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REVIEW ARTICLE

Social Capital in Disaster Management: A Systematic Literature Review of Research Trends from 1998 to 2019

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Abstract. This study investigates how different facets of social capital affect community resilience in The face of disasters. There has not been a thorough study that examines social capital across various types of frequently occurring disasters and across the different phases of a disaster, that is, pre-disaster, during disaster, and post-disaster. Previous research on social capital has been conducted in both developed and developing countries using various disaster cases. To synthesize previous research, identify knowledge gaps, and set the course for future research, this study used a literature review technique. This method is both methodical and rigorous. The current analysis found a rising trend in the amount of research on the use of social capital in disaster management, demonstrating a growing interest in the function of social capital in boosting community resilience in the face of disasters. The findings of this study showed that community resilience in disaster management is influenced by social capital components. The study found that the trust and network components of social capital-which include trust, beliefs, norms, rules, networks, and values-have the greatest effects on community resilience. Greater knowledge of the function of social capital in disaster management and the aspects of social capital that are most important for fostering community resilience are provided by these results, which have a substantial impact on future research and disaster management methods.

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1. Introduction

Today, disasters have become an interesting phenomenon that is gaining attention from numerous parties. In the past, ``disasters rarely occurred, and they were considered acts of God. However, in the last several years, the volume and frequency of disasters has rapidly increased (UNISDR, 2011). From 1998 to 2017, geophysical and climate-related disasters resulted in the deaths of 1.3 million people and caused 4.4 billion others to suffer injury, lose residence, or become in need of emergency relief. Most of these deaths were caused by geophysical events such as earthquakes and tsunamis; 91% of all disasters are caused by floods, storms, droughts, heat waves, and other extreme weather events (CRED, 2017).

Disasters occur when the negative effects of hazards are not properly managed (Abarquez and Murshed, 2004). The institutions responsible for disaster management should emphasize the adaptive capacity of resources when facing various disasters (Agrawal, 2008; Ahmadvand et al., 2009; de Lange et al., 2016). In disaster management, regardless of the upper level of government involvement, the provision of basic services throughout most disaster management cycles remains in the hands of the local government and community (Murphy, 2007). The role of the community is crucial at every stage of a disaster (Zhao, 2013).

Studies on disasters that have been carried out by disaster experts worldwide (Contractor & Bishop, 2000; Miller et al., 1999) have proven that the more involved community activity networks that raise a sense of community, self-efficacy, and problem-solving, the greater their resilience to the difficulties brought about by disasters. According to Putnam (2000), the more connected people are with one another, the more trusting others they will be, and the better they will become both individually or collectively, because social capital has a strong collective aspect (as cited in Mathbor, 2007).

Social capital is a substantial aspect of society (Sanyal and Routray, 2016). Social capital describes how a person can work together (Coleman 1990), and connections and networks are available for individuals in society (Bourdieu 1983). The concept of social capital emerged from the idea that it is impossible for members of society to overcome the various problems they encounter individually (Syahra, 2003), including in the event of a disaster, because it can turn into community resilience for confronting disasters (Akter & Mallick, 2013).

Studies on social capital during disasters have been conducted by researchers in both developed and developing countries using various cases of disasters. A number of studies from developed countries have been conducted in Japan

(Aldrich, 2011b; Dussaillant & Guzmán, 2014; Haraoka et al., 2012; Jones, 2016; Shaw & Goda, 2004; Yamamura, 2010), the US (Reininger et al., 2013), Australia (Brockie & Miller, 2017; Wickes et al., 2017), the UK (Lo & Chan, 2017), Taiwan (Chang, 2012), and China (Chen et al., 2016; Wei & Han, 2018), whereas those from developing countries consist of the Philippines (Loebach & Stewart, 2015), India (Mukherji, 2014), Indonesia (Gianisa & Le De, 2018; Gultom, 2016; Karnawati et al., 2012), Malaysia (Amir Zal, 2017), and Sri Lanka (Minamoto, 2010).

Prior studies on social capital explain that social capital takes the form of collaboration (collective action) among the community (Benny et al., 2018; Buckland & Rahman, 1999; McCarthy, 2014; Rahill et al., 2014). The level of social capital functions in post-disaster recovery (Akbar and Aldrich, 2018; Correa-Velez et al., 2014; Jarosław Działek et al., 2013; Susanto and Kusumasari, 2019; Wickes et al., 2017). Households or social environments with good social capital quickly recover to normal conditions (Mabuku et al., 2018).

There has been much research on social capital in the context of disasters, but the majority of these studies have only looked at one particular kind of disaster and one specific region, giving them a limited understanding of the complex relationship between social capital and disaster management. An important gap in the literature is the absence of a thorough study that analyses social capital across many types of commonly occurring catastrophes and throughout various phases of a disaster. To fill this knowledge gap, this study underlines the significance of undertaking a systematic literature review, which is a meticulous and thorough approach to synthesizing previous research.

For disaster management studies, a systematic literature review is important because it enables researchers to build new studies on top of existing ones, prevent bias, pinpoint significant ideas, and determine the need for additional studies. By providing a thorough assessment of the status of research on a particular issue, identifying knowledge gaps, and suggesting new study avenues, a systematic literature review also improves the capability of future investigations. This method enables researchers to expand on the body of information and helps create a more comprehensive and complex understanding of social capital in the context of catastrophe management (Djalante, 2018).

Disaster management has expanded and has been disseminated in various journals using a systematic literature review approach (Lettieri et al., 2009). A systematic literature review has been employed in a number of prior studies on disaster management, beginning with studies on the role of volunteers in disaster risk reduction (Kankanamge et al., 2019), adaptive capacity of communities (Ferro-Azcona et al., 2019), and various natural disasters, including landslides (Kornejady et al., 2019), earthquakes (Chan et al., 2010), tsunamis (Jones, 2016), and climate change (Shaffril et al., 2018). A systematic literature review was conducted to explain the mapping of social capital through comprehensive analysis.

Observing the existing trends in social capital research will contribute to research on disaster management at the local level. A change in the result of reconceptualizing the role of human communities in managing natural resources by engaging local stakeholders in planning and management through a more socially inclusive environmental policy (Berkes, 2015; Bockstael et al., 2016; Brody et al., 2013; Brosius et al., 2005; Few et al., 2007).

Based on this background, this study aims to answer the following three research questions: (1) What is the map of literature on social capital from 1998 to 2019?(2) What are some of the most widely discussed social capital dimensions in disasters?(3) How has the definition of social capital in disaster management been developed from 1998 to 2019?

This study consists of four parts. In the first part, this article reviews several studies related to social capital in disaster management. The second part contains the research methodology and data collection analysis. The third section explains the trends in research on social capital from 1998 to 2019. The fourth section contains a map of the literature, and the results are discussed further. Finally, in the fifth part, conclusions and recommendations for future studies are presented.

2. The Methods

This study employed the systematic literature review (SLR) method to collect several scientific articles that focus on the role of social capital in disaster management. The study carried out reviews using several criteria, such as keywords related to the year of disaster, type of disaster, and journal category. Accordingly, this section is divided into seven basic sections describing the collection and processing of the articles.

Research Approach and Type

The method used in this study is a Systematic Literature Review (SLR) that provides an outline of social capital in disaster management. The systematic literature review used a structured standard methodology driven by a protocol. This methodology is focused on, explicit, and transparent (Jesson et al. 2013). A systematic literature review can begin by planning a review, identifying and evaluating research, extracting and synthesizing data, reporting thematic and descriptive findings, and utilizing these findings to inform research and practice (Djalante 2018).

Through a literature review, the author intends to provide a literary outlook on the importance of social capital in disaster management during the 20-year period from 1998 to 2019. The Scopus search engine was used to collect the literature data. Scopus is a service provider with the largest database of peer-reviewed literature (Achsan 2019). Specifically, the literature reviews were conducted in several stages to determine the inclusion and exclusion of more relevant findings.

Search Strategy

The systematic literature review in this study utilized the Scopus database, which was selected on the basis that this database specializes in providing articles in various fields, one of which is the social sciences. The search was conducted in February 2019. The search words selected for all databases were “disaster” OR “natural hazard” OR “disaster management” OR “disaster risk reduction” AND “social capital”.

Criteria of Inclusion and Exclusion

This section explains the inclusion and exclusion criteria used in the study, as shown in the table below.

Search Process

An article search was conducted using the Scopus database. Scopus has an extensive scope, and most journals are written in English. The search began by collecting all findings

Table 1. Criteria of Inclusion and Exclusion

Criteria	Inclusion	Exclusion
Type of publication	Peer-reviewed journal articles	Books, anthologies, conference articles, etc.
Language	English	Non-English
Article availability	Complete articles	Incomplete articles
Type of article	Empirical studies	Non-empirical studies like conceptual framework and literature study
Disaster category	Natural disasters	Other disasters
Type of disaster	Frequent disasters such as earthquakes, tsunamis, landslides, floods, eruptions, and storms.	**Infrequent disasters.**

of publications on social capital and disaster management between 1998 and January 2019, which reached 528 publications. Ultimately, 120 publications were analyzed by filtering the title/abstract and complete texts. The table below explains the search process using inclusion and exclusion criteria.

Data Extraction

To thoroughly gather and synthesize data on disaster management, which entailed a multistage procedure, the current study used a systematic approach. First, basic data were gathered from each study, including title, author, and publication date. To provide a thorough and nuanced picture of disaster management strategies worldwide, a wide range of pertinent data, including country, catastrophe type, and significant findings, were collected and evaluated. Five continents (Asia, America, Africa, Europe, and Australia) were chosen because they were thought to be the most relevant in terms of human life to ensure that the breadth of research was worldwide representative. The study also focused on natural catastrophes such as earthquakes, tsunamis, landslides, floods, storms, and volcanoes. The present study adopted these six dimensions to comprehensively examine social resilience in disaster management before, during, and after catastrophic events. This was done in response to the seminal work conducted by McElroy et al. (2006), who identified knowledge (trust, beliefs, rules, and norms) and the capacity to learn individually, collectively (network), and values in the community as the primary dimensions of social capital. It was decided to take such a multifaceted approach to develop a more comprehensive understanding of the function of social capital in disaster management and to improve the ability of disaster management authorities to foresee and respond to such events in a more thoughtful and effective way.

Data Analysis

Research on social capital in crisis management was examined in the present study using a rigorous and systematic qualitative content analysis approach (Berelson, 1952; Silverman, 2011). The analysis used existing social capital dimensions to begin, and by carefully examining the data, we attempted to develop these dimensions. The texts of the 120 selected articles were examined for recurrent themes, and the social capital dimensions of each piece were compiled using quotations.

The study carefully investigated the social capital dimensions in each article, dividing them into two separate categories based on continents: developed and developing countries, to better understand the social capital components in disaster management. The parameters were further differentiated between the different disaster management stages, that is, before, during, and after the crisis, to provide a more nuanced perspective. The goal was to determine whether the dimensions of social capital vary at each level of disaster management.

The present study's examination and classification of social capital components reveals the intricate and dynamic nature of the connection between social capital and catastrophe management. In-depth explanations and analyses of the categories and codes used in the study are provided in the data presentation section, which gives readers a complete and nuanced knowledge of social capital's roles in disaster management. To synthesize and analyze the content of the 120 selected publications, this study used a qualitative content analysis technique, adding to the body of knowledge on disaster management and social capital (Elo et al., 2014).

Data Reliability

To improve reliability and the possibility of replicating the study, a number of search criteria and measures taken to collect the articles were explained. At the initial stage, an analysis of the initial coding list and subsequent inductive modifications were performed. Second, reliability was ensured by an academic supervisor and an additional supervisor who was not affiliated with the study. Third, a final category analysis

Table 2. Results of Inclusion and Exclusion Criteria

Stage	Criteria	Results
First	Inclusion based on the keyword "Natural hazard" OR Disaster OR "Disaster management" OR "Disaster risk reduction" AND "Social Capital"	528
Second	Inclusion of peer reviewed article	399
Third	Exclusion based on type of research (only empirical studies)	382
Fourth	Exclusion based on Language (only English articles)	322
Fifth	Exclusion based on type of disaster (only natural hazard)	219
Sixth	Exclusion based on the type of commonly occurring disaster (earthquakes, tsunamis, landslides, floods, storms, and eruptions)	120

was conducted, which produced a clarification of category names and descriptive text.

3. Result and Discussion

This section studies the role of researchers and organizations in contributing to the literature. The collection and systematic analysis of data provides us with highly valuable information to the government and institutions responsible for activities related to disaster response and the recovery process (Centre for Research on the Epidemiology of Disasters, CRED, 2018). This section outlines several studies and early authors discussing social capital in disaster management. It also discusses researchers from which countries have largely contributed to research on this topic and researchers who have collaborated with other researchers and international organizations. The role of the authors was examined generally and specifically by looking at the ten most cited articles.

Research Trend

This study identified the main schedule and period of publication in the Scopus database. The search timeline was set from 1998 to 2019, and the year 1998 was chosen based on the year in which a publication on social capital in disaster management was published. There are journal rankings in Scopus, known as Quartile, in which journals with a good reputation and quality are placed in Quartile 1 (Q1, very good), while others are placed in Q2, Q3, or Q4 based on reputation. The search of the literature on social capital in disaster management resulted in 120 journals, of which 71 were ranked Q1.

The wave of publications on social capital in disaster management has tended to increase. Despite a drop in publication between 2008 and 2009, as well as between 2014 and 2016, there had been a significant increase in the following years, namely in 2017 and 2018. There were 73 publications in 2018, which was the highest number of publications per year. The number of publications until the end of January 2019 was as many as 14, and it is expected to increase keeping in mind the increase in the number of natural disasters. This is shown in the figure below.

Authorship

This section discusses the authorship of the research on social capital in disaster management. The oldest publication listed in Scopus is a publication by Ian Christoplos in 1998 about *Humanitarianism and Local Service Institutions in Angola*, which is a Swede born in Washington DC. The following publication was published in 1999 on community-based disaster management during the 1997 Red River Flood in Canada, written by Jerry Buckland along with Matiur Rahman. Jerry Buckland is a professor of International Development Studies at Canadian Mennonite University, and Matiur Rahman is one of the lecturers at the University of Manitoba, Canada. Christoplos continued to write extensively about disaster management in various regions of the world, and about disaster mitigation and disaster risks that people face.

This review found that more than 250 names were obtained using the Scopus search engine, 41% were from the Asian continent, where Japan is the dominant country, 32% of authors were from the American continent, with the United States being the dominant country, 13% from the Australian continent, 10% from the European continent, Sweden was the dominant country, and 3% from the African continent. The four highest-ranking countries with dominant authors were Japan, the United States, Australia, and Sweden, which are developed countries, and developing countries are from Africa. The percentages of authors are shown in the figure below.

Accordingly, every disaster was categorized along with the origin of the authors to identify the number of authors for each disaster. The table below describes the role of authors in every category of disaster publication on every continent (Earthquake, Storm, Tsunami, Flood, Eruption, and Landslide).

The results in Table 4 show that there is wide geographic variation among the authors who write on particular disasters. The majority of authors who wrote about landslides, volcanoes, tsunamis, and earthquakes are based in Asia. This is not surprising given the frequency of natural disasters in Asia and the population's susceptibility to their effects. In addition,

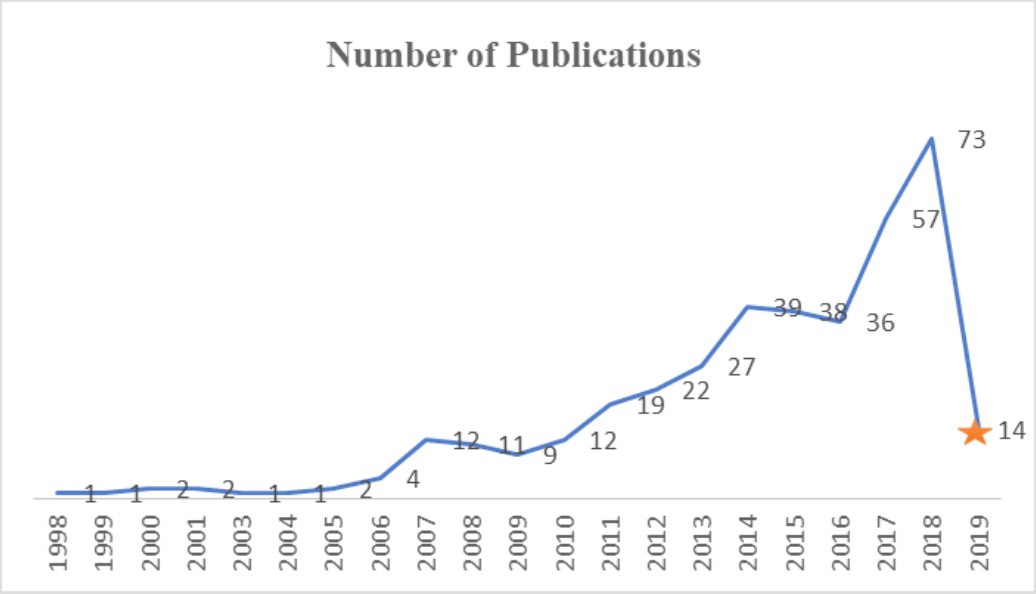

Figure 2. Journal Publications on Social Capital in Disaster Management

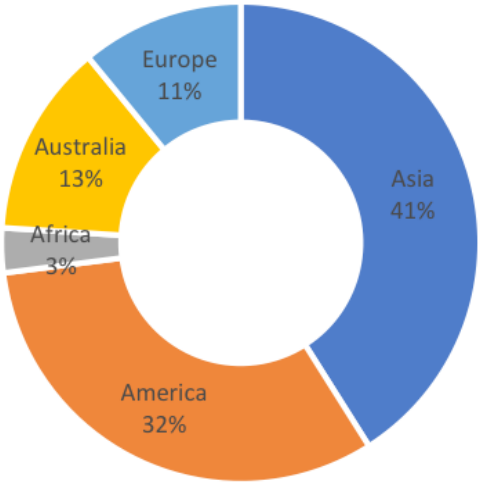

Figure 3. Authors Percentage by Continents

Table 4. The Role of Authors in Every Disaster

Disaster	Earthquake	Storm	Tsunami	Flood	Eruption	Landslide
Continent						
Asia	50	14	11	20	12	7
America	24	42	8	11	1	3
Australia	6	4	-	20	-	-
Africa	-	-	-	8	-	-
Europe	8	-	7	7	7	1

owing to their familiarity with the local environment, authors from the Asian continent may be more prone to concentrate on disasters occurring in their region.

On the other hand, storms were primarily penned by authors from the American continent. This finding can be linked to the frequent occurrence of hurricanes in different American countries, which may have stimulated further investigation of this kind of catastrophe. While authors from Africa wrote only about floods, authors from Asia and Australia wrote the majority of books about floods. This pattern may be explained by the recent severe floods that have occurred in Asia and Australia, which have increased interest in this kind of tragedy. However, there might be fewer floods in Africa, which would mean fewer studies on the subject.

Overall, the fact that many authors from Asia have written about almost every form of disaster is consistent with the finding that the Asian region has experienced more natural disasters than other continents. To improve our understanding of disaster management measures and foster community resilience, this pattern highlights the significance of research in areas most susceptible to the effects of natural disasters. As a result, when examining research articles and performing a literature review on the subject of disaster management, it is important to consider the diverse locations of writers who write on various types of disasters (Centre for Research on the Epidemiology of Disasters, CRED, 2018).

Citations

This section analyzes the citations for every disaster category. In the 120 journals used in this study, there were 1701 citations. Overall, storms were cited 168 times. Table 1 lists the top ten most-cited journals.

The article with the most citations, totaling 168 citations, was published in the *Journal of Social Work* in 2010 and was written by Hawkins R.L. and Maurer K. about how bonding, bridging, and linking social capital operated in the aftermath of Hurricane Katrina in New Orleans (Hawkins & Maurer, 2010). The second most cited article was published in the oldest journal used in this study, which was in 2004, and it was written by Shaw R., Goda K. about the Japanese experience of dealing with disasters in a sustainable manner, it has 136 citations (Shaw & Goda, 2004). The last on the list is an article written by Reininger et al. (2013) on social capital and disaster preparedness among low-income Mexican Americans in disaster-prone areas, which was published in 2013 with as many as 37 citations.

The above explanation indicates the significant interest that the authors have to discuss the importance of social capital in disaster management. Additionally, the increasing number of issues related to disasters is also a factor of interest for research to discuss. Further research on disasters, particularly those relating to social capital, is necessary.

Discussion

Map of the Literature

Considering its contribution to the practice of disaster management, this study selected only six frequently occurring natural disasters: earthquakes, storms, tsunamis, landslides, floods, and eruptions. The acquired data were subsequently divided by the location of the disaster from various countries into five continents: America, Asia, Australia, Europe, and Africa, as well as by periods of disaster, which are before, during, and after an event of disaster. A map of the literature is shown in Figure 4.

Table 5. Most Cited Articles

Author(s)	Title	Journal	Cited
Hawkins & Maurer (2010)	*Bonding, bridging and linking: How social capital operated in New Orleans following Hurricane Katrina*	*Journal of Social Work*	168
Shaw & Goda (2004).	*From disaster to sustainable civil society: The Kobe experience*	*Disasters*	136
Mathbor (2007)	*Enhancement of community preparedness for natural disasters: The role of social work in building social capital for sustainable disaster relief and management.*	*International Social Work*	114
Aldrich, (2011b)	*The power of people: Social capital's role in recovery from the 1995 Kobe earthquake*	*Natural Hazards*	114
Lu & Yang, (2011)	*Information exchange in virtual communities under extreme disaster conditions*	*Decision Support Systems*	83
Chamlee-Wright & Storr (2011)	*Social capital as collective narratives and post-disaster community recovery*	*Sociological Review*	78
Elliott, Haney, & Sams-Abiodun (2010)	*Limits To Social Capital: Comparing Network Assistance in Two New Orleans Neighborhoods Devastated by Hurricane Katrina*	*Sociological Quarterly*	60
Zanotti (2010)	*Cacophonies of Aid, Failed State Building and NGOs in Haiti: Setting the stage for disaster, envisioning the future*	*Third World Quarterly*	51
Aldrich (2011a)	*Social, not physical, infrastructure: The critical role of civil society after the 1923 Tokyo earthquake*	*Disasters*	43
Reininger et al. (2013)	*Social capital and disaster preparedness among low income Mexican Americans in a disaster prone area*	*Social Science and Medicine*	37

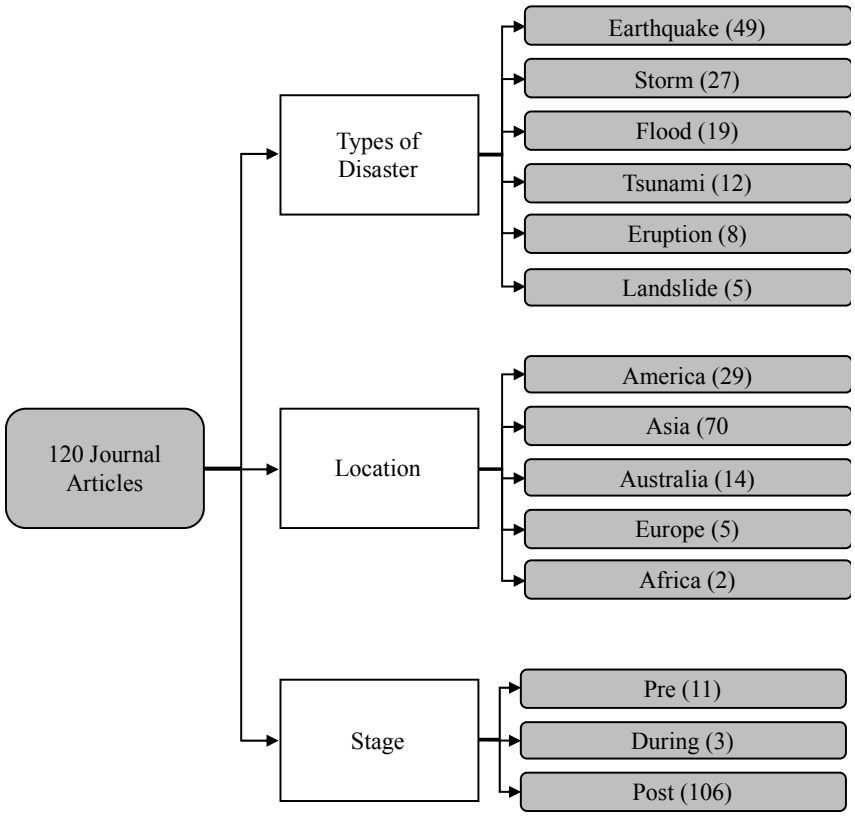

Figure 4. Map of the Literature

Several themes and patterns in the literature on social capital in disaster management are highlighted in the literature map created in this study. This study found that earthquakes received the most attention, with as many as 49 articles devoted to this disaster type, while landslides received the least attention, with only five articles. The excessive attention paid to earthquakes can be explained by their widespread devastation and high frequency. The literature map shows that the Asian continent is the most investigated region in terms of disaster locations, with 70 articles making up more than 50% of the publications. Given Asia's high rate of natural disasters and the population's susceptibility to their effects, this is not surprising. In contrast, the African continent has the fewest papers, only two in total, revealing a serious research gap in the continent's approach to catastrophe management.

The literature map also shows that the majority of the papers focused on post-disaster studies. This pattern may be explained by the fact that post-disaster studies provide

an opportunity to assess social capital's efficiency in disaster management and pinpoint areas where it may be reinforced to increase community resilience in the event of future disasters. While these periods are crucial for disaster preparedness and response, there is a considerable void in the literature regarding studies of the pre-disaster and catastrophe phases.

The literature map created in this study offers a thorough review of the current body of knowledge regarding the use of social capital in disaster management. The map reveals a number of themes and patterns in the literature, including the overemphasis on earthquakes and the Asian continent as well as the paucity of studies on the periods before and immediately after disasters. These results provide important new information on the state of disaster management research today and lay the groundwork for future studies that will expand the current body of knowledge and fill in any gaps in the literature.

Social Capital Dimensions

A study carried out by McElroy, Jorna, & Engelen, (2006) on social capital found that social capital dimensions largely consist of knowledge (trust, beliefs, rules, and norms) and the capacity to learn individually and collectively in the form of networks and values in the community. Six social capital dimensions were used to identify the findings that have an impact on community resilience when facing disasters before, during, and after a disaster occurs. The following table shows the results of social capital dimensions that affected the community in responding to disasters from 1998 to 2019.

According to the findings from all the disasters, only two dimensions were found to be dominant in affecting social resilience: trust and network. As many as 94 articles relating to the dimension of trust and 97 articles relating to the network were found. Trust was abundantly found because people believe in one another, and the success of the post-disaster recovery process depends on a high level of trust (Akbar & Aldrich, 2018; Correa-Velez et al., 2014; J. Działek et al., 2013; Wickes et al., 2017). Network dimensions were found in large numbers because networks can foster collaborations (Buckland & Rahman, 1999) and provide quicker services, resources, aid tools (Correa-Velez et al., 2014), and information (Reininger et al., 2013). Meanwhile, the dimension with the least number of articles was the rules dimension because people tend to break the rules when responding to disasters (Twigg & Mosel, 2017). Accordingly, all the findings of the dimensions were described by disaster categories. This can be seen in Table 7.

Based on the tables, it can be concluded that the results of the findings show that many studies have provided explanations relating to post-disaster issues. Few studies have described issues before and during a disaster. Based on the types of disasters, geophysical disasters such as earthquakes, tsunamis, and eruptions that occur intermittently, or

Table 6. Findings of Social Capital Dimensions in All the Disasters

Dimensions	Number of Publications
Trust	94
Beliefs	29
Norms	43
Rules	9
Network	97
Value	26

Table 7. Dimension, Stage and Type of Disaster

Dimension	Stage	Earthquake	Storms	Floods	Tsunamis	Eruptions	Landslides
Trust	Pre	5	2	1	0	0	0
	During	1	0	1	1	0	0
	Post	39	16	14	7	6	1
Beliefs	Pre	1	1	1	0	0	0
	During	1	0	0	1	0	0
	Post	4	5	3	4	6	2
Norms	Pre	1	0	1	0	0	0
	During	0	0	0	1	0	0
	Post	15	9	20	5	1	0
Rules	Pre	1	0	0	0	0	0
	During	0	0	0	0	0	0
	Post	2	2	0	4	0	0
Network	Pre	4	2	2	0	0	2
	During	1	0	1	1	0	0
	Post	32	23	14	8	4	3
Value	Pre	4	3	1	0	0	2
	During	1	0	1	0	0	0
	Post	4	0	0	2	5	1

hydrometeorological disasters such as storms, floods, and landslides that occur almost constantly every year, they both have similar dominant social capital dimension findings, which are network and trust. However, for eruptions, the dimension of beliefs has the same result as the dimension of trust within the community, and it is even greater than the findings for the dimension of the network, because the community affected by the eruptions still has a high level of belief system, such as religious beliefs, and they still perform rituals.

Expansion of the Meaning of Social Capital

From 1998 to 2019, the following definition of social capital in disaster management was developed: In the realm of disaster management, "social capital" was a relatively new idea in 1998. In general, the networks, norms, and trust that exist within a community can be mobilized to strengthen community resilience and assist in successful disaster response. This was the broad definition of social capital in disaster management in 1998.

Researchers began looking into the many types of social capital that existed within communities between 2000 and 2005. During this period, other types of social capital, such as bonding, bridging, and linking, were included in the notion of social capital in disaster management. While bridging social capital refers to relationships that exist between people from various social groups or backgrounds, bonding social capital refers to ties that exist between people with similar traits or identities. Links between people and formal institutions, whether governmental or non-governmental, are referred to as linking social capital.

The definition of social capital in disaster management evolved from 2006 to 2009, becoming more complex and nuanced. Researchers are now investigating the ways in which social capital may be a resource and a limitation in disaster management. They also started looking into how crucial it is to comprehend the larger social, economic, and political settings in which social capital functions, as well as the intricate interactions between social capital and other elements such as poverty, inequality, and power dynamics. Throughout this time, there has also been a greater focus on the contribution of social capital to disaster recovery, as well as the significance of long-term community construction and the maintenance of social capital for better catastrophe resilience.

The meaning of social capital in disaster management changed from 2010 to 2019. In addition to the need for more community-led and participatory approaches to disaster management that prioritize the voices and needs of marginalized and vulnerable groups, researchers have started to examine the significance of social capital in disaster risk reduction and the pre-disaster phase. In addition, the importance of social capital in disaster governance and decision making was highlighted, underscoring the need for better cooperation and partnership among various players in the disaster management system.

The definition of social capital in disaster management was significantly enlarged for the period 2016–2021, taking into account the contribution of social media and technology to the mobilization of social capital for disaster response and recovery . Researchers have also begun to investigate how social capital may be quantified and evaluated, as well as the necessity of more systematic methods for determining how social capital affects disaster management outcomes. Throughout this time, there has been greater emphasis on the value of social capital for long-term sustainability and resilience, as well as the necessity of more comprehensive, integrated approaches to disaster management that prioritize social, economic, and environmental sustainability.

Knowledge (trust, beliefs, standards, and norms), ability to learn both individually and collectively (a network), and societal values comprise the majority of the components of social capital (values). The two aspects based on these six dimensions that were most frequently observed in the research findings were trust and networking. At specific times of the year, the development of the meaning of social capital also accelerated in each city. For instance, in the network dimension, the network can take the form of a community-based social network system, such as the Toya Usu Volcano Meister in Japan, the Jalin Merapi (Merapi Circle Information Network) in Indonesia, or hybrid sociotechnical systems in Asia. The network can also take the form of a relationship or collaboration within a community.

4. Conclusion

The analysis of publications on social capital in disaster management between 1998 and 2019 revealed a growing trend in this area of research, with a notable increase in publications in recent years. The year 2018 saw the highest number of publications in a one-year period, with 73 published articles. This trend is expected to continue given the rise in the frequency and intensity of natural disasters worldwide. Of the 528 articles initially gathered, a final list of 120 articles was selected, of which 71 were ranked Q1.

An analysis of the authors of these articles revealed that 41% were from Asia, with Japan being the most prolific contributor. The American continent had the second-highest number of authors, with the majority originating from the United States. Australia had 13% of authors, while Europe and Africa had 10% and 3% of authors, respectively. The majority of the authors were from developed countries such as Japan, the United States, Australia, and Sweden. In terms of disaster types, earthquakes had the highest number of publications, with 49 articles, whereas landslides had the least, with only five articles.

Publications were categorized based on the location and period of the disaster. The Asian continent had the most publications, with 70 articles, whereas Africa had the least, with only two articles. Most of the publications focused on post-disaster issues, with 106 articles, while only three articles addressed matters during the disaster, and 11 articles addressed pre-disaster issues.

This study examined the aspects of social capital that affect a community's ability to withstand calamities. A thorough analysis of Scopus's literature reveals that there have been more publications on social capital in recent years, reaching a maximum of 73 in 2018. Trust, beliefs, rules, norms, networks, and values were among the six social capital aspects considered in this study. The most common dimensions in the research findings were trust and networking. The study also shows that community-based social network systems, such as *Toya Usu Volcano Meister* in Japan and *Jalin Merapi* in Indonesia, have been incorporated into the definition of social capital.

This study provides suggestions for additional investigation and disaster risk reduction. The results imply that social capital aspects can be used for disaster management and that everyone can use these results to increase community preparedness, including the community, NGOs, and the

government. This study also highlights the need for additional research on various catastrophe risk reduction dangers, places, and topics. This study highlights how beliefs, norms, and rules are rarely considered in studies regarding disasters, which necessitates additional research to examine the gap in their quantities.

The study also notes that the majority of articles are devoted to post-disaster issues, which presents an opportunity for additional investigation into how communities use social capital prior to and during disasters. According to this study, the outcomes may be applied to the disaster mitigation process to lessen the impact of upcoming calamities. The community can be better prepared to respond to emergencies and carry out recovery and reconstruction operations in the event of a disaster by increasing readiness and implementing non-structural mitigation through changes in human behavioral processes. Overall, this study offers insightful comments and suggestions for further investigation and disaster risk reduction.

5. Research

Understanding social capital during disasters is crucial, but this cannot be sufficiently stressed. Even if they cannot be prevented, natural catastrophes can be managed in a manner that reduces their effects. This includes fostering social norms that help communities to prepare for emergencies. The results of this study provide insights into the social capital elements that are most frequently noticed in communities after disasters. This study's shortcomings, particularly the inability to distinguish between the social behavior of various community groups, such as wealthy and low-income residential regions, must be acknowledged.

Therefore, future research could conduct a thorough analysis to distinguish between people's behavior in developed and developing nations, especially in light of the possibility of variations in behavior between elite and low-income residential regions. Future research may also examine how the government can help disaster-affected communities build up their social capital. This would give people a clearer idea of how government policies might be created to support and encourage social behavior that fosters community resilience.

This study advances our understanding of public administration and disaster management despite its limitations. The findings can be applied to the development of social behavior techniques to enhance community readiness and the catastrophe risk-reduction mitigation process. This study gives the government a better grasp of social capital components and how to use them to promote the creation of plans and regulations that will increase catastrophe preparedness. This study also underscores the value of conventional knowledge in disaster management and the need for further investigation into the reasons why social capital components such as beliefs, norms, and rules are rarely included in catastrophe studies.

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