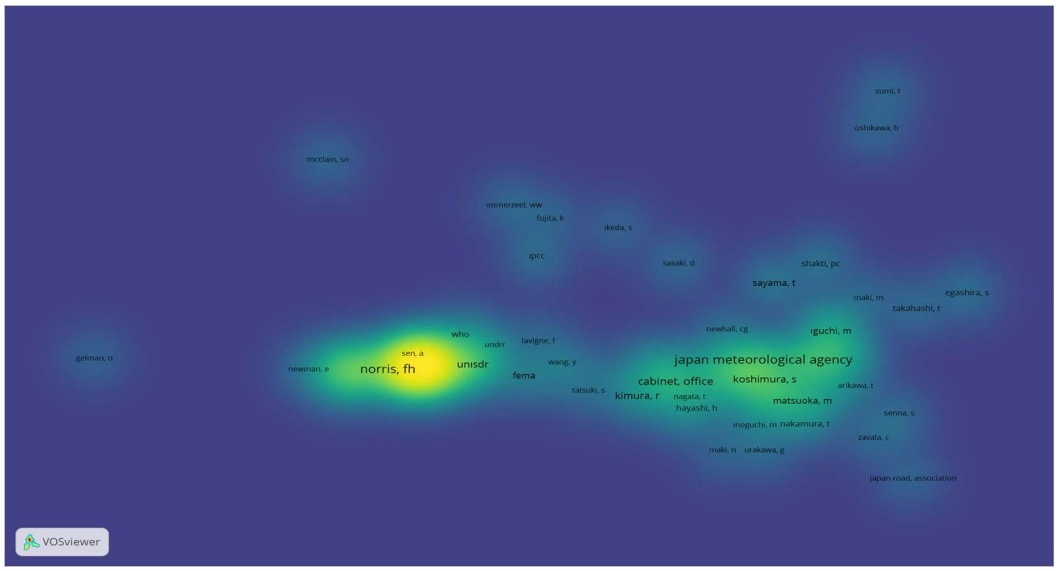

Figure 8. Density of Co-Citation of Co-Authors

In examining the publications within the Web of Science Core Collection scope, 626 studies in the field of social sciences were identified. Approximately half of these studies belong to 2019 and beyond. Lori Peek is the most published researcher with 11 works, followed by Gaillard, J.C., and Aubrey K. Miller with 10 works and Aubrey K. Miller with eight works. When the topics of the published works are considered, it is seen that there are 226 works under the title of Climate Change. Therefore, publications related to climate change have a predominant share in the social sciences literature.

On the other hand, it has been determined that the works were written in English to a considerable extent (612). The number of works in German is six, and the number in Chinese is only 5. It is seen that approximately 49% of the publications in the social sciences literature originate from the USA, followed by China with 57 works and Australia with 45 works, respectively. The number of works originating in Turkey is only 3. As a result of the handling of the works within the scope of Sustainable Development Goals, it was determined that 243 studies were within the scope of Climate Action, and 204 were within the scope of Good Health and Well-Being Goals. The number of works associated with the Sustainable Cities and Communities goal, which ranks third, is 34. In this context, most of the research is similarly related to climate change.

Table 6. Top Ten Used Disaster Keyword Links in Social Sciences

Web of Science Categorise	Occurences	Total Link Strength
Disaster	18	99
Disasters	11	44
Resilience	7	30
Disaster Research	7	28
Gender	5	24
Vulnerability	5	24
Natural Disasters	5	22
Trauma	4	24
Covid-19	4	17
Flood	4	16

Source. WOS Core Collection, 2023.

When we look at the most frequently used keywords in publications related to "Disaster Research" in the field of Social Sciences, disaster has 18 repetitions, disasters with 11 repetitions, resilience with seven repetitions, disaster research with seven repetitions, gender has five repetitions, vulnerability with five repetitions, natural disasters with five repetitions, trauma with four repetitions, Covid-19 with four repetitions and flood with four repetitions are in the top ten. Regarding total connection power, the most vital expressions are disaster, disasters and resilience, disaster research and gender. As a result of the analysis made with 504 observation units that were seen at least one time and had a relationship between them, a total of 25 clusters and 295 keywords were determined. Figure 8 shows the connection network in question.

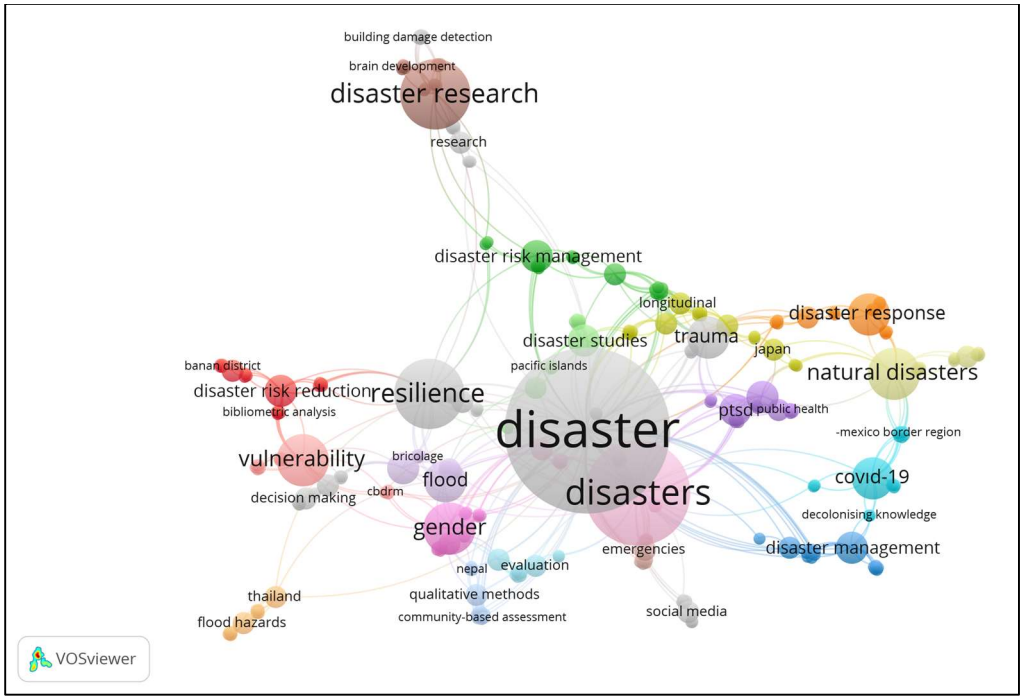

Figure 9. Most Frequently Used Keyword Links in Social Sciences

When the citations of the studies in the field of social sciences are examined, it is seen that the most cited work (885) belongs to Manyena (2006) with the title "The concept of resilience revisited". Fothergill et al. (1999) with "Race, ethnicity and disasters in the United States: A review of the literature" with a total of 425 citations and Oliver-Smith (1996) with "Anthropological research on hazards and disasters" with a total of 425 citations. Table 7 shows the top 10 most cited disaster research works in the social sciences.

Table 7. The Top Ten Most Cited Publications in Social Sciences

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K. Tierney (2012)	Disaster Governance: Social, Political, and Economic Dimensions	249
Rodríguez et al. (2006)	Rising to the challenges of a catastrophe: The emergent and prosocial behavior following Hurricane Katrina	181
Auf Der Heide (2006)	The importance of evidence-based disaster planning	178
Gupta et al. (2016)	Disaster Management from a POM Perspective: Mapping a New Domain	160

Source. WOS Core Collection, 2023.

3. Conclusion

Disasters, whether natural or human-caused, create complex stressors affecting individuals and communities. They test societies' ability to protect populations, infrastructure, and recover rapidly. Disasters can be triggered by natural phenomena or human causes, having devastating economic, social, and environmental impacts. It's crucial to provide mental health services, financial assistance, job training, and housing support for affected communities. Disaster response teams should also prioritize providing relief through food, water, and shelter.

The objective of this study is to analyze the studies conducted in the context of disasters and to provide recommendations to policy makers on disaster preparedness and the implementation of necessary measures. Additionally, this study aims to reveal the theoretical and methodological changes observed in the literature over time. To this end, disaster studies published in the Web of Science database between 2001 and 2023 were examined using a bibliometric approach, and their subject, scope, method, and findings were analyzed.

In the study, the 10 journals with the highest impact were initially analyzed. It was observed that the majority of articles on disaster (72%) were published in the journal "Geosciences Multidisciplinary." The second and third highest rates were observed in environmental journals. In the subsequent stage of the study, the word "disaster" was used the most, as anticipated, in the analysis conducted by considering the word "disaster" directly and the words that indirectly reflect the word "disaster." Subsequently, the words "tsunami," "climate change," "COVID-19," and "earthquake" exhibited the highest rates of usage, respectively. These findings indicate that, in addition to the general use of the word "disaster," disaster impacts are also analyzed specifically according to the disasters experienced in certain periods. Notably, "tsunami," "climate change," and "COVID-19" have emerged as key focus areas in recent studies. In this context, the impact of disasters has been analyzed through both qualitative and quantitative methodologies, with the objective of formulating policy recommendations at both the stage of disaster preparation and at the point of disaster prevention or mitigation.

In the subsequent stage of the study, the years of the studies on disasters were taken into consideration, and the course of disaster studies in the period 2001-2023 was analyzed. In this context, the level of studies on disasters in the 2001-2005 period follows a horizontal course. That is to say, it is observed that there is no significant increase in disaster studies in this period. However, since 2005, there has been a divergence in the trajectory of disaster studies, with a notable surge in the number of studies conducted. It can be posited that the emergence of climate change and the Covid-19 pandemic have played a pivotal role in this recent surge in interest.

Upon analysis of the studies in general, it becomes evident that the findings are concentrated on specific disaster types, such as climate change and the ongoing pandemic. Despite the utilization of disparate qualitative and quantitative methodologies, the studies exhibit a degree of convergence in terms of both disaster preparedness and disaster management policies. However, in country-specific studies, there may be variations in policy recommendations, considering the economic, political, and geographical conditions of the country in question. In this context, the most significant finding of this study is that the role of disaster studies in disaster management is more significant than previously thought. Disaster studies provide a scientific foundation for disaster policies. Therefore, any changes to the quality, quantity, and composition of disaster preparedness and measures to be taken against disasters should be informed by scientific facts. In this context, the failure rate of a policy that ignores disaster studies is high. In this regard, it is imperative that policies be formulated with due consideration of the scientific studies on disaster preparedness.

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