Building innovation capability: The role of top management innovativeness and relative-exploration orientation

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\textbf{A B S T R A C T}

Firms strive to develop innovation capabilities that help them achieve competitive advantage in the marketplace. This paper shows that managers can contribute to firms' innovation capabilities by involving themselves directly. Based on a unique multi-source (shareholder letters, COMPSTAT, and World Bank Database) dataset covering 335 firms over nine years, empirical analysis reveals that top managers' innovativeness makes them more likely to adopt exploration orientation over exploitation orientation in innovation. This relative-exploration orientation is a key mediator that can transform top managers' innovativeness into better financial performance, and the effectiveness of this mediating role is contingent on a firm's resources and the industry environment.

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\section{1. Introduction}

Innovation capability, defined as a firm's ability to generate, accept, and implement new ideas, processes, products, or services, is one of the key resources that drive a firm's success in the marketplace (Calantone, Cavusgil, & Zhao, 2002; Ngo & O'Cass, 2013). In practice, firms strive to develop or improve their innovation capabilities. For example, according to the PWC Global Innovation 1000 study, worldwide R&D spending has steadily increased over recent years, reaching $680B USD in 2016. On average, the top five most innovative companies (i.e., Apple Inc., Alphabet Inc., 3M Co., Tesla Motors Inc., and Amazon.com Inc.) spend over 12% of their overall sales revenue on R&D activities (PWC 2016). Accordingly, the Marketing Science Institute suggests that understanding the role of innovation on producing superior firm performance should be a top research priority (www.MSI.org).

Fortunately, many managers have realized the importance of innovation. Being innovative has therefore become a popular component in many firms' mission statements. Researchers have found that firms can develop their innovation capabilities in various ways, including investing in research and development (e.g., Laursen & Salter, 2006), obtaining knowledge from multiple stakeholders (e.g., Slotegraaf, 2012), developing a market/learning-oriented culture (e.g., Marinova, 2004), and encouraging knowledge sharing within the organization (e.g., Arnett & Wittmann, 2014). Though this body of literature has significantly enriched our understanding of how resources contribute to a firm's innovation capability, few studies have considered the manager's role in building a firm's innovation capability. In fact, some researchers have argued that managers' contributions to firms' innovation are limited because of the demanding nature of managers' jobs (Hambrick, Finkelstein, & Mooney, 2005). Thus, the underlying mechanism behind how a manager may contribute to a firm's innovation capability development is still not fully explored.

Researchers have investigated this issue from three perspectives. First, it has been suggested that variation in firms' innovation performance is an outcome of managers' background characteristics such as managers' demographic and cultural backgrounds (e.g., Barker & Mueller, 2002). In general, managers who are young (e.g., Barker & Mueller, 2002; Knight et al., 1999), have short tenures (e.g., Kor, 2006), have related industrial/marketing experience (e.g., Barker & Mueller, 2002), and have a social culture (e.g., Hoffman & Hegarty, 1993) are more likely to promote innovation activities. The second stream of research focuses on the composition of top management teams, exploring issues such as the diversity and heterogeneity of top management teams (e.g., Auh & Menguc, 2005; Kor, 2006; Talke, Salomo, & Kock, 2011). This stream of research suggests that diversity and heterogeneity in a firm's top management team can drive the firm to be more innovative. The third research stream focuses on the involvement of managers in the firm's innovation processes. Some authors suggest that a firm's success in innovation needs top managers' support (e.g., Smith & Tushman, 2005). Though the existing research provides insight into the manager's influence on a firm's innovation performance, few studies have investigated managers' direct roles in promoting firms' innovation capabilities.
When managers engage in innovation-related activities, they typically rely on two strategic orientations in organizational learning, namely exploration and exploitation (Levinthal & March, 1993; March, 1991). With an exploration orientation, managers actively seek to increase variations in managerial practice, foster the search for new ideas/technologies, encourage risk taking, and discover new opportunities (March, 1991). Exploitation orientation, on the other hand, tends to allow managers to discover opportunities using the available resources and focuses more on the innovation implementation process (Rosing, Frese, & Bausch, 2011).

In this study, we develop a comprehensive theoretical model (see Fig. 1), positing that managers contribute to a firm’s innovation capability by facilitating innovativeness and by adopting a relative-exploration orientation. Innovativeness reflects the extent to which a manager is willing to invest in innovation-related activities, and relative-exploration orientation indicates the likelihood that a manager will choose exploration orientation over exploitation orientation. Specifically, our study addresses the following research questions:

1. Can a manager’s innovativeness and relative-exploration orientation be a part of a firm’s innovation capability?
2. If yes, how do the manager’s innovativeness and relative-exploration orientation contribute to the firm’s favorable financial performance?

Using a multi-source (shareholder letters, COMPUSTAT, and World Bank Database) dataset collected from 335 S&P 500 companies over nine years (2007-2015), we examined whether managers’ innovativeness makes managers more focused on exploration orientation or exploitation orientation, and whether managers’ innovativeness leads firms to perform well financially. We also examined whether the above relationship varies based on the firm’s resources and the industry environment.

By addressing the proposed research questions, this paper contributes to the literature and managerial practice in several ways. First, the paper extends the literature by considering the role of the manager’s resources in the firm’s innovation capability. Managers’ innovativeness and the adoption of relative-exploration orientation are expected to generate a stronger innovation capability, which results in better financial performance. Second, the research offers an alternative explanation as to why managers’ different backgrounds can lead to different innovation outcomes. Specifically, relative-exploration orientation is proposed as a key mediator linking managers’ innovation efforts to firm performance. Third, the paper presents both firm resources and industry competition as moderators that can influence the transformation of managers’ innovativeness into relative-exploration orientation. Finally, this research provides insights into how managers should allocate their innovation efforts in less competitive environments such as new or emerging markets.

2. Theory and hypotheses

2.1. Top management innovativeness and firm performance

Top management innovativeness (TMI) refers to the extent to which a firm’s top managers have favorable attitudes toward innovation and are willing to take risks to invest resources in innovation activities (Rodriguez, Pérez, & Gutiérrez, 2008). Accordingly, innovative managers (i.e., those with high TMI) are supportive of innovation activities (Llorëns Montes, Ruiz Moreno, & Miguel Molina Fernández, 2004). Nevertheless, researchers disagree on the extent to which executives can influence innovation processes and outcomes. For example, some researchers argue that top managers are barely relevant in driving innovation efforts because of the demanding nature of their jobs—they are simply unable to devote adequate time to the more creative components of marketing (Hambrick et al., 2005). Hegarty and Hoffman (1990) reach a different conclusion, suggesting that even though some managers are able to contribute to the innovation process, their contributions are limited to the project level rather than the firm level. Other researchers, however, suggest that top managers play a significant—and perhaps vital—role in firm innovation (e.g., O’Cass & Sok, 2013; Rosing et al., 2011). For example, in a study of bank CEOs, Yadav, Prabhu, and Chandy (2007) found that future-focused CEOs have positive, direct, long-term effects on how their firms develop and use new technologies.

Steve Jobs, the former CEO of Apple, exemplified the latter perspective. The literature (e.g., Amason, 1996; Hunt, 2010) suggests that top management is the central actor in strategic decision-making and can therefore guide a firm’s strategic orientation (Smith & Tushman, 2005). Accordingly, top managers’ innovativeness enables them to devote more efforts to facilitating innovative activities and adopting innovation-oriented strategies (Talke et al., 2011). Consequently, when making decisions regarding strategic resource allocation, managers tend to allocate a greater amount of valuable resources to innovation activities (e.g., new product development), which results in enhancing the firm’s ability to compete with rivals (Hunt, 2010). Moreover, top management innovativeness facilitates innovation within the top management team (West & Anderson, 1996) and helps build a competitive advantage barrier that is difficult for rivals to replicate (Hamel, 2006).

![Fig. 1. Theoretical framework.](image-url)
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