

# Towards a Framework for Classification and Adoption of Social Media Monitoring Tools

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**Abstract:** The huge popularity and evolution of the Web in the last decade, and the rapid advances in ICT allowed an exponential growth of the volume and diversity of data produced by social media. The widespread use of social media has encouraged citizens to give their opinions more freely and actively participate in several aspects of modern life. The data provided in this context can have a great impact on business, where often opinions of customers may contribute to the success of a product or service, or destroy the reputation of a brand or a company. The effective and full use of social media by organizations require that they are able to monitor and analyse the high volumes of heterogeneous data that are produced by these media, so as to obtain relevant information and valuable insights for decision making and for conducting their business. Due to the diversity of social media monitoring tools available and wide range of features offered, we propose a framework to classify and guide the process of adoption of such a tool (or set of tools) by an organization. While the design of the framework is still at an early stage, its foundations are presented in this paper.

**Keywords:** social media tools, social media monitoring tools, framework, thresholds

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## 1. Introduction

The huge popularity and evolution of the Web in the last decade and the rapid advances in ICT allowed an exponential growth of data obtained from the use of social media, mainly unstructured data and therefore of a different type of traditional data. These data contain potential valuable information that can be extremely useful, if appropriate monitoring tools are used to extract relevant information for organizational decision support. Social media tools have raised new challenges for research: content analysis, discovery and monitoring, and context-based services (Shen et al., 2012). Social media tools encouraged citizens to give their opinions more freely and participate more in many aspects of life, such as in politics. Furthermore, they also have a huge impact on business, where opinions of online users often contribute to the success of a product, or may destroy the reputation of a brand or a company (Ferreira al., 2014).

Within the business context, companies currently understand the value of social media tools, the benefits that they may get from their use and the role they play in the development of business in the future. The problem that arises is how to achieve these goals effectively, especially with the diversity of social media tools available.

Social media monitoring tools, as defined by Janssen (2014), are useful in the discovery of what is happening in online environments in which a company operates, because they allow the transfer of words and phrases from unstructured to structured database data.

Today's organizations tend to use modern strategic marketing plans to promote their products and services by using social media tools. Hence, organizations can measure customer responses or potential customers' attraction regarding their interactions with social tools. This evaluation can only be carried out efficiently, if it is performed through the use of monitoring tools of the target social media. The results obtained can be used in defining new marketing strategies, address issues and problems identified by customers, etc.

Thus, an analysis of social media monitoring tools is needed as well as the definition of a framework for their adoption, so that organizations can use the most appropriate tool in order to obtain relevant information and valuable insights for decision-making. In this paper, we present a framework to drive the adoption of a social media monitoring tool.

The rest of the paper is structured as follows. In Section 2 we present related work within the area of social media monitoring tools adoption. In Section 3 we present the foundations for the framework proposed and its way-of-working. Section 4 concludes with considerations on the achievements produced so far and directions for future work.

## 2. Related work

Related work in this subject mostly include proposals for the adoption of a social media monitoring tool based on a qualitative approach by organizing tools into categories and sub-categories of features whereas only one approach is based on the cost criterion.

The work undertaken by (Dyer, 2013; O'Hare, 2014; Crowd, 2014; Barakat, 2014; Davids, 2014; Keshav, 2014) has in common the identification of a set of aspects that should be considered in social media monitoring tools. These aspects are subdivided into five categories and each category by a set of functionalities/features.

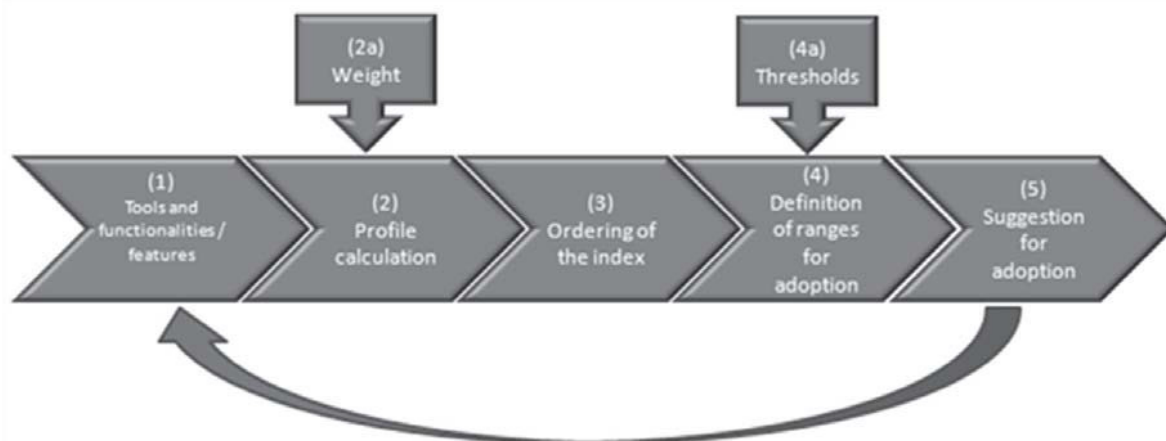
Neiger et al. (2012) discuss three issues that should be considered in the process of adoption of social media monitoring tools: 1) Why are you using social media? 2) What will be your key performance indicators? and 3) How will you match your evaluation metrics to your performance indicators?. Neiger et al. (2012) also examine the use of indicators in measuring social media. These metrics comprise five areas: brand awareness, critical information dissemination, reach, public engagement, and market insights.

Chaffey (2014) does not present a specific selection method for social media monitoring tools, but only a set of features organized in four levels, whereas Ntalianis et al. (2014) for adoption of such tools use as the single criterion "more known in the market".

Finally, Aquino (2012) discusses a number of issues regarding the alignment of what organizations need and the kind of tools that should be used. Regarding the issue of tools selection, the author puts forward the guiding principle of cost.

## 3. A framework for classification and adoption of social media monitoring tools

The literature survey presented in the previous section has shown that none of the proposed solutions include a quantitative approach to help decision-makers in the adoption of social media monitoring tools, as well as on the analysis of the functionalities and features of these tools. Acknowledging this gap, we propose a framework for classification and adoption of social media monitoring tools. The proposed framework is shown in Figure 1 and is composed of five phases.



**Figure 1:** The proposed framework for adoption of social media monitoring tools

In the first stage (1) tools are collected from the repository of available tools, and their functionalities and features are identified. After building the matrix (tools – functionalities/features), in step (2), weights (2a) are assigned to each of the functionalities, according to the degree of importance that the feature is perceived to have. Subsequently, the profile of each tool is calculated through the formula (1). In step (3) the ordering of the sorting index is performed. This ordering is made based on the profiles calculated for each tool in step (2). In step (4) thresholds are set (4a) so that intervals of choice may be defined. By using step (5) and based on the defined thresholds, it is possible to have as an outcome the suggested tool or tools most suitable for an adoption. At this stage, the following three types of adoption are allowed: (i) adequate full adoption; (ii) conditional adoption; and (iii) should not to be adopted. The process is iterative, as new tools and functionalities may be considered, and need to be evaluated in the process.

The rating index of the tools is represented by a vector, which is a data structure used to represent the profile of the tool and its suitability, calculated through several pairs of functionalities and related weights. The functionalities/features considered are those identified in the previous analysis performed, and the weights represent the degree of interest that these functionalities should have in calculating the tool profile to address a given situation. The values set for the functionalities can be (0, 1) to indicate that the functionality is or is not included in a given tool, whereas weights can range from (1 to 5), with 1 representing “not at all relevant”, and 5 representing “very relevant”.

The calculation of each tool profile is done through the following formula (1):

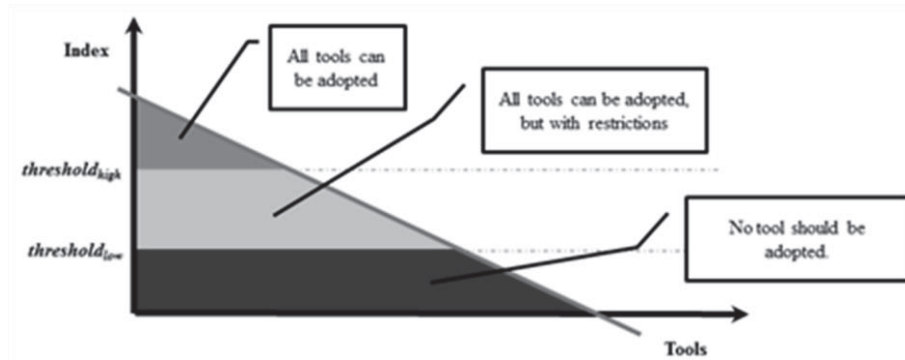
$$t_k = \frac{\sum_{i=1}^n p_i \times f_i}{\sum_{i=1}^n p_i} \quad (1)$$

where  $t_k$  represents the final classification of tool  $k$ ,  $p_i$  is the weight assigned to feature  $i$ , and  $f_i$  is the existence of feature  $i$ , in the  $i$  tool.

Assuming that the repository has  $n$  tools, each is identified by a number of functionalities  $F_n$ , then the tool profile is represented as a vector  $P(t_i) = \langle p_{i1}, p_{i2}, \dots, p_{in} \rangle$ , where  $n$  is the dimension of the vector and  $p_{ij}$  is the weight for functionality  $j$ . The profile of the tools may be represented as  $P(t_i) = \langle (f_i, p(t_i, f_i)) | f_i \in F, t_i \in T \rangle$  where  $F$  and  $T$  are the sets of functionalities and tools, respectively.

After assigning the weights, the calculation of the profile is needed so as to further introduce criteria for adoption of the tools. Hence, as explained above, two thresholds, “high” and “low”, were established, to set the ranges indication for the adoption. Thus, after obtaining the index of tools, it is necessary to observe the intervals where each tool fits, to be able to make a suggestion for adoption. For example, if  $T_i > threshold_{high}$  then any tool can be adopted without subject to cost constraints; however, if  $threshold_{low} < T_i < threshold_{high}$  then the tool can be adopted, but in a more moderate way. All tools which profile is below  $threshold_{low}$  should not be adopted.

For a clearer understanding of the process, the last phase of the framework (the adoption phase) is graphically presented in Figure 2.



**Figure 2:** Graphical presentation of phase 5 of the framework

Underlying the definition of  $threshold_{high}$  is the idea that any tool that has a higher profile than this value covers almost all the functionalities defined initially, so it should be suggested for adoption, since the missing functionalities/features are not core to the analysis/monitoring of the target organization/situation.

On the other hand, the definition of  $threshold_{low}$  implies the need to consider a tool with at least the main functionalities. In this range, the cost factor, although it is not included in the calculation of the tool profile, may be crucial to the suggestion of adoption of a given set of tools.

#### 4. Conclusions and future work

The effective and full use of social media by organizations require that they are able to monitor and analyse the high volumes of heterogeneous data that are produced by these media, so as to obtain relevant information and valuable insights for decision making and for conducting their business.

Due to the diversity of social media monitoring tools available and the wide range of features offered, we propose a framework to guide the process of adoption of such a tool (or set of tools) by an organization.

The framework design is currently at an early stage and there are several issues that need to be fully explored. Nevertheless, we believe that it represents a valuable contribution to acknowledge the potential of social media monitoring tools and to envisage a classification scheme of these tools. When fully developed and tested, it will provide the necessary guidance for the adoption of these tools.

Further work should target the definition of the right or more appropriate weights and thresholds. For this purpose, a multiple case study approach should be adopted, including domain experts to validate weights and thresholds of the proposed framework. Finally, to determine the weights and thresholds, other issues may be considered besides the functionalities of the tools. For example, the impact of tool cost on adoption, the business area of the organization, or even the size of the organization.

## References

- Aquino, J. (2012). Find the right Social Media Monitoring Tool. Customer Relationship Management. 33-37
- Barakat, C. (2014). "30 Social Media Monitoring Tools for Business." [online] [http://socialtimes.com/30-social-media-monitoring-tools-business\\_b199940](http://socialtimes.com/30-social-media-monitoring-tools-business_b199940) (visited on 08/09/2014).
- Chaffey, D. (2014) "Social media listening tool comparison." [online] <http://www.smartinsights.com/social-media-marketing/social-media-analytics/social-media-listening-tool-comparison/>
- Crowd (2014). "Compare Best Social Media Monitoring Software." [online] <https://www.g2crowd.com/categories/social-media-monitoring>.
- Davids, S. (2014). "30 Best Social Media Monitoring Tools for Business." [online] <http://stuartj davidson.com/social-media-monitoring-tools/>
- Dyer, P. (2013). "50 Top Tools for Social Media Monitoring, Analytics, and Management." [online] <http://www.socialmediatoday.com/content/50-top-tools-social-media-monitoring-analytics-and-management>
- Ferreira, M. J., Moreira, F. and Seruca, I. (2014). A traditional organization towards a new dimension of labour – social business", Information systems and Technology for Organizational Agility, Intelligence, and Resilience, pp. 180-204, Hershey: Information Science Reference, DOI: 10.4018/978-1-4666-5970-4.ch009
- Gorry, G. A., and Westbrook, R. A. (2011). Can you hear me now? Learning from customer stories. Business horizons, 54(6), 575-584. <http://dx.doi.org/10.1016/j.bushor.2011.08.002>
- Hagel, J., Brown, J. S., and Davison, L. (2010). The Power of Pull: How Small Moves, Smartly Made, Can Set Big Things in Motion. New York: Basic Books.
- Janssen, C. (2014). "Social Media Monitoring." [online] <http://www.techopedia.com/definition/29592/social-media-monitoring>
- Jarche, H. (2011). "Social learning for business." [online] <http://www.jarche.com/2011/01/social-learning-for-business/>
- Keshav (2014). "Top 9 Free Social Media Monitoring Tools That You Cannot Miss Out On." [online] <http://digitalescalator.com/2014/03/top-9-free-social-media-monitoring-tools-that-you-cannot-miss-out-on/>
- Neiger BL, Thackeray R, Van Wagenen SA. (2012) Use of social media in health promotion: purposes, key performance indicators & evaluation metrics. Health Promot Pract. 13(2):159–64. doi: 10.1177/1524839911433467.
- Noll, M. G., and Meinel, C. (2007). Web search personalization via social bookmarking and tagging. The Semantic Web (pp. 367-380). Springer.
- Ntalianis, K., Papadakis, N. and Tomaras, P. (2014). Reputation Monitoring over Rule-Stringent Social Media based on Advanced Wrapper Technologies. 2nd International Conference on Strategic Innovative Marketing. Procedia – Social and Behavioral Sciences. 148. 559-566
- O'Hare, M. (2014). "New social media monitoring rankings: Brandwatch, Synthesio earn high marks." [online] <http://about.g2crowd.com/blog/new-social-media-monitoring-rankings/>
- Shen, H. T., X. S. Hua, et al. (2012). Guest editorial: content, concept and context mining in social media." World Wide Web-Internet and Web Information Systems 15(2): 115-116.