



Rethinking organizational learning orientation on radical and incremental innovation in high-tech firms☆



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ARTICLE INFO

Article history:

Received 1 September 2015

Received in revised form 1 October 2015

Accepted 1 November 2015

Available online 30 December 2015

Keywords:

Absorptive capacity

Entrepreneurs

High-tech firm

Incremental innovation

Organizational learning orientation

Radical innovation

ABSTRACT

Does organizational learning orientation impede radical innovation? The results show that a high level learning orientation promotes myopic learning and incremental innovation, but constrains experimentation and radical innovation in emerging domains. The study tests hypotheses using two separate data analyses, comparing traditional PLS-SEM with fsQCA. The empirical results show that fsQCA captures better predictive outcomes than PLS-SEM. Entrepreneurs and high-tech firms should interpret the findings with some cautions because of their prosperity based on competency and learning orientation in specific fields. For the high-tech industry and entrepreneurial ventures, superior capability in a particular area leads to exploitative learning and cultivate incremental innovation.

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1. Introduction

Numerous studies emphasize the importance of a firm's learning orientation and its impact on innovation (Chung, Yang, & Huang, 2015; Rhee, Park, & Lee, 2010; Tho & Trang, 2015). Examining the integration of knowledge in firms is particularly useful in elucidating customer needs and market responses to product innovation (e.g., Li & Calantone, 1998). Few studies dispute the effect of organizational learning orientation on innovation, primarily because firms benefit from responding extensively to marketplace conditions. However, the myopia caused by focusing too closely on a firm's dominant markets can mean that new knowledge emerging beyond the scope of view may be undetected. Also, as firms accumulate experience and knowledge, they become increasingly competent at assimilating external knowledge from similar fields. Because of the positive feedback between experience and learning, the self-reinforcing nature of learning leads firms to efficiently use new knowledge into existing knowledge bases (Montgomery & Lieberman, 1998). However, core competencies can fall into competency traps and become core rigidities (Leonard-Barton, 1998). Therefore, a strong learning orientation

in a particular area encourages exploitative activities in the advance of incremental innovation but hinders the exploratory behaviors that lead to radical innovation (Levinthal & March, 1993; Zhou & Wu, 2010).

To preclude organizations' learning orientation from dropping into competency traps, the present study explores the relationship between learning orientation and innovation within a broader learning-innovation framework. Absorptive capacity (Cohen & Levinthal, 1990) is a broader learning perspective that has received considerable attention in organizational literature (Huang, Lin, Wu, & Yu, 2015; Lane, Koka, & Pathak, 2006; Leal-Rodriguez, Ariza-Montes, Roldan, & Leal-Millan, 2014; Roberts, 2015). Rosenkopf and Nerkar (2001) also posit that absorptive capacity may enhance exploration and prevent firms from focusing on the development of core rigidities. According to absorptive capacity theory, the ability to evaluate and use external knowledge depends on the level of prior related knowledge. One common business norm mandates that firms scan the external environment and collect market knowledge from all possible sources (Laursen & Salter, 2006). New external knowledge through learning orientation requires systematic processing and represents a firm's internal cognitive map in answering the needs of customers and markets. Therefore, absorptive capacity can serve as an internal filtering mechanism to assist firms in the processing of new external knowledge (Lichtenthaler, 2009). Consequently, the market knowledge process partially generates the joint effect of learning orientation and absorptive capacity on innovation.

Most previous research has concentrated on the relationship between learning orientation and innovation by lumping all forms of innovation into a single category (Akgün, Keskin, Byrne, & Aren, 2007;

☆ This article was presented at the Global Entrepreneurship and Innovation in Management Conference, July 30–31, 2015, National Chung Hsing University, Taiwan. The authors are grateful for the support by the "Academic Exchange and Cooperation Project" between the Top University Strategic Alliance (Taiwan) and the University of California, Berkeley (USA). The authors thank the reviewers of GEIM Conference for their careful reading and suggestions.

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Jiménez-Jiménez & Sanz-Valle, 2011). Recognizing the inherent multidimensionality of innovation, the first contribution in this study is to conceptualize the construct at a fined level by discriminating between radical and incremental innovation. Second, the study explores the respective linkages between learning orientation, absorptive capacity, and incremental and radical innovation. Third, the study investigates the possible differential effect of learning orientation on radical and incremental innovation, thereby providing a comprehensive understanding of the influence of learning orientation on organizations. Finally, although prior research indicates that absorptive capacity can enhance innovation (Datta, 2011a), the study discovers that the relative effects of potential and realized absorptive capacity complement learning orientation on radical and incremental innovation.

Next, the present study introduces a theoretical framework by first reviewing learning orientation, absorptive capacity, radical and incremental innovation. Subsequently, the study develops a set of hypotheses that examine the direct effect of learning orientation and the complementary effect of absorptive capacity on radical and incremental innovation. After testing the hypotheses by using data collected from 70 high-tech firms in Taiwan, the study presents the results and discusses managerial implications.

2. Conceptual framework and hypothesis development

The foundation of the theoretical framework comprises two elements: organizational learning orientation and the effect of absorptive capacity. Learning orientation has proven highly effective in determining how external forces influence innovative processes. However, even powerful external forces cannot affect the outcome without first addressing the effect of absorptive capacity within the organization. This study conceptualizes organizational learning orientation to be the market knowledge process in an organization: acquisition, dissemination, shared interpretation, and responsive action (e.g., Sinkula, 1994; Slater & Narver, 1995). Absorptive capacity highlights learning, the process by which a firm derives and absorbs knowledge from its experiences (Lane & Lubatkin, 1998; Zahra & George, 2002), and an organization's risk-taking action. The two processes are interdependent: to learn from risk-taking action, the organization must acquire market knowledge and undertake responsive action. The two processes are complementary because absorptive capacity is a firm's ability to recognize new external knowledge through learning orientation and then assimilate and apply external knowledge. Therefore, the study examines the complementary effect of learning orientation and absorptive capacity on both incremental and radical innovation.

2.1. Radical innovation and incremental innovation

Radical innovation involves the acquisition of new knowledge and the development of new products for new customers or emerging markets while incremental innovation is to enhance the firm's existing knowledge and improve existing products (Benner & Tushman, 2003). Incremental innovation improves existing product-market domains by responding to the needs of existing customers and markets (Lin, McDonough, Lin, & Lin, 2013). Radical innovation commonly destroys existing market positions and broadens new market opportunities (Aboulnasr, Narasimhan, Blair, & Chandy, 2008). Pursuing radical innovation requires the development of unique features and benefits superior to those found in existing products and markets.

2.2. Organizational learning orientation

Organizational learning orientation relates to organization-wide activities associated with the creation and use of knowledge for the enhancement of innovation. However, we argue that learning orientation has a more pronounced effect on incremental than on radical innovation through the application of knowledge in the refinement

of products in a manner that is consistent with current organizational processes and routines. Christiansen (1997) also suggests that high-tech firms which have superior capability in a particular field are more likely to search and use their existing knowledge to foster incremental innovation.

In contrast, we do not expect to see an equally strong relationship between learning orientation and radical innovation. Radical innovation depends on a firm encouraging questions related to current theories-in-use (Argyris & Schön, 1997), mental models, dominant logics (Bettis & Prahalad, 1995), and behavioral norms, thereby challenging traditional goals and activities in the organization (Baker & Sinkula, 1999). Radical innovation requires that a firm be able to recognize the value of new knowledge, which in turn provides insights into current knowledge (Cheng & Chen, 2013). Therefore, a high level of learning orientation may be locked in with similar areas, thereby hampering radical innovation.

H1. Organizational learning orientation has a stronger effect on incremental innovation than on radical innovation.

2.3. Absorptive capacity

Absorptive capacity is the ability to recognize new external knowledge, assimilate, and apply it to commercial ends (Cohen & Levinthal, 1990). Absorptive capacity advances the unique resource and capability of a firm is a key to driving the firm's performance, leading organizational renewal (Datta, 2011b; Narasimhan, Rajiv, & Dutta, 2006), and promoting product innovation (Robertson, Casali, & Jacobson, 2012). Zahra and George (2002) suggest that absorptive capacity has two dimensions: potential and realized absorptive capacity.

2.3.1. Potential absorptive capacity

Potential absorptive capacity, which includes knowledge acquisition and assimilation, captures efforts in acquiring and assimilating new knowledge obtained from external sources (Zahra & George, 2002). Enkel and Heil (2014) suggest that potential absorptive capacity can make a firm better to value new external knowledge, thereby averting a firm from being fixed in a special sphere of expertise. Potential absorptive capacity is critical in the development of radical innovation through the recognition of new external knowledge, thereby renewing the stock of knowledge and developing new products that are radically different from existing ones (Jansen, Van Den Bosch, & Volberda, 2005). Therefore, the more new external knowledge is, the more likely the firm achieves radical innovation. Studies also show that the acquisition and assimilation of heterogeneous knowledge has a more pronounced effect on radical innovation than on incremental innovation (Fang, 2008).

H2. Potential absorptive capacity has a stronger effect on radical innovation than on incremental innovation.

2.3.2. Realized absorptive capacity

Realized absorptive capacity, which includes knowledge transformation and application, encompasses new insights and the consequences associated with the combination of existing and newly acquired knowledge, as well as the incorporation of transformed knowledge into operations (Zahra & George, 2002). Realized absorptive capacity also encourages the development of new products without undercutting existing product lines (Datta, 2011a).

Prior research indicates that sustainable competitive advantage relies heavily on a firm's ability to transform and reconfigure knowledge (Rosenkopf & Nerkar, 2001). Realized absorptive capacity can deepen existing knowledge through transformation processes to improve efficiency and aid in the application of knowledge in pursuing product innovation (Jansen et al., 2005). When a firm reconfigures new and

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