Chapter 139
Social Network Analysis

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Category: Social Aspects of Knowledge Management

INTRODUCTION

In knowledge management (KM), one perspective is that knowledge resides in individuals who interact in groups. Concepts as communities-of-practice, knowledge networks, and "encultured knowledge" as the outcome of shared sense-making (Blackler, 1995) are built upon this perspective. Social network analysis focuses on the patterns of people's interactions. This adds to KM theory a dimension that considers the effects of social structure on for example, knowledge creation, retention and dissemination. This article provides a short overview of consequences of social network structure on knowledge processes and explores how the insights generated by social network analysis are valuable to KM as diagnostic elements for drafting KM interventions. Relevance is apparent for management areas such as R&D alliances, product development, project management, and so forth.

BACKGROUND

Social network analysis (SNA) offers a combination of concepts, formal (mathematical) language, statistical, and other methods of analysis for unraveling properties of social networks. Social networks have two building blocks: nodes and ties among the nodes. Nodes may represent people, groups, organizations, and so forth, while the ties represent different types of relationships for example communication flows, collaboration, friendships, and/or trust. As illustration, Figures 1a and 1b represent graphs of the business and marriage network of Florentine families in 15th century (see Padgett & Ansell, 1993). The graphs are created with Netdraw (Borgatti, 2002).

SNA has its origins in the early decades of the 20th century. It draws on insights from a variety of disciplines, most notably social psychology, structural anthropology, sociology, and particularly the sociometric traditions (Scott, 2000). The formal language of SNA is based in the mathematical branch of graph-theory (e.g., Harary, Norman, & Cartwright, 1965).

DOI: 10.4018/978-1-59904-931-1.ch139

Figure 1a. Florentine families business network

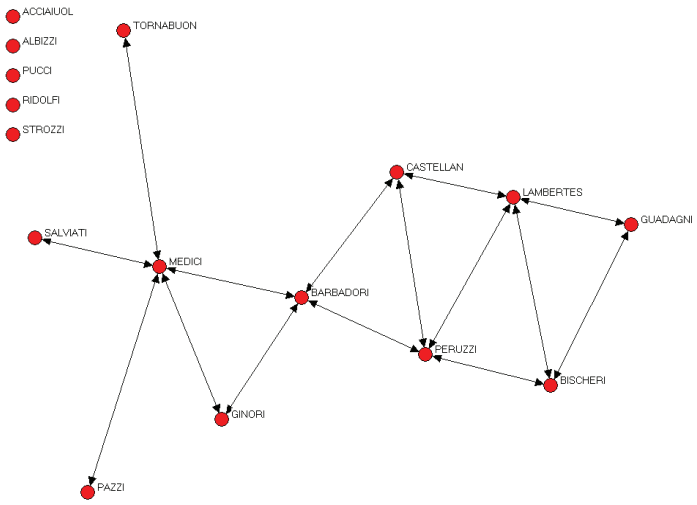
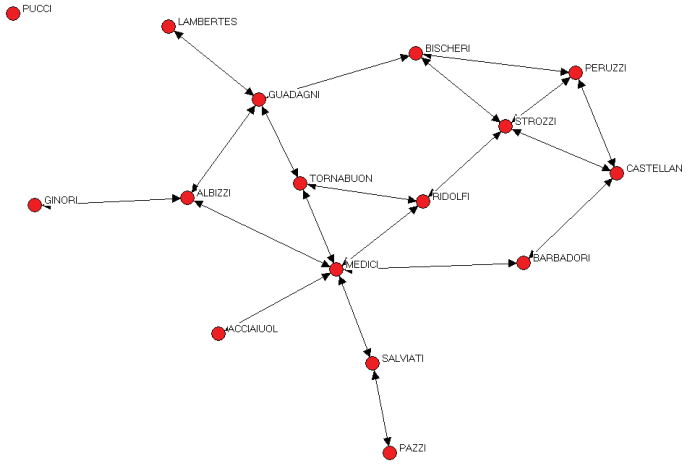


Figure 1b. Florentine families marriage network



Network statistics describe characteristics of a network and include network size, density, centrality, and so forth. Social network thinking has produced many such statistics (see Wasserman & Faust, 1994). However, only a limited number have been studied and have known consequences for knowledge management. To analyze and characterize networks, SNA provides statistics of the whole network, groups within the network, individuals, and relationships. The substantive meaning of these statistics often depends on the contents of the ties in the network.

Granovetter's (1973) seminal paper, titled "The Strength of Weak Ties," heralds the central place of social networks in knowledge management and shows the importance of relationship characteristics for knowledge transfer. Others show that social relationships and structures also are important for other knowledge processes, such as creation and retention (e.g., Burt, 2004; Hansen, 2002; Harga-