Chapter 8
Sentiment Analysis in Crisis Situations for Better Connected Government: Case of Mexico Earthquake in 2017

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ABSTRACT

One of the pillars of connected government is citizen centricity: an approach in which citizen participation is essential. In Mexico, social networks are currently one of the most important means by which citizens express their needs and provide opinions to the government. The goal of this chapter is to contribute to citizen centricity by adapting the methodology of sentiment analysis of social media posts to an expanded version for crisis situations. The main difference in this approach from the normally accepted one is that instead of using pre-defined classes (positive and negative) for sentiments, the authors first determined the different data categories and then applied them to the classic process of sentiment analysis. This approach was tested using posts on Mexico's earthquake in 2017. They found that needs, demands, and claims made in the posts reflect sentiments in a better way, and this can help to improve the government-citizen connection.

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INTRODUCTION

The connected government strategy is based on six fundamental pillars: citizen centricity, common standardized infrastructure, back-office reorganization, governance, new organizational model, and social inclusion (Kaczorowski, 2004). To further strengthen these pillars, in recent years, governments have turned their attention to Internet-based technology. This has resulted in an increase of public services, reduction of costs, and improvement in the government's relationship with the electorate. Governments have also been able to exploit their considerable investments in information and communication technologies to strengthen their international competitive advantage (Kaczorowski, 2004: p. 3).

As a consequence of the adoption of new technologies, affordable channels for connecting citizens with government have become possible (Mahmood, 2014). Social Media networks are a clear example of these channels. They have become very important in modern society and a powerful means of expression where people can freely share opinions, including those concerning their needs, aspirations and claims on government topics. Therefore, social networks represent one of the most common tools used by citizens and governments. These platforms have worked as a mechanism for the improvement of government-to-citizen interactions and communications, as well as for the improvement of interaction between citizens, and streamlining citizen participation actions.

An important social networking tool is micro-blogging. Twitter is the most commonly used platform of this type, worldwide. Data extracted from micro-blogging platforms have been used in many studies to identify the polarity of sentiments in posts. This information has been useful for decision making in organizations. In most of these studies, only two categories (positive and negative) have been considered. In other cases, sentiments have been categorized into three divisions: positive, negative and neutral (Neppalli et al., 2017). Although valuable, this type of analysis is not sufficient for a complete understanding of the sentiments expressed in posts as a reaction to some complex events such as political elections, catastrophes, or even suicidal thoughts (Birjali et al., 2017). Therefore, some researchers have considered a variety of emotions in order to identify sentiments on Twitter and other platforms (Gaspar et al., 2016). During a crisis situation, citizens usually post on social networks. These posts have different aims: to stand in solidarity, to organize, to request, to complain, or even to protest against the government, organizations, or specific people. In situations of this kind, it is necessary to identify not only the polarity of the publications, but also an analysis of feelings to a greater level of precision.

The aim of this chapter is to contribute to connected government strategies by means of a methodology for sentiment analysis in a crisis. The methodology presented here is an adaptation of the standard approach to sentiment analysis as reported in the literature. However, we expanded the list of sentiments in order to better explain the data. We tested our approach on data regarding an earthquake which occurred in September 2017 in Mexico. The seismic activity was more severe at that time, and there were several strong earthquakes. Two of them were particularly intense, causing damage to buildings and dozens of deaths:

- The first earthquake on September 7 was an oscillatory earthquake and was recorded at 8.2 on the Richter scale. The States of Oaxaca and Chiapas were the worst affected. Over 110,000 properties were damaged, in addition to 96 people who lost their lives (Wade, 2017).
- The second earthquake, on September 19 (19S) was recorded at 7.1 on the Richter scale and caused more damage than the first one, particularly in the States of Oaxaca, Chiapas, Morelos, Guerrero, Puebla, State of Mexico, and Mexico City (Mexico's capital) (Atienza et al., 2017).