

## **Profiling Innovators: an Emotional Text Mining and Social Network Analysis Approach**

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The identification of innovative staff members is a challenge for many business companies. This study looks at employees' communication, presenting a new procedure to identify and profile innovators. The procedure combines Emotional Text Mining (ETM) and social network analysis. ETM is an unsupervised methodology, which allows the profiling of people based on their communication; it is a bottom-up semiotic approach used to classify unstructured data by means of cluster analysis and correspondence analysis. The study of the word chosen to talk about a topic and their co-occurrence allows the understanding of people's symbolizations, representations and sentiment, about one or more discourse topics (Greco & Polli, 2019). ETM is a fast and relatively simple procedure, which can be used to extract meaningful information from large text corpora. In order to profile innovators and describe their social behavior, we analyzed the intranet forum of a large Italian company and one-year interactions of about 11,100 employees. These interactions produced a large text corpus, consisting of over 1.8 million tokens. As a first step, we performed cluster analysis through bisecting k-means to segment the main discourse topics. Subsequently, we applied ETM on 7 clusters, in order to determine the innovation potential of each employee. At the same time, we studied those social traits which characterized the most innovative people in the company. In particular, we analyzed honest signals of communication (Pentland, 2010), studying the employees' degree of connectivity, interactivity and use of language (Gloor, 2017). We found

that the language and social behavior of innovators significantly differentiated them from their peers. Our findings have important practical implications: we propose a new methodology which can help R&D managers to recognize innovative staff members – and nurture them, supporting the kind of communication and interaction dynamics that can foster innovation.

## References

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