



Slack resources in team learning and project performance

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ABSTRACT

This study examines the effect of slack resources on the relationship between team learning and project performance. Regression analysis tests the hypotheses in a sample of 183 firms in Taiwan. The findings suggest that two assessments of team learning, exploitative learning and exploratory learning, associate positively with project performance. Exploratory learning relates positively to project performance as absorbed and unabsorbed slack resources increase. Thus, slack resources play a moderating role in the relationship between exploratory learning and project performance. Empirical results provide general support for the predictions. The article discusses managerial implications and future research directions.

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1. Introduction

In an increasingly turbulent environment, new product development is a critical mechanism by which to enhance potential value and to facilitate continuous innovation (Atuahene-Gima and Murray, 2007; Sarin and McDermott, 2003). Organizational learning theory and the resource-based view depict firms as repositories of knowledge and expertise that form a basis for sustainable competitive advantage (Barney, 1991; Conner and Prahalad, 1996; Wernerfelt, 1984).

According to organizational learning theory, firms need to actively manage knowledge and expertise to develop innovative products through organizational learning (Srinivasan, Haunschild, and Grewal, 2007). New product development often comes from bringing together knowledge embedded in individual minds. However, knowledge is not easily transferable between individuals because of stickiness and tacitness (Grant, 1996). Team members in a new product development team can engage in exploitative learning and exploratory learning in order to exchange knowledge (Atuahene-Gima and Murray, 2007; Katila and Ahuja, 2002).

Exploitative learning involves improvements and effort with regard to existing knowledge, technology, and paradigm; exploratory

learning involves the search for new knowledge and technology and experimentation with new alternatives (Levinthal and March, 1993; March, 1991; Miller, 1996). Both exploitative learning and exploratory learning can broaden and improve the knowledge base of project teams (Blazevic and Lievens, 2004). Through team learning that involves both exploitation and exploration, project teams can increase their ability to respond to markets, to solve problems, and to enhance performance outcomes (Auh and Menguc, 2005; Bunderson and Sutcliffe, 2003; Zellmer-Bruhn and Gibson, 2006). Thus, team learning plays an important contributory role with regard to new product success and project performance (Atuahene-Gima and Murray, 2007; Sarin and McDermott, 2003; Tucker, Nembhard, and Edmondson, 2007).

While the relationship between team learning and project performance is pervasive, the intensity of this relationship may be contingent on some related intervening variables. This study identifies slack resources as important intervening factors and examines the relevant theoretical rationales and empirical work. Slack is a potentially utilizable resource that can influence the ability of firms to implement desired actions (Bourgeois, 1981; Cyert and March, 1963). In order to manage uncertainty and exploit opportunities, prior scholars recommend slack resources as the strategic tools for facilitation of risk taking, innovation, and performance (George, 2005; Keegan and Turner, 2002; Nohria and Gulati, 1996; Tan and Peng, 2003).

Slack resources act as buffers which insulate the technical core from environmental pressures and challenges (Bourgeois, 1981). The availability of slack resources enables firms to experiment with new strategies such as introducing new products and entering new markets (Geiger and Makri, 2006; Tan and Peng, 2003; Yang, Wang, and

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Cheng, 2009). A firm can afford the risk taking and capital restriction associated with knowledge exploration and new product development (George, 2005; Nohria and Gulati, 1996; Voss, Sirdeshmukh, and Voss, 2008).

Conversely, lack of available slack inhibits a firm's ability to mobilize necessary resources and constrain strategic change and aggressiveness (Ferrier, 2001). Thus, slack resources may play a contingent role with regard to triggering innovation and supporting the exploitation and exploration of knowledge leading to favorable project outcomes. This study aims to examine the effect of team learning on project performance and to determine whether slack resources play a moderating role in affecting the association of team learning and project performance.

2. Research background and hypotheses

2.1. Team learning

Organizational learning theory emphasizes the use of existing knowledge and the acquisition of new knowledge by actors in order to direct future actions (Miller, 1996). Organizational learning depends on both individual and group learning. Cyert and March (1963) articulate the notion that a firm could learn from its members. A firm can enhance its ability to integrate multiple knowledge streams by applying prior knowledge to tasks as well as by creating new knowledge (Conner and Prahalad, 1996; March, 1991). Learning is especially critical in helping firms to adapt and respond to dynamic challenges and changes. Innovation is an intensive knowledge process by which firms adapt and transform themselves (Nonaka and Takeuchi, 1995). New product development is a key manifestation of innovation accompanied by significant changes in organizational routines (Srinivasan et al., 2007). Project members from different functional areas have to engage in team learning in order to share knowledge and overcome the difficulties inherent in new product development.

Team learning indicates the extent to which a team develops existing knowledge or acquires new knowledge. Learning in either a team or a group reflects information processing activities and reciprocal exchanges between individual members (Blazevic and Lievens, 2004). From resource-based theory, knowledge tacitness reflects the growing need for team learning that can produce a richer knowledge exchange by including both explicit and tacit knowledge (Grant, 1996). Team members can collectively engage in both exploitative and exploratory learning to establish shared mental models and an understanding of how to deal with project tasks (Atuahene-Gima and Murray, 2007; Nonaka and Takeuchi, 1995). As March (1991) notes, exploitation is the refinement and extension of existing knowledge, skills, and technologies, while exploration is the experimentation with new alternatives and acquisition of new knowledge, skills, and technologies (Levinthal and March, 1993). In new product development, exploitative learning refers to learning from a firm's previous experience and well-defined knowledge. Exploratory learning implies that learning occurs along a different trajectory that includes such things as search, discovery, risk taking, and experimentation. These two learning behaviors provide opportunities for an organization to translate tacit knowledge into physical products (Lynn, Reilly, and Akgün, 2000; Sarin and McDermott, 2003) and to facilitate new product introduction and innovation (Atuahene-Gima and Murray, 2007; Katila and Ahuja, 2002). This study attempts to examine the effects of both exploitative and exploratory learning on project performance in new product development teams.

2.2. Slack resources

The resource-based view suggests that an organization depends on its unique resource endowments to sustain competitive advantage

(Barney, 1991; Wernerfelt, 1984). The ability to exploit strategic opportunities or counter environmental threats varies because of each firm's slack or residual resources. Cyert and March (1963) define "slack" as the difference between the resources available to the organization and total necessary payments. Bourgeois (1981) points out that slack is resources in excess of the requirements necessary for the efficient operation of a firm. Based on this definition, Bourgeois and Singh (1983) introduce three components designed to classify slack. Available slack refers to unexploited resources that are readily available for use. Recoverable slack is excess costs in a firm that can be retrievable when firms experience financial difficulty. Potential slack refers to future resources generated through borrowing and accruing debt. Cheng and Kesner (1997) examine the impact of available slack and recoverable slack on a firm's responses to environmental shifts. Following previous research, Geiger and Makri (2006) also consider available slack and recoverable slack as two measures for organizational slack and suggest that slack affects the process of exploratory and exploitative innovation in technology-intensive firms.

Some studies emphasize managerial discretion in the deployment of slack resources. Sharfman, Wolf, Chase, and Tansik (1988) conceptualize organizational slack along a managerial discretion continuum distinguishing between high-discretion slack and low-discretion slack. Different types of organizational slack may give managers different degrees of discretion and flexibility in their approach to reducing internal or external pressures (George, 2005; Sharfman et al., 1988).

George (2005) notes that slack is a potentially utilizable resource that firms can divert or redeploy in order to achieve organizational goals. Further, George (2005) classifies organizational slack as low-discretion slack, high-discretion slack, resource availability, and resource demand. The concepts of high-discretion slack and low-discretion slack capture the permanent nature of slack. Slack availability and slack demand emphasize the ephemeral nature of slack. Similarly, Lin, Cheng, and Liu (2009) employ high-discretion slack and low-discretion slack to measure organizational slack and find that different slack resource levels lead a firm to develop different international expansion strategies.

Singh (1986) makes a distinction between absorbed slack and unabsorbed slack, which subsequent studies adopt (i.e. Greve, 2003; Tan and Peng, 2003; Voss et al., 2008). It is unlikely that firms can redeploy absorbed slack. Absorbed slack exists in the firm as excess costs, such as unused capacity and skilled employees (Greve, 2003; Voss et al., 2008). Contrary to absorbed slack, firms can easily redeploy unabsorbed slack and commit it to use (Singh, 1986; Tan and Peng, 2003; Voss et al., 2008).

Examples of unabsorbed slack include the level of cash on hand, liquid assets, reserve funds, or retained earnings (Tan and Peng, 2003). Resource absorption can connect with managerial discretion. Absorbed slack is low discretion, while unabsorbed slack is high discretion (George, 2005). Organizations can easily employ more discretionary resources in some specific situations (George, 2005; Sharfman et al., 1988).

Slack reflects the pool of resources in an organization that is in excess of the minimum necessary to produce a given level of organizational output (Nohria and Gulati, 1996). According to the resource-based view, organizations having scarce and unique resources are able to create more value and achieve superior competitive positions. Some studies apply the resource-based view to explain organizational slack as it relates to improved performance (George, 2005; Tan and Peng, 2003; Yang et al., 2009) and innovation (Geiger and Makri, 2006; Nohria and Gulati, 1996; Voss et al., 2008). The presence of slack will influence the ability of an organization to implement desired actions and adapt to complex competitive landscapes (Bourgeois, 1981; Cheng and Kesner, 1997; George, 2005). Organizations can afford to experiment with new strategies such

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