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# The impact of cross-functional communication on absorptive capacity of NPD teams at high technology firms in Thailand

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ABSTRACT

Absorptive capacity (ACAP) is an essential component for new product development (NPD) teams to effectively manage knowledge received from external sources. This paper extends the existing theory of ACAP by examining the impact of cross-functional communication on the ACAP of NPD teams at high technology firms in Thailand. The results indicate that all characteristics of cross-functional communication, including frequency, quality, and informality have direct impacts on ACAP. However, only quality and informality have a significantly direct effect on all activities of ACAP, which includes knowledge acquisition, assimilation, transformation, and application.



## 1. Introduction

New product development (NPD) teams play a critical role in many high-technology manufacturing firms during this era of intense competition. The performance of NPD teams enables the company to strengthen its competitive advantage (Cooper, 2001), speed to the market (Chen, Damanpour, & Reilly, 2010), and new product quality (Sethi, 2000). Prior research has revealed a wide range of factors that affect NPD team performance, including cross-functional communication. Cross-functional communication within an NPD team occurs when team members from different functional areas who own specific knowledge exchange work-related information in order to accomplish an NPD project. Many scholars have shown that cross-functional communication improves new product quality, reduces conflicts, increases profitability, and promotes team performance (Barczak, Griffin, & Kahn, 2009; Massey & Kyriazis, 2007; Song & Parry, 1997).

Besides cross-functional communication, NPD teams need to have the internal capacity to effectively apply external knowledge into new product projects. Since research and development activities involve a variety of knowledge fields from inside/outside the team, the capacity of the team to manage these bodies of knowledge is critical for team success. This capacity, namely absorptive capacity (ACAP), refers to the team's ability to acquire, assimilate, and utilize useful information to accomplish NPD project objectives. Extant research has found that ACAP is a valuable input for innovation performance (Chen, Lin, & Chang, 2009), manufacturing practices (Tu, Vonderembse, Ragu-Nathan, & Sharkey, 2006), and so forth. However, most of these studies have investigated the outcomes of ACAP. Moreover, very few studies empirically investigate ACAP in the context of NPD (Stock, Greis, & Fischer, 2001). This study, therefore, fills these gaps by examining the antecedent (i.e. cross-functional communication) of ACAP in an NPD setting at high technology firms.

The objective of this study is to address the importance of ACAP in an NPD team environment and to contribute to the existing literature in two ways. First, this research selected cross-functional communication to be an antecedent of ACAP since communication process is the major constituent of ACAP (Zahra & George, 2002). Second, this research extends the study of organizational ACAP

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to a team level. Third, this research empirically further validates the impact of cross-functional communication on four activities (i.e. acquisition, assimilation, transformation, and application) that comprise ACAP.

The structure of this study is follows. A literature review is discussed in Section 2. Hypotheses are proposed in Section 3. Section 4 describes the methodology, including sample and research design. Section 5 explains the results of data analysis, including descriptive statistics, reliability and validity of the measurement, correlations between constructs, and the results of SEM output. The last section discusses the results of this study and provides the implications.

## 2. Conceptual framework

Absorptive capacity (ACAP) in previous studies is predominantly conceptualized as a firm's ability to identify, assimilate, and apply knowledge gained from external sources (Cohen & Levinthal, 1990). Importantly, it enables an organization to accumulate knowledge and convert it into a usable form that can be applied in business operations. Since this study focuses on ACAP on a team level, it refers to the ability of the members of a team to interrelate with the expertise of the team members. However, ACAP in NPD teams does not just simply equal the cumulative amount of individuals' ACAP (Cohen & Levinthal, 1990). It also depends on the effectiveness of communication between team members. A team's ACAP in a particular knowledge domain is therefore a function of the expertise in that domain and the process of communication within that team.

In later research, ACAP is distinguished into two dimensions (namely potential and realized ACAP), each of which consists of two main activities (Zahra & George, 2002). First, potential absorptive capacity (PACAP) includes the efforts of knowledge acquisition and assimilation obtained from external sources. Second, realized absorptive capacity (RACAP) includes knowledge transformation and application of new insights into existing operations by the combination of existing and newly acquired knowledge, and incorporating transformed knowledge into operations. These two dimensions are fundamentally different concepts that involve distinctive behaviors, but they do have complementary roles. On one hand, PACAP involves personal internal processes, such as reflection, intuition, and interpretation. It requires changing abilities, flexibility, and creativity. On the other hand, RACAP involves the efficiency of leveraging externally absorbed knowledge. It requires order, control, and stability (Newey & Zahra, 2009). These two dimensions may result in different outcomes. As such, companies that focus on PACAP may be forced to continually renew their knowledge at a high cost of acquisition, but gain less benefit from knowledge application. On the other hand, companies that focus on RACAP may obtain short-term profits through knowledge application, but fall into competence traps, and unable to cope with changing environments (Ahuja & Lampert, 2001).

ACAP is a critical component for learning processes that help individuals understand new technology used to generate new product ideas (Tsai, 2001). ACAP allows an NPD team to identify and value new knowledge that generates new product concepts beyond its original boundaries, and to assimilate and integrate such new knowledge with the existing knowledge (Arora & Gambardella, 1994). Many scholars have suggested that team's ACAP enables it to convert and apply external knowledge into new product ideas and innovations (Harrington & Guimaraes, 2005). The previous literature has widely examined the outcomes of ACAP, such as NPD performance (Stock et al., 2001), innovativeness (Chen et al., 2009), and competitive advantage (Easterby-Smith, Graça, Antonacopoulou, & Ferdinand, 2008). Most of these studies investigated the outcomes of ACAP, but a few studies explicitly examined the antecedent of ACAP in NPD teams. One exception, Tiwana and Mclean (2005), suggests that a team should promote the integration of expertise while working on a project in order to effectively enhance ACAP. This study, therefore, further attempts to fill these gaps by proposing an antecedent that enhances the ACAP level of NPD teams. The selected antecedent is cross-functional communication among NPD team members who are from diverse functional areas.

### 2.1. Cross-functional communication

Cross-functional communication is a channel for information exchange between NPD team members across functional operations (Bulte & Moenaert, 1998; Griffin & Hauser, 1996; Moenaert & Souder, 1990b; Pinto & Pinto, 1990; Souder & Moenaert, 1992).

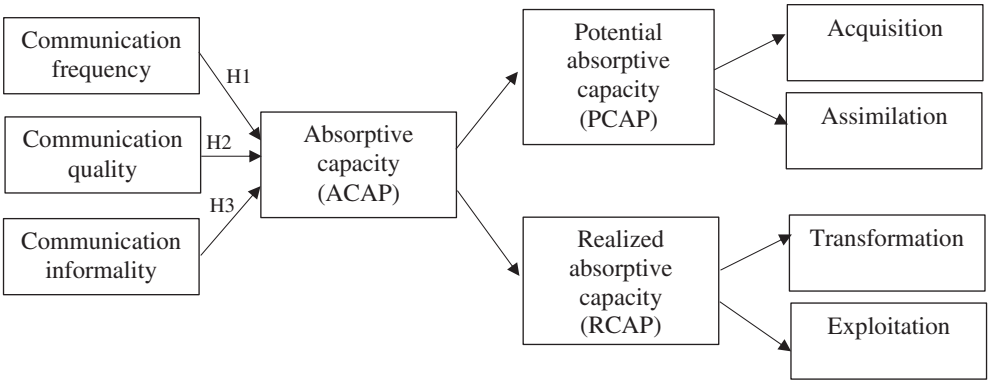


**Fig. 1.** Conceptual model.