Chapter 9
Sentiment Analysis, Social Media, and Public Administration

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ABSTRACT

This chapter describes how sentiment analysis, based on texts taken from social media, can be an instrument for measuring popular opinion about government services and can contribute to evaluating and developing public administration. This is an applied, interdisciplinary, qualitative, exploratory, and technological study. Throughout the chapter, the main theoretical and conceptual formulations about the subject are reviewed, and practical demonstrations are made using opinion-mining tools that provide high accuracy in data processing. For demonstration purposes, topics that triggered the popular protests of June 2013 in Brazil were selected, involving million people across the country. A total of 51,857 messages posted on social media about these topics were collected, processed, and analyzed. Through that analysis, it can be observed that even after six months, the factors that motivated the protests continued generating citizen dissatisfaction.

INTRODUCTION

The large volume of data posted on the Internet through social media is producing important changes in people's communication, knowledge sharing, and sentiments that influence social, political, and economic behaviors worldwide (Montoyo, Martínez-Barco, & Balahur, 2012).

Mostafa (2013) points out that opinions expressed on social media are vital in influencing government behavior in many areas. For example, in political and public management areas, these

media have the power to disseminate opinions that may result in both improved public services and protests motivated by citizen dissatisfaction with government (O'Callaghan et al., 2014; Papacharissi & Oliveira, 2012).

The popularity of these tools is considerable, making them a significant information source that can also be used to improve public services. Therefore, in addition to direct channels where citizens can send their opinions by e-mail, through online portals, and other complaint mechanisms, social media tools (blogs, microblogs, social networking sites, among others) can be used to promote participatory and citizen-oriented public services (Sobaci & Karkin, 2013). However, the sheer volume of information circulating on the Internet requires technologies enabling its analysis (Bonson, Torres, Royo, & Flowers, 2012).

Sentiment analysis, or opinion mining, is an automated knowledge discovery technique that aims to find hidden patterns in a large amount of textual information, including social media (Mostafa, 2013). The goal of sentiment analysis is to create a knowledge base in a structured, explicit manner containing reviews (positive, negative, and neutral) that express sentiments, evaluations, and perceptions about any subject (Fortuny, Smedt, Martens, & Daelemans, 2012; Sobkowicz, Kaschesky, & Bouchard, 2012).

In this context, this study aims to propose a technique of sentiment analysis as a tool to allow public administrators to use information circulating on social media for strategic purposes. In other words, this study describes how sentiment analysis can be used as an instrument for measuring public opinion about public services and identifying citizens' main dissatisfactions with government, so that government can reset its priorities and avoid unpopularity or even conflict.

This work is justified because it is necessary to understand the social media applications' use as acceptable channels for interaction between the government and its stakeholders, which can potentially make a difference in the perceptions

and sentiments of citizens in relation to the government (Mergel, 2013a). Moreover, "despite the growing attention to analyzing user-generated content from social media, most […] researchers have little knowledge about how to apply content-mining methods" (Yoon, Elhadad, & Bakken, 2013, p. 122) and lack appropriate metrics to identify the impacts of the government's actions on social media (Hofmann, Beverungen, Räckers, & Becker, 2013; Mergel, 2012). In addition, this study presents relevant theoretical and empirical contributions showing how to apply sentiment analysis to identify widespread social media opinions on politics and public management.

Thus, this chapter explores the sentiment analysis of data mining on social media about important topics in public administration, demonstrating its potential and capacity to identify citizens' views.

The next section of this chapter presents the theoretical background. The third section introduces social media as data sources. The fourth section explores recent literature about sentiment analysis of social media, describing the main issues, advantages, and limitations of the technique, and further presenting works related to the topic. The fifth section demonstrates the application of sentiment analysis to public administration by means of a practical example. Finally, the chapter concludes with information about future trends regarding the use of sentiment analysis of social media as a form of establishing a dialogue between government and citizens aiming to achieve a more democratic public management.

Background

Increasingly, citizens are using social media to communicate with families, friends, coworkers, companies, and even government (Kavanaugh et al., 2012). In addition, social media include a set of technologies that allow collaborative communication between stakeholders and government (Oliveira & Welch, 2013).

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