# Excavating Business Intelligence from Social Media

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## INTRODUCTION

Social media technologies have changed the way individuals, teams and organizations communicate. Today, social networking sites, blogs, and forums, are used as channels of communication between family, friends, neighbours, and co-workers. Businesses are also facing new challenges. The volume of data in social media platforms can provide valuable insights on people's opinions that are difficult and costly to find elsewhere, it also offers new opportunities for business intelligence (BI).

In recent years, efforts by businesses to understand the environment in which they operate using new media channels are typically constrained to customer analytics. Indeed, many of these metrics are incorporated as services by social media to their corporate users. Although these measurements are useful to estimate the effectiveness of marketing campaigns or brand awareness, they appear to be insufficient to provide a deeper understanding of customers' behaviours. This is because much of the information retained by social networks is embedded in different artefacts such as unstructured text, videos, photos, and patterns of user actions. These are not uniform and do not afford standard manipulative actions. The situation is further complicated by the continuous evolution of social media, which constantly update their services and integrate new social media functions. This makes harder a one-off solution for collecting and analysing online data; something that could be achieved much more easily in a business supported forum or a bulletin board.

In this chapter, we provide a step towards a model for obtaining business intelligence through social media grounded in the concept of virtual settlements. The notion of a virtual settlement was introduced by Jones (1997) in an effort to understand virtual communities through what he termed as cyber-archaeological inquiries. Re-focusing the problem from virtual communities to more general cyber-phenomena allows us to approach social technologies as a kind of archaeological settlement whose excavation may facilitate improved BI. In this effort, we first motivate a method and then demonstrate the method's application to BI through a case study.

## BACKGROUND

Transforming business relevant data into BI has been a long-standing aim of firms in different sectors of the industry (Chen, Chiang, & Storey, 2012; Wixom & Watson, 2010). In recent years, the portfolio of methods has expanded to account

*Table 1. Recent efforts in utilizing social media data*

| Scholarship | Methods/Methodology | Social Media | Application |
|---|---|---|---|
| (Hogg, 2010) | - Social network analysis<br>- Network topology | - Social network service (Essembly.com) | Identifying consumer preferences to help sellers design customized bundles of products. |
| (Xu, Guo, Li, Lau, & Liao, 2012) | - Social network analysis<br>- Influence network<br>- Web mining | - Users opinions Website supporting social networking functions (Epinions.com)<br>- Micro-blogging platform (Twitter.com) | Analysing user opinions to discover influential user for marketing and enterprise reputation management. |
| (Castellanos et al., 2011) | - Natural Language Processing<br>- Sentiment Analysis | - Micro-blogging platform (Twitter.com) | Conducting real-time and historical sentiment analysis to get customer insights on new marketing or sales campaign. |
| (Prestus & Bygstad, 2010) | - Text mining | - Social network service (Facebook.com) | Utilizing social media to manage customer relationships and customer communication. |
| (Zhang, Fuehres, & Gloor, 2011) | - Sentiment Analysis | - Micro-blogging platform (Twitter.com) | Predicting stock market indicators by measuring collective hope and fear. |
| (Bollen, Mao, & Zeng, 2011) | - Sentiment Analysis | - Micro-blogging platform (Twitter.com) | Predicting stock market indicators through mood tracker tools. |
| (Sobkowicz, Kaschesky, & Bouchard, 2012) | - Natural language processing<br>- Semantic Web approaches | - Online discussion platform<br>- Blogging platforms (Technorati.com) | Exploring ways that online content can be exploited used to inform decision makers and the potential impacts of policy initiatives. |
| (Abrahams, Jiao, Wang, & Fan, 2012) | - Text mining<br>- Content analysis | - Online discussion platform (honda-tech.com) | Facilitate decision support for the vehicle defect discovery and classification process. |
| (Kavanaugh et al., 2012) | - Semantic analysis Visualization | - Social network service (Facebook.com)<br>- Micro-blogging platform (Twitter.com)<br>- Video-sharing platform (Youtube.com) | Leverage social media data by government officials to improve communication with citizens and managing crisis situations. |
| (Callarisa, García, Cardiff, & Roshchina, 2012) | - Quantitative assessment | - Travel related social network service (Tripadvisor.com) | Measuring brand equity using online customer reviews. |

for social media such as social Web sites and social networking services. This is mainly due to the wealth of data hosted and made available with the end users' consent. Such data turn out to be useful in revealing not only cultural information about past and/or on-going incidents but also market trends, consumer behaviour and other business related aspects. Such information can be processed and analysed from various perspectives such as social network analysis (Scott, 1988), virtual ethnographic assessments (Harrison, 2009), data mining and information discovery (Fayyad, Piatetsky-Shapiro, & Smyth, 1996). The capability of enterprises to appropriate such data stems from the social media platforms' openness, interoperability and use of third-party applications. An attempt to synthesize representative efforts in this direction is presented in Table 1.

The efforts presented above are indicative of the importance of social media for modern enterprises. However, they do not follow a common protocol and do not allow comparisons across cases. Moreover, they are frequently limited to what is 'traceable' using a certain tool at the expense of what is needed and most useful for an enterprise. To address these challenges, the present work links with efforts that conceive BI in Web 2.0 as a type of archaeological inquiry conducted in a virtual settlement; aiming to bring to the surface traces of digital remains of potential value for enterprises.

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