

A Review Paper on Disaster Management

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ABSTRACT: *The term "disaster management" refers to the process of coordinating catastrophe response throughout the nation. Due to its unique geo-climatic characteristics, India has always been susceptible to natural catastrophes. Floods, droughts, cyclones, earthquakes, and landslides would all have been common occurrences. Floods are the most common source of catastrophe in India. Around 60% of the landmass is vulnerable to earthquakes of different magnitudes, over 40 million hectares are vulnerable to floods, cyclones affect 8% of the entire area, and drought affects 68 percent of the continent. Catastrophe management is the study of how resources and information are managed in the event of a disaster, as well as how effectively and seamlessly these resources are coordinated. Individual and organizational disaster management addresses issues including planning, coordination, communication, and risk mitigation. The world has always been a dangerous place, but India's government has just adopted a paradigm shift in disaster management. The new approach is founded on the idea that growth will not be long-term unless disaster mitigation is included in. Mitigation must be interdisciplinary, including all areas of development, according to another pillar of the approach. In this article, a review of catastrophe causes and mitigation, as well as the impact of disaster on human lives and the required measures needed to mitigate the disaster, is presented.*

KEYWORDS: *Disaster, Communication, Coordinates, Management, Technology.*

1. INTRODUCTION

Disaster management is a topic that deals with the management of resources and information in the case of a disaster, as well as how efficiently and smoothly these resources are coordinated. Individual and organizational disaster management deals with problems such as preparation, coordination, communication, and risk management. The earth has always been an insecure place, but in recent years, India's government has implemented a paradigm change in catastrophe management. The new strategy is based on the belief that growth will not be sustainable unless catastrophe mitigation is included into the process. Another tenet of the strategy is that mitigation must be multidisciplinary, including all aspects of development. The new strategy is also based on the idea that mitigation expenditures are much more cost-effective than relief and restoration spending[1]–[4].

The poor and underprivileged are disproportionately impacted by natural catastrophes, thus disaster management plays a significant role in this country's policy framework. Until now, the man who entered this scene has been investigating throughout his workout to solve different riddles. These secrets have only been comprehended and kept inside the intellectual community. However, when human beings are the victims of mystery, they need to know what caused the catastrophe. Disasters do not happen in a vacuum. Technological and scientific advancements may fairly and in some instances correctly forecast the strike's likelihood, timing, location, and severity. It has been proven that there is a certain pattern in their occurrences, and therefore we can minimize the effect of harm to some degree. We cannot, however, lessen the severity of the harm.

A disaster is described as a circumstance that results in widespread harm that is beyond our capacity to recover from. As a result, a flawless ideal system that avoids harm cannot exist since it would not be a catastrophe. Our capacity to recuperate must be suffocated. Only then can it be referred to be a "disaster," since "disaster" is defined as "a crisis condition that far surpasses the capabilities."

The disaster management literature is expanding and being more widely published in many publications. Even a basic examination of the literature reveals that disaster management academics claim various theoretical underpinnings and advocate for several theoretical frameworks. The term "disaster management" is equally ambiguous and subject to debate. Figure 1 shows the tremendous disasters[5]–[8].



Figure 1: The above figure shows the tremendous disasters.

Catastrophe management has been defined as the body of policy and administrative choices, operational actions, players, and technology that relate to the different phases of a disaster at all levels for the purposes of this literature review. The purpose of this article is to add to our understanding of disaster management by evaluating the literature using a systematic review technique that has been utilized in the medical sciences for the last 15 years. The goal of this study is to characterize the state of the art in disaster management, rather than focusing on a particular danger or problem. The article will provide both a descriptive and a thematic analysis in this light.

A systematic review is not the same as a conventional narrative evaluation of the literature. Narrative reviews are often lacking in rigor, are prone to researcher bias, and lack a method of interpreting the findings of the studies examined. Narrative reviews, according to medical researchers, contain a low degree of evidence and are not a real piece of investigative science. A systematic review, on the other hand, is a research technique that is defined as a pragmatic, transparent, and repeatable way of analyzing existing literature. In reality, it describes how the researcher conducted the examination, what kind of materials (documents, papers, books, and so on) he or she examined, and where those records were located. This makes it possible for other researchers to completely repeat the study. A systematic review's primary aim is to make sense of a large amount of sometimes conflicting information in order to assist academics and practitioners in improving their decision-making and practice by closing the gap between research and practice[9].

A systematic review has five stages:

- Planning the review
- Locating and assessing studies
- Extracting and synthesising data
- Reporting descriptive and theme results
- Using the findings to guide research and practice.

The descriptive and thematic results acquired, as well as the content, are briefly given in this paragraph the descriptive and thematic findings gained in stage, as well as the content of stage, are addressed in the following sections.

The first stage, review planning, consists of three phases:

- The formation of an expert panel that will guide the process and assess the findings
- The mapping of the field of investigation to identify relevant bodies of literature
- The formalization of a review protocol that will allow other researchers to replicate the review.

Faculty members of Politecnico di Milano who are engaged in the PROMETEO project and practitioners from civil defense and civic protection were chosen as review panel members for the current Systematic Review. With the help of the review panel, the map of the disaster management field was defined, and the following research areas were identified: the theoretical framework used in disaster management, phases of the general disaster management process actors involved and responsibilities within disaster management; and technology and information as resources.

This field map was very helpful throughout the review process, as it allowed us to quickly identify research that were either outside or inside the area of the subject under investigation. The review methodology established in stage 3 outlined how the research team should perform the literature review. The protocol should include the different sources that will be used to find relevant studies, the intended search strategy, the specific criteria for including and excluding studies, the criteria for evaluating the quality of the studies chosen, and any other information that will allow someone else to replicate the review. The Social Science Citation Index (SSCI) internet database was utilized to find research on disaster management for the current Systematic Review, and only published peer-reviewed articles were used as documents, excluding books and unpublished papers or reports. The SSCI database was particularly useful in identifying a list of disaster management periodicals. The complete articles were obtained from the CILEA and EBSCO databases, as well as the journal's website[10].

The research team used two sets of criteria to choose relevant studies: one set of inclusion and exclusion criteria, and another set of quality assessment criteria (based on methodology or research design, contribution to theory or implication for practice, and generalisability of findings). The following information was gathered from each of the studies: Details about the author(s), journal name, year, and so on. The distinction between theoretical and empirical methodology is made in methodology. In the case of an empirical research, country refers to the nation where the case study was produced, whereas in the case of a theoretical study, country refers to the country where the author is associated. Any of the locations discovered during the mapping the field exercise might be considered perspective.

Following the completion of the search process and the selection of relevant studies.

Two different analyses of the data may be produced:

- A descriptive and

- A thematic analysis.

The descriptive analysis aids in the clarification of the field's major features (methodologies employed, categorization of nations, and evolution of key phrases, for example). The primary goal of the theme analysis is to synthesize the key findings from the literature in order to guide future research and practice. Descriptive research

The goal of the descriptive analysis is to provide an overview of the field's features. The articles from the systematic review, as well as their unique features. The documents are meticulously documented by between 1980 and 2006, the year of publication. According to the affiliation of the first author, this is the nation of origin.

The article is divided into four sections:

- Theoretical framework,
- Crisis management process stages,
- Players engaged in the process, and
- Technology and information.

The stages of the disaster management process that were looked at in this study. The number of articles that were included in the study between 1980 and 2006 based on the inclusion criteria. The progression reveals that catastrophe management is a relatively new topic, with the majority of research published between 1997 and 2005. Because the systematic review ended in June 2006, the number for 2006 is just partial. The year 2003 had the greatest number of publications, and after that, the number rapidly declines. Most likely, the writers were concentrating on other aspects of civil defense.

The provenience of the chosen articles based on the first author's country of association. This is important to know since it shows how diverse the studies' and authors' cultural origins are. The findings are unusual but not unexpected, and they enable at least two inferences to be drawn. To begin with, the majority of research come from the United States and the European Union (EU). Despite the fact that nations like Japan and India devote a great deal of attention to disaster management due to the high frequency and size of earthquakes and tsunamis, Asia produces less research. Second, the writers may choose to communicate the key findings of their research with a national audience, rather than publishing in international publications. This may be important in terms of disaster management information exchange and cross-fertilization across nations. The paucity of articles that address knowledge management or performance management supports this viewpoint.

The results show that a significant number of articles deal with the stages of the disaster management process, formalizing various sequences (please, see the next thematic analysis). The topic of which players are engaged in the disaster management network and what role they should play was also given due consideration. One-third of the papers chosen deal with problems relating to information management and the information and communication technologies that should be used to enhance real performance.

1.1 Disasters pose a health risk:

The Sendai Framework, in particular its identification of local level health as a key component in disaster resilience, has influenced the health resilience literature. According to AitsiSelmi et al. (2015), this represents a significant shift away from a response-driven to a risk-management-driven approach to disaster risk reduction, with five of the Sendai Framework's seven global targets focusing on disaster mortality and disaster damage to health infrastructure

(United Nations 2015c). The World Health Organization defines health system resilience as "the ability of the system to deal with and manage health risks in such a manner that the health system's core functions, identity, and structure are preserved" (World Health Organization 2015, p. 13). When these objectives and systemic concerns are applied to the community level, healthy individuals are less likely to suffer disaster-related morbidity or death, healthy houses are more disaster resistant, and healthy communities are less vulnerable to natural catastrophes.

Vulnerability is measured in terms of the population's biophysical effect, as well as the sensitivity of communities to these impacts and their ability to cope. The notion of social vulnerability, for example, has been discussed in the literature (Cutter, Ash, and Enrich 2014; Shaw 2013). The notion of health vulnerability, which refers to "the susceptibility of a population or an area to harm" (World Health Organization 2010, p. 2), is becoming increasingly popular. Differential physical, psychological, and mental health impacts of severe events influence a population's health vulnerability. The literature also emphasizes the potential health consequences of disaster events on key infrastructure, such as hospital and transportation system failures, lack of access to health services due to storms and floods, and failures in risk communication and medical care.

Because of losses, relocation, and fatalities, disasters may have devastating effects on the health of people and communities. Infectious illnesses are seldom the cause of death in catastrophes, especially in epidemics. Disasters may exacerbate communicable illnesses, resulting in additional fatalities. Following Typhoon Haiyan in the Philippines (2013), significant health problems emerged because of a failure to avoid infectious illnesses and an increase in the severity of non-communicable diseases because of a shortage of food, water, shelter, and medication. When people are displaced or lose their jobs, they are more likely to develop mental health problems.

Communities' coping ability is reduced because of these stresses, and the healing process is slowed. As a result, offering mental health assistance in order to enhance community coping ability becomes a crucial rehabilitation approach. The literature also emphasizes that when considering health resilience, the population's underlying physical health is important because it determines vulnerability and capacity to cope in the face of disasters, which includes understanding the prevalence and distribution of chronic disease and the population's ability to access timely and appropriate preventive health services. Communities with illnesses that are more chronic, the elderly, or those who are exposed to epidemics, for example, are more vulnerable. According to the literature, such populations may need more services and assistance after a catastrophe, thus knowing a community's baseline health status and hazards is critical in disaster risk reduction planning.

Many extreme events are expected to occur more frequently and at higher intensities because of projected climatic changes, increasing the vulnerability of systems, communities, and assets to disaster risks and straining their capacity to recover and adapt. Regional climate models, for example, predict increases in "the frequency and effect of the very worst fire-weather days" in Tasmania, Australia, according to Grose et al. As a result, in such situations, the risk profile of an area may alter due to the introduction of previously unknown dangers.

Multi-hazard problems with short-, medium-, and long-term consequences and uncertain outcomes add to the complexity of disaster management policy.

2. DISCUSSION

The author has discussed about the disaster management, Because of urbanization, population expansion, and environmental deterioration, disaster-related losses in terms of lives and property have been increasing throughout the world. The frequency and intensity of natural disasters do not match the global efforts to prevent them. The National Catastrophe Management Authority (NDMA) is in charge of a variety of disaster mitigation and response programs. There are many of them, including the National Cyclone Risk Management Project, the School Safety Project, the Decision Support System, and others. The India Disaster Response Summit was held on November 2017. Catastrophe management is the study of how resources and information are managed in the event of a disaster, as well as how effectively and seamlessly these resources are coordinated. Individual and organizational disaster management addresses issues including planning, coordination, communication, and risk mitigation. The world has always been a dangerous place, but India's government has just adopted a paradigm shift in disaster management. The new approach is founded on the idea that growth will not be long-term unless disaster mitigation is included in. Mitigation must be interdisciplinary, including all areas of development, according to another pillar of the approach.

3. CONCLUSION

Following their thorough investigation, they concluded that the catastrophe is a major issue that requires immediate attention. Disaster-related losses in terms of lives and property have been rising throughout the globe because of urbanization, population growth, and environmental degradation. The frequency and severity of catastrophes do not equal the worldwide efforts to control them. The National Disaster Management Authority (NDMA) oversees a number of initiatives aimed at disaster mitigation and response. The National Cyclone Risk Management Project, the School Safety Project, the Decision Support System, and others are among them. On November 9, 2017, the India Disaster Response Summit was held in New Delhi. The National Disaster Management Authority (NDMA) and the social networking site Facebook collaborated on this summit. India is the first nation to collaborate with Facebook on disaster relief efforts.

REFERENCES

- [1] M. Yu, C. Yang, and Y. Li, "Big data in natural disaster management: A review," *Geosciences (Switzerland)*. 2018, doi: 10.3390/geosciences8050165.
- [2] C. S. A. Siriwardana, G. P. Jayasiri, and S. S. L. Hettiarachchi, "Investigation of efficiency and effectiveness of the existing disaster management frameworks in Sri Lanka," 2018, doi: 10.1016/j.proeng.2018.01.141.
- [3] C. Asamoah, H. Akussah, and A. Musah, "Recordkeeping and disaster management in public sector institutions in Ghana," *Rec. Manag. J.*, 2018, doi: 10.1108/RMJ-01-2018-0001.
- [4] F. Juanita, S. Suratmi, and I. L. Maghfiroh, "The Effectiveness of Basic Training on Disaster Management Pilot Program for Disaster Preparedness in Community," *Indones. Nurs. J. Educ. Clin.*, 2018, doi: 10.24990/injec.v2i2.157.
- [5] P. Nepal, N. R. Khanal, and B. P. Pangali Sharma, "Policies and Institutions for Disaster Risk Management in Nepal: A Review," *Geogr. J. Nepal*, 2018, doi: 10.3126/gjn.v11i0.19546.
- [6] R. Kikuchi, M. Numada, M. M. Mon, T. Naing, K. T. Yu, and K. Meguro, "A comparison of disaster management plans for both Japan and Myanmar," *J. Disaster Res.*, 2018, doi: 10.20965/jdr.2018.p0062.
- [7] H. Goyal, "A Review on Disaster Management and its Mitigation Techniques," vol. 6, no. 11, pp. 1–3, 2018.
- [8] E. Lettieri, C. Masella, and G. Radaelli, "Disaster management: Findings from a systematic review," *Disaster Prev. Manag. An Int. J.*, vol. 18, no. 2, pp. 117–136, 2009, doi: 10.1108/09653560910953207.
- [9] S. L. Cutter, K. D. Ash, and C. T. Emrich, "Urban–Rural Differences in Disaster Resilience," *Ann. Am. Assoc. Geogr.*, 2016, doi: 10.1080/24694452.2016.1194740.

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- [10] A. Asadzadeh, T. Kötter, P. Salehi, and J. Birkmann, "Operationalizing a concept: The systematic review of composite indicator building for measuring community disaster resilience," *International Journal of Disaster Risk Reduction*. 2017, doi: 10.1016/j.ijdr.2017.09.015.