

Chapter 5

Using Social Network Analysis to Support Collective Decision-Making Process

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ABSTRACT

Current traditional technologies, while enabling effective knowledge sharing and accumulation, seem to be less supportive of knowledge organization, use and consensus formation, as well as of collaborative decision making process. To address these limitations and thus to better foster collective decision-making around complex and controversial problems, a new family of tools is emerging able to support more structured knowledge representations known as collaborative argument mapping tools. This paper argues that online collaborative argumentation has the rather unique feature of combining knowledge organization with social mapping and that such a combination can provide interesting insights on the social processes activated within a collaborative decision making initiative. In particular, the authors investigate how Social Network Analysis can be used for the analysis of the collective argumentation process to study the structural properties of the concepts and social networks emerging from users' interaction. Using Cohere, an online platform designed to support collaborative argumentation, some empirical findings obtained from two use cases are presented.

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INTRODUCTION

In the current dynamic and turbulent environment, organizations increasingly have to deal with complex problems. One way to deal with such increasing complexity is to create multidisciplinary and multi-stakeholders working groups in order to have diverse perspectives on the problem, different individual knowledge and skills, and alternative approaches for problem solving (Beers et al., 2006). As highlighted in literature, in the last decades many organizational decisions migrated from individual decisions to distributed decisions based on the contributions offered by large, diverse groups of individuals within a firm or even from multiple firms (Shim et al., 2002). Nowadays, cooperative and collaborative decision making is achieving increasing importance in organizations (Jankovic et al., 2009). Collective decision making processes are mainly the consequence of environmental complexity which compel firms to make decisions on increasing complex problems, and the evolution of information and communication technologies which have made feasible interaction and communication among several and, in many cases, dispersed workers at decreasing, virtually zero, costs. These expectations are confirmed by anecdotes as well as empirical evidence that under the right circumstances collective decisions made by large groups of competent and motivated individuals can be more effective than single experts' or small group decision making (Page, 2008).

According to Zaraté and Soubie (2004), it is possible to identify four different types of collective decision-making processes on the basis of two main criteria, namely time and space:

- **Face to Face Decision Making:** Different decision makers, involved in the decisional process, are physically in the same place and at the same time.
- **Distributed Synchronous Decision Making:** Different decision makers, in-

involved in the decisional process, are not located in the same place but work together at the same time.

- **Asynchronous Decision Making:** Different decision makers, involved in the decisional process, come in a specific place (also virtual place) to make decisions but not at the same time.
- **Distributed Asynchronous Decision Making:** Different decision makers, involved in the decisional process, do not work together at the same time and in the same place.

Naturally, the collaborative decision making process in synchronous way is the richest, in terms of information exchanged among team members, and the most common way in organizations to make a decision especially in complex projects. Face to face group decision making is however prone to group thinking and well known group decision making pitfalls as information cascades, hidden profiles and polarization (Sunstein, 2006).

The advent of Internet has given rise to many new and enriched applications of existing technologies able to better make deliberation and decision making process more efficient and effective. In particular, Internet has made feasible for organizations the overcoming of time and space constraints (Cramton, 2001) and to draw together knowledgeable individuals and wider amount of information sources on a scale that was unimaginable few years ago. The main Web's impact on deliberation and decision making processes has been to increase information access and foster more rapid and deeper dissemination of relevant information to all decision makers implied in the process even if geographically dispersed as well as to make them less costly (Shim et al., 2002). Moreover, web-based tools promote more consistent and well-supported decision making by enabling a larger number of users to participate and, thus, promoting a broader exploration of the solution space.

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