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Who can I ask? How psychological safety affects knowledge sourcing among new product development team members

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ABSTRACT

Knowledge source selection is a complex phenomenon that is often addressed from an organizational viewpoint; however, we know little about knowledge-seeking practices at the individual level. We examined knowledge sourcing in new product development (NPD) teams at the micro-level through the lens of psychological safety (PS). We investigated 1345 individuals at 85 software development teams in Pakistan to demonstrate how different levels of PS affected knowledge sourcing from three groups: within the team; within the organization; and outside the organization. Our results showed that individuals with high PS levels were more inclined to consult fellow team members and individuals with low PS levels were more likely to choose external sources. We also examined how the diversity of a team's composition affected the relationship between psychological safety and knowledge source selection. We explored the implications of these findings for managerial practice.

1. Introduction

New products and services are fundamental to organizational performance and survival (Brown & Duguid, 1991; Chadwick & Raver, 2015; Collins & Smith, 2006; Ilgen, Hollenbeck, Johnson, & Jundt, 2005; Rubera, Chandrasekaran, & Ordanini, 2016), and new product development (NPD) success depends on how well NPD team members can access the best sources of knowledge and information (Carmeli & Schaubroeck, 2007; Chadwick & Raver, 2015; Frankort, 2016; Katila & Ahuja, 2002; Maggitti, Smith, & Katila, 2013; March, 1991). NPD is one of the most knowledge-intensive processes in business. Development teams must frequently adapt to shifting internal and external environments that are often uncertain, ambiguous, and confusing (Dayan, Ozer, & Almazrouei, 2016; Hoegl & Parboteeah, 2006; Sicotte & Langley, 2000). To face these challenges, and creatively solve task-related problems, NPD team members need up-to-date knowledge and information (Akhavan, Hosseini, & Abbasi, 2016; Knudsen, 2007; Swink, 2000). Indeed, the NPD team that is best able to identify new knowledge and information will also be the team that will best contribute to the firm's growth through strategic decision making (Cyert & March, 1963; Katila, Chen, & Piezunka, 2012; Mintzberg, 1973). Individual team members play a critical role in this search process (Ferrerias-Méndez, Fernández-Mesa, & Alegre, 2016), since a team's strength depends on the quality of its members. The cumulative capability of team members to find and utilize knowledge plays a fundamental role in defining both the team's and the firm's overall capabilities (Carmeli & Schaubroeck, 2007).

The knowledge sources available to NPD team members can vary along a spectrum from internal to external, with many degrees

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in between. Knowledge can be obtained from three types of sources (Hansen, Mors, & Lovas, 2005). *First*, the “*within-team*” allows team members to limit their knowledge search to within a team (Almirall & Casadesus-Masanell, 2010). *Second*, the “*intra-organizational*”, allows team members to access information from personal relationships in other functional areas and subsidiaries outside the team's boundaries but within organizational boundaries. *Third*, “*external sources*” allow team members to seek information from outside the firm's boundaries.

NPD team members tend to have individual selection preferences when they choose a knowledge source. While the performance impact of different sources of knowledge has been well documented in the literature (Du, Leten, & Vanhaverbeke, 2014), surprisingly, the antecedents of the knowledge selection process, especially at the individual level, have not received much attention (Borgatti & Cross, 2003). Researchers have not explicitly answered questions such as what motivates an individual NPD team member to select a particular source of knowledge over other sources, or why a team member would seek knowledge outside the team, even if this knowledge is available within the team.

A review of the limited literature on the antecedents of knowledge source selection reveals why this neglected area of research requires more attention. *First*, the strategic management literature relies on a resource-based view to examine the antecedents and suggests that a firm's existing internal capabilities is what determines how knowledge is sourced, and that this affects the level of innovativeness (Caloghirou, Kastelli, & Tsakanikas, 2004). The strategic perspective, however, focuses mainly on the firm level and ignores the team and individuals within a team. This is an important distinction because individuals in NPD teams play a pivotal role in searching, collecting (Barczak, Griffin, & Kahn, 2009), and utilizing knowledge (Du et al., 2014; Mytelka & Smith, 2002; Tang & Naumann, 2016; van de Ven, 1986). Although the firm can design, organizational systems, incentives, and procedures to encourage team members to search for new knowledge, it is the employee of an organization who actually engages in the search activity rather than the organization (Li, Maggitti, Smith, Tesluk, & Katila, 2013; Tang & Naumann, 2016). Indeed, some ethnographic studies of workplace practices have indicated that the ways in which individuals actually work may differ from the ways in which organizations describe that work in strategic plans, manuals, organizational charts, and job descriptions (Brown & Duguid, 1991). Therefore, organizations need to understand the knowledge-seeking behaviors of their individual members, especially those in NPD teams, where knowledge is needed the most.

Second, social network theory (SNT) scholars have considered the same questions by examining the nature of the informal social relationships between the two sides (Gillian Ragsdell, Stadler, & Fullagar, 2016; Gupta & Govindarajan, 2000). They have typically examined the strength of the social ties within the team or network, to investigate the impact of a tie-strength on types of knowledge selection (tacit vs. explicit) and innovation (Badir & O'Connor, 2015; Wang, 2016). Social network theory focuses mainly on the social dimension of knowledge seeking and ignores any psychological processes. Although Crossan, Lane, and White (1999) argued that knowledge search behavior and learning at the individual, team, and organizational levels are linked by social as well as psychological processes, social network research has only considered the influence of observable individual attributes, such as gender, rather than investigating individual psychological characteristics (Kalish & Robins, 2006; Mehra, Kilduff, & Brass, 2001; Totterdell, Holman, & Hukin, 2008). This is unfortunate, since as Totterdell et al. (2008) discovered, the psychological attributes of individuals within a team are very likely to affect other team members, both in terms of the team's cohesion and the strength of the ties between people within the networks. In addition, SNT tends to exclude the impact on the team when an individual team member's decision making process affects the search for knowledge. There is, therefore, a need for research to explore the antecedents of knowledge source selection at the NPD team member level that take into account the impact of the NPD team members on each other, and the psychological mechanisms that may affect the relationships between the individual team member, the team as a unit, and how knowledge is sourced.

In team settings, the degree of psychological safety (PS) determines individual team members' perceptions of safety within the group, the ability to learn, behavioral change, and work engagement (Edmondson, Kramer, & Cook, 2004; Newman, Donohue, & Eva, 2017). An individual's behavior is influenced by PS because the actions taken are based on the level of risk attached to them (Edmondson & Roloff, 2008; Newman et al., 2017; Yagil & Luria, 2010). In a psychologically safe environment, members share a general sense that others will not punish them for their mistakes, and consequently, they will not be reluctant to ask questions, seek knowledge and share their innovative ideas since they have no fear of being wrong or of being blamed for slowing the team's progress (Edmondson, 1999; Koopmann, Lanaj, Wang, Zhou, & Shi, 2016). If team members fear the possibility of negative social consequences (being embarrassed, criticized, or ridiculed) from risk-taking, they will probably avoid asking questions (Kark & Carmeli, 2009; Kostopoulos & Bozionelos, 2011).

The effect of PS on individual and team learning has been theoretically and empirically examined (Edmondson, 1999; Unger-Aviram & Erez, 2016), but we know less about the relationship between PS and knowledge source selection. Therefore, to address this gap in extant research on the antecedents of knowledge source selection, our *first* objective is to investigate how PS affects an NPD team member's knowledge source decision making process.

Most NPD projects are carried out by cross-functional teams (Ayağ, 2016; Joshi & Roh, 2009; Keller, 2001; Parker, 2003). The cross-functional team structure provides an opportunity to integrate knowledge, skills and expertise from diverse fields to achieve project goals. Scholars have suggested that a team's composition influences members' behavior towards learning (Bell, 2007; Edmondson & Lei, 2014; Mesmer-Magnus & Dechurch, 2009; Tekleab, Karaca, Quigley, & Tsang, 2016) and choosing a knowledge sources. Therefore, our *second* objective is to explore how team composition moderates the relationship between PS and knowledge source selection.

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