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Exploring the relationship between multiple team membership and team performance: The role of social networks and collaborative technology

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ABSTRACT

Firms devoted to research and development and innovative activities intensively use teams to carry out knowledge intensive work and increasingly ask their employees to be engaged in multiple teams (e.g., R&D project teams) simultaneously. The literature has extensively investigated the antecedents of single teams performance, but has largely overlooked the effects of multiple team membership (MTM), i.e., the participation of a focal team's members in multiple teams simultaneously, on the focal team outcomes. In this paper we examine the relationships between team performance, MTM, the use of collaborative technologies (instant messaging), and work-place social networks (external advice receiving). The data collected in the R&D unit of an Italian company support the existence of an inverted U-shaped relationship between MTM and team performance such that teams whose members are engaged simultaneously in few or many teams experience lower performance. We found that receiving advice from external sources moderated this relationship. When MTM is low or high, external advice receiving has a positive effect, while at intermediate levels of MTM it has a negative effect. Finally, the average use of instant messaging in the team also moderated the relationship such that at low levels of MTM, R&D teams whose members use instant messaging intensively attain higher performance while at high levels of MTM an intense use of instant messaging is associated with lower team performance. We conclude with a discussion of theoretical and practical implications for innovative firms engaged in multitasking work scenarios.

1. Introduction

Organizations increasingly adopt work teams to perform knowledge intensive tasks and coordination activities (Hoegl and Proserpio, 2004; Ferriani et al., 2009; Zaccaro et al., 2012). Furthermore, to respond to fast-paced and dynamic environments, knowledge professionals in organizations, like software developers and R&D employees, are frequently engaged in multiple project teams simultaneously. In other words, professionals often hold multiple team memberships, being concurrently members of several teams in a given period of time (O'Leary et al., 2011). According to O'Leary et al. (2012), more than 80% of knowledge workers experience work situations of multiple team membership, especially in the field of new product development and software development, i.e., in organizations strongly involved with innovative work and R&D.

As organizations' achievements depend more and more on the work of teams, the comprehension of the way they function and how to improve their performance is becoming increasingly important. While extant research has undoubtedly enriched our knowledge on the antecedents of single teams effectiveness (see Cohen and Bailey, 1997 and Mathieu et al., 2008 for comprehensive reviews of theorical models on teams), it has largely overlooked the role played by the fact that members of a single team, in practice, often hold memberships also in other teams generating, at the team level, a situation of multi-team membership (MTM) (although notable exceptions do exist; see, e.g., Cummings and Haas, 2012; O'Leary et al., 2011). Consequently, we know little about if and how the multiple commitments held by professionals working in a MTM context influence the processes and the performance of the single teams in which they are involved. Dynamics of multiple membership are likely to generate both positive and negative consequences on single teams. For instance, through multiple memberships, knowledge, best practices, and other resources can flow between R&D teams; however, the way individual members allocate their time across the different teams can influence single

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teams processes and pose serious challenges to their functioning. Because of the increasing evidence of innovative organizations adopting this form of organizing (Chan, 2014), exploring the relationships between MTM and team performance is therefore of both theoretical and practical importance (O'Leary et al., 2011; Tennenbaum et al., 2012). Moreover, the very few studies that focused on the topic of MTM offer us a puzzling picture that calls for additional and more nuanced understanding of how the belongingness of individuals to multiple teams simultaneously creates challenges in attaining high levels of team performance. On one hand, O'Leary et al. (2011), in the first theoretical contribution that explicitly investigates the relationship between MTM and teams productivity, propose the existence of an inverted curvilinear relationship so that intermediate levels of MTM allow teams to gain higher productivity because they push team members to develop better team work practices and to pay more attention to the way they allocate their time. Conversely, in their empirical study of knowledge-intensive teams, Cummings and Haas (2012) found that multiple team membership was positively related to team performance; such result is consistent with Chan (2014) who studied engineering project teams.

We embrace and aim to extend this stream of literature. A first goal of the present empirical study is to further explore the relationship between MTM and team outcomes by focusing specifically on the performance of R&D teams. We thus help explaining the inconsistent evidence above described and, by paying attention to team performance, above and beyond team productivity, we focus on an outcome of paramount importance for R&D contexts. As we will expand upon later, we first draw from attention based theories and knowledge acquisition theories (e.g., Hansen, 1999; Hansen and Haas, 2001; Ocasio, 1997) to argue that teams characterized by extreme levels of MTM (very low and very high) attain lower performance than teams operating at intermediate levels of MTM.

Furthermore, our work extends theoretical models on teams and team performance by unraveling the interacting role of MTM with other factors. As a matter of fact, the investigation of the relationship between MTM and team performance is made more complex by the intervention of moderating factors. O'Leary et al. (2011) suggest that moderating factors can be at organizational (e.g., incentive systems), team (e.g., geographic dispersion), and individual level of analysis (e.g., time related individual preferences, individuals' networks of relationships). A second objective of this paper is to focus on moderators that originate at the individual level of analysis, i.e., external advice receiving and collaborative technology use. The explanation for focusing on these variables follows.

In a new work scenario where R&D professionals are engaged in different teams simultaneously, a situation that poses challenges for teams and their members (Wageman et al., 2012a), individuals and teams make use of their social and technological resources in order to better accomplish their tasks. This creates a complex set of interdependencies between new forms of teams, collaborative technologies, and members interactions that make the processes of organizing team work for successful performance more complex than previously theorized.

It is well known that modern workplaces are experiencing profound changes in how people interact (i.e. how they build social networks) and how they use collaborative technology (e.g., email and IM). For instance, Adecco (2014) reports that, as workers are more and more fragmented across projects and locations, the promotion of interactions between individuals who may rarely meet face to face, above and beyond the participation in shared projects, becomes fundamental. In addition, collaborative technology is now pervasive in the workplace and is expected to support and even improve collaboration in teams (Bertrand, 2014). However, social and technological resources are likely to generate both positive and negative consequences on single teams that are also dependent on the combination of individuals on multiple teams simultaneously. For instance, in terms of social resources, it is acknowledged that the presence in a team of internal networks where members are connected to each other and of external ties that connect team members to external resources may be beneficial in helping individuals and teams to accomplish their tasks and gain better performance (e.g., Ancona and Caldwell, 1992; Sparrowe et al., 2001). More specifically, receiving advice from external sources helps team members to acquire inputs that can be incorporated in team work practices. At the same time, external social networks require a valuable resource, like time, to be managed and maintained (Day and Kilduff, 2003) thereby increasing the coordination costs that teams have to face. We thus expect that the effect of MTM on team performance, via its effect on informational and attention resources, will be influenced by the level of external advice receiving available to team members.

In order to strive in MTM scenarios, professionals also make an intensive use of collaborative technologies (e.g., email, instant messaging, project management systems) to keep in touch with a large number of colleagues who could be co-located or dispersed. Among different collaborative technologies, in this paper we focus on instant messaging (IM), that has now become a common means of communication in work contexts (Tudor and Pettely, 2010; Radicati, 2012) and is suitable to R&D contexts because its quasi-synchronous features and likely "polychronic" use (e.g., Dennis et al., 2010). While on the one hand IM can help teams in accessing knowledge and information and managing individuals' availability (Garrett and Danziger, 2007), on the other hand it is a source of potential disruptive interruptions (Rennecker and Godwin, 2005). Once again, in a MTM scenario, it is not enough to consider how a team uses a technology like instant messaging because the configurations of individuals on multiple teams simultaneously likely interact, via their effects on coordination and attention, with the single teams' ability to use effectively the technology to increase their performance.

Therefore, the second aim of the paper is to investigate how external advice receiving networks and instant messaging use in teams moderate the relationship between MTM and team performance. In particular we posit that higher levels of external advice receiving and instant messaging use are associated to enhanced team performance but only for teams characterized by a low to intermediate levels of MTM.

We explore these issues through a field study conducted in the R&D unit of a major Italian firm in the alternative energy industry. The present research intends to make several contributions. To our knowledge, it is one of the few studies to empirically assess the relationship between MTM and team outcomes, specifically team performance, in an R&D work setting. It therefore adds to the very recent stream of literature on new forms of work that started to acknowledge the changed and complex settings in which project-based organizations operate today (e.g., Ferriani et al., 2009) and to the theoretical models on teams and teamwork (e.g., Wageman et al., 2012b). In addition to that, we enrich our comprehension of new moderators (social networks and use of collaborative technologies) that may affect the relationship between MTM and R&D team performance. As such, our study contributes to an enhanced understanding of the contingent value of relational and technological resources for professionals operating in a multi-team membership scenario. Accordingly, we offer new insights on how to better support organizations that adopt MTM as a way of structuring work and favoring innovation processes. Finally, our research has specific implications for R&D managers who are responsible, at the same time, for allocating their co-workers' time along a variety of projects to attain efficiency as well as to maximize the innovative