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# Exploring social networks on the team level—A review of the empirical literature

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### ABSTRACT

Despite the extensive set of findings on the determinants of team effectiveness, academic understanding of one potentially critical set of determinants, social networks, is limited. This paper is a review and a discussion of the literature on the impact of social networks in small groups such as teams. More specifically, the interest is in the effects of the structural characteristics of the networks on team effectiveness. The review covers various types of small groups: subjects of laboratory studies, student teams, innovation and R&D teams, and other organisational groups. The research findings for each type are reviewed, and the article concludes with a comparison of the variables studied. The progress that has been made is highlighted, suggestions for further research are made, and the key contributions to this area of study are summarised.

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## 1. Introduction

The importance of interaction is acknowledged as a basic process in an organisation. It enables the development and maintenance of its goals: humans working together need to constantly find effective ways of creating and maintaining the flow of ideas, information, decisions and tasks. The “human side” also has a clear role in new-product development, technology implementation and technology transfer. Thus, technology managers are among those who are acutely concerned about human connections (Green and Aiman-Smith, 2004), also termed social networks.

The literature on networks in general is extensive. Ranging from the social to the organisational and beyond, networks have emerged into a research area that includes and brings together various fields

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such as organisational theory and behaviour, strategic management, business studies, health-care services and public administration (Provan et al., 2007). In general, academics have made considerable efforts to understand what networks really are and how they develop. Despite the progress there is still a great deal we do not know. The aim of this article is not to reiterate what is already familiar about networks in general, but rather to focus on one particular aspect of network studies that has received only scant attention until recently. The main objective, therefore, is to establish what we know about the impact of social networks on various types of small groups such as teams. To date there has been relatively little research conducted in the area of social contacts and their consequences for the functioning of small groups (Krackhardt, 1990; Ibarra and Andrews, 1993). Previous studies on social networks have tended to focus on the structural properties of egocentric (e.g., employee) or bounded (e.g., organisational) networks as the unit of analysis (Cummings and Cross, 2003). Furthermore, in numerous cases researchers have concentrated on the factors that influence small group (i.e. team) effectiveness (Kozlovski and Bell, 2003), and social networks have not often been included in the critical set of determinants.

Increased competition, shortening life-cycles, increased customer requirements, developing technology and globalisation are often suggested as reasons for the need to innovate and develop the products and services companies bring to the market (Belliveau et al., 2002; Rosenau et al., 1996; Belliveau et al., 2004 cf. Leenders et al., 2007). The use of small groups such as teams has dramatically expanded in response to these competitive challenges (Manz and Sims, 1993). They have thus become the central building blocks of a modern organisation, and practitioners and academics have increasingly started to stress their importance in achieving organisational success in the current economic climate. Some scholars suggest that the ability to transfer knowledge represents a distinct source of competitive advantage in comparison to other institutional arrangements such as markets (Kogut and Zander, 1992), and the effective transfer of knowledge among individuals is important or even critical in a variety of organisational processes and outcomes, such as the transfer of best practices (Szulanski, 1996), new-product development (Hansen, 1999), and even organisational survival (Baum and Ingram, 1998). Interpersonal social networks are considered to play a central role in this process.

Teams could be considered information-processing units: like individuals they encode, store and retrieve information (Brauner and Scholl, 2000). They exchange it through effective interaction and building on the knowledge of others, and can create new knowledge and insights (Moenaert et al., 2000; Bakker et al., 2006). Consultation and interaction could help them to foresee and possibly rule out potential weaknesses in technical and marketing solutions, for example. In other words, inter-team communication represents the logistics through which knowledge is accessed, transferred, and absorbed into new knowledge, ideas and insights. Developing, refining, testing, selecting and implementing ideas are all dependent on interaction among team members. Furthermore, a higher level of interaction makes cross-fertilisation more likely, thus potentially fostering more and better ideas (West, 1990). It is therefore clear that managers of technological-innovation teams, for example, also need to take care of the human connections (Green and Aiman-Smith, 2004). All this makes it increasingly important to understand the relationship between both intra-team and inter-team social relations and team effectiveness, also for technology managers.

More specifically, the aim of this review is to find out what previous research reveals with regard to the following questions. Do social networks of individuals within the small group such as team have an impact on group effectiveness? Do patterns of group-internal social networks affect the effectiveness? Do group-external social networks have an impact? In her search for answers the author reviewed the research on various team-working arrangements, ranging from early laboratory investigations in the 1950s and 1960s to more recent research streams starting from the 1980s (32 studies in total). The variables studied in different types of small groups are compared, the progress that has been made is highlighted, suggestions for future action are given, and the key lessons learned from the review are summarised.

A social network in the context of this review is “a set of nodes and the set of ties representing some relationship, or a lack of relationship between the nodes” (Brass et al., 2004, 795) within a small group such as team. Thus, the idea of studying social networks in small groups stems from the underlying concept of the network approach (Wellman, 1988), which describes how the structure of social

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