Chapter 4.10
Applying Social Network Analysis in a Healthcare Setting

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INTRODUCTION

The people-to-people relationships where knowledge work actually gets performed in organizations are called social networks, and they may be in complete contradiction to the information flows expected, based on looking at the organizational chart of formal roles or titles. These informal or social networks are playing an increasingly important role in the healthcare industry, as medical and clinical knowledge needs to be shared effectively between people within and among healthcare organizations. Social network analysis (SNA) is a research methodology to analyze networks between people, groups, organizations, and systems within and across organizations (Wasserman & Faust, 1994). The results of the analysis inform the researcher of both the structure of the network, as well as the positions of nodes or people in the network. This article provides a description of how SNA can be applied in a healthcare setting.

Organizations are increasingly relying on networks of people, groups, and other institutions collaborating with each other to perform knowledge-based work. This is especially true in knowledge-intensive industries, such as business consulting, technology, research, and petroleum, where work is project-based in structure and sharing information within and between teams is essential to performance. Also, much of the

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critical work in businesses today requires tacit knowledge, which, by definition, is difficult to codify and resides in the key experts of the organization (Polanyi, 1983). Therefore, connections to these experts are required in order to leverage their expertise, past experiences, and institutional memory.

These informal or social networks are playing an increasingly important role in the healthcare industry. With the continued advancements in medical treatments, the rapid dissemination and sharing of this information becomes vital. While treatment descriptions can be codified and put into a database that physicians can access, often physicians will call on their personal relationships to understand the relevance, risks, and benefits of the latest medical knowledge. Physicians are turning to Web-based communities, such as sermo.com, to exchange, comment on, and rate others' postings on medical insights. Social networks are also vital to understanding the communication patterns, both between and within healthcare organizations. While traditionally operating as silos, these organizations recognize the need for improved access and sharing of clinical and medical research knowledge across their organizational boundaries. Within healthcare providers, social networks can reveal who are the key decision-makers or influencers pertaining to medical treatments, and the adoption of medical technology and information technology (IT), as well as determining if certain physicians are a bottleneck (or overburdened) when it comes to answering questions and disseminating information. Therefore a network perspective is vital to understanding how work gets performed in the healthcare industry.

BACKGROUND

There has been a dramatic rise recently in social network research in the management field (Borgatti & Foster, 2003). Network research has grown as a result of the importance of connections between people, groups, organizations, and IT systems. Network research has been used to study leadership (Brass & Krackhardt, 1999), entrepreneurship (Baron & Markman, 2003), knowledge management (Parise, Cross, & Davenport, 2006), individual performance (Mehra, Kilduff, & Brass, 2001), and team performance (Hansen, 1999). Social network analysis (SNA) is a structured methodology to analyze networks within and across organizations. The results of the analysis inform the researcher of both the structure of the network as well as people's positions within the network. Based on these findings, organizations can then develop interventions to produce the desired network effects. There has been limited research in the healthcare setting, using SNA as a methodology. SNA has been used to study the interaction patterns in primary care practices (Scott, Tallia, Crosson, Orzano, Stroebel, DiCicco-Bloom, O'Malley, Shaw, & Crabtree, 2005), identify influential individuals who are critical to the successful implementation of medical informatics applications (Anderson, 2005), and study the relationship between communication density and the use of an electronic medical record system by nurse practitioners and physicians' assistants (Tallia, Stange, McDaniel, Aita, Miller, & Crabtree, 2003).

SNA allows us to analyze the relationships among actors or nodes in a network. Nodes can be people, organizations, and IT systems. Connections between nodes are called links and determine the relationships between nodes. Two common representations of networks are bounded networks and ego networks (Wasserman & Faust, 1994; Scott, 2000). In a bounded network, the nodes in the network are predetermined. When using bounded networks, the researcher will often look for silos or fragments in the network. This occurs when there is a breakdown in communication between structures, such as between departments or divisions. Attribute data, such as current job tenure, company tenure, job level, location, and