Chapter 4

Internet Information Monitoring System:
A Digital Tool for Emergencies, Crises, and Disasters

Paola Pinheiro Bernardi Primo
Universidade Federal do Espírito Santo, Brazil

Michele Nacif Antunes
Universidade Federal do Espírito Santo, Brazil

Mariela Pitanga Ramos
Secretaria Estadual de Saúde do Espírito Santo, Brazil

Carlos Eduardo Gomes Siqueira
https://orcid.org/0000-0001-8993-3031
University of Massachusetts, Boston, USA

Adauto Emmerich Oliveira
Universidade Federal do Espírito Santo, Brazil

José Manuel Mendes
https://orcid.org/0000-0003-3602-9756
Centre for Social Studies, Faculty of Economics, University of Coimbra, Portugal

ABSTRACT

This study presents an information monitoring system: SIGDesastre. It is a method of monitoring the various sources of information available on the internet. The monitoring scenario is the failure of the dam in Mariana, Brazil. This event was considered the biggest socio-environmental disaster in the country. The creation of SIGDesastre involves the identification of the sources to be monitored, an automated search system for keywords in these pre-registered sources and the visualization of the results in a friendly environment. The use of information monitoring on the internet is considered an important tool for the post-disaster risk communication process. The monitoring of information on the internet is believed to be a potential device to support managers in institutional decisions and in the formulation of public policies. Also, for the affected population, they will be able to expand access to information about the actions being taken by the actors involved.

INTRODUCTION

In recent decades records of disasters, crises and emergencies have risen worldwide. In 2009, the influenza A (H1N1) pandemic infected more than 600,000 people and was the first declaration of this type of emergency by the World Health Organization in the 21st century (WHO, 2009). In the early months of 2020, we saw a new worldwide public health emergency due to the new Coronavirus, the SARS-CoV-2, turn into a pandemic

Major socio-environmental disasters have also made history around the world. One important example is dam disasters. According to the database of the World Information Service on Energy (WISE), there are records of about 90 serious dam disasters in the world in the last 50 years, which makes them common and recurrent disasters (WISE, 2020).

In 2015, the biggest socio-environmental disaster in the world took place in Brazil. On November 5, 2015, Fundão dam, located in Mariana, state of Minas Gerais (MG), ruptured generating a "wave" of mine tailings and destruction. More than 50 million cubic meters of tailings were dumped in the Doce River basin. The mining complex where the dam was located belongs to "Mineradora Samarco," a company controlled by the multinationals Vale S.A. and BHP Billiton, each with 50% of the company's shares. About four years after the Fundão dam burst, on January 25th, 2019, the dam of "Córrego do Feijão" mine ruptured, in the city of Brumadinho, also in Minas Gerais. Until September 8, 2019, there were 259 deaths and 11 people missing, according to data reported by government agencies (CIVIL DEFENSE-MG, 2020). This disaster was considered the largest occupational accident ever recorded in Brazil by magnitude of fatalities.

One of the important issues in a catastrophic dam rupture, such as the Fundão's, is risk communication and access to information by the population affected before, during, and after the disaster. Those issues are often neglected in Brazil. We think that by guaranteeing access to quality, transparent and updated risk information for exposed populations, it is possible to reduce social vulnerability. Access to information and communication should thus be considered an important dimension of social vulnerability.

With the advent of the Internet, the volume of information is continuously growing and there is a wide dispersion of information. Integrated, contextualized and networked communication can be used to understand certain problems, including public health ones, either more quickly in identifying outbreaks or forecasting scenarios.

Data collected via the Internet and social media sites have generally been used as a complementary source of epidemiological surveillance data during epidemics and to supplement data for existing outpatient, hospital and laboratory systems (Hempel, 2014; Abdullah; Wu, 2011). Nevertheless, it is still little used for monitoring disasters. Therefore, information monitoring is an important tool to guide the decision making of managers in different areas and, mainly, in the health area. This improvement in knowledge about a given scenario improves the quality of management and the strategy to develop and consolidate public policies in contexts of epidemics, crises and disasters (Cruz and Reis, 2011; Moraes and Vasconcellos, 2006).

One of the strengths of monitoring is to collect a large amount of organized information from different sources (Antunes *et al.*, 2014). In cases where governments need to act quickly, such as in disasters and emergencies, monitoring can be used to automatically track information from the web to support decision making.

Related Content

Using an Agent-Based Behavior Modeling for Finding Humanitarian Relief Center Location in an Earthquake Zone

Numan Celebi (2014). *Crisis Management: Concepts, Methodologies, Tools, and Applications (pp. 876-891).*

www.irma-international.org/chapter/using-an-agent-based-behavior-modeling-for-finding-humanitarian-relief-center-location-in-an-earthquake-zone/90755

Web-Based Group Decision Support for Crisis Management

Simon French, Clare Bayleyand Nan Zhang (2009). *International Journal of Information Systems for Crisis Response and Management (pp. 41-53).*

www.irma-international.org/article/web-based-group-decision-support/2776

Adapting to Online Learning: A Pioneering Journey in Technological Transformation

Shahnaz Hamid (2024). *Building Resiliency in Higher Education: Globalization, Digital Skills, and Student Wellness (pp. 21-37).*

www.irma-international.org/chapter/adapting-to-online-learning/345215

The Economic Crisis: The Result of Reducing the Systemic Links

Daniel Belingherand Cantemir Adrian Calin (2014). *Crisis Management: Concepts, Methodologies, Tools, and Applications (pp. 247-258).*

www.irma-international.org/chapter/the-economic-crisis/90719

Disaster Economic Loss and Income: An Assessment in Entitlement Perspective

Md. Abul Kalam Azad, Md. Juel Miaand A. K. M. Nazrul Islam (2020). *International Journal of Disaster Response and Emergency Management (pp. 1-23).*

www.irma-international.org/article/disaster-economic-loss-and-income/268783