



# Managing innovation through co-production in interfirm partnering<sup>☆</sup>



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## ABSTRACT

Innovation is a key source of knowledge-based competitive advantage. However, research on how firms' co-production enhances innovation is scarce. Thus, this study not only integrates the three dimensions of social capital and examines these dimensions' separate effects on co-production but also incorporates the roles of absorptive capacity and self-efficacy, analyzing their effect on innovation. This study uses a random sampling method to select 221 firms in Taiwan and employs structural equations modeling to test the relationships. The findings indicate that absorptive capacity and self-efficacy enhance innovation. Co-production positively affects innovation, absorptive capacity, and self-efficacy. The findings also support positive relationships between social capital and co-production. This study contributes to the little research that explores partnership co-production in innovation.

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## 1. Introduction

Innovation in the era of knowledge economy becomes increasingly important for firms to sustain competitive advantage (Huang, 2010; Subramaniam & Youndt, 2005). Innovation may come from outside the firms; such firms intensively develop partner relationships to increase new product development opportunity and improve innovation (Frost & Zhou, 2005; Lai & Chang, 2010; Paulin & Ferguson, 2010). Recent research emphasizes that co-production emerges from the reciprocal interaction processes in the inter-organizational context (Ballantyne & Varey, 2006). Specifically, co-production enhances the collaborative nature of value co-creation and shows the both parties' interest in collaborating effectively (Pires, Dean, & Rehman, 2015). Therefore, co-production becomes a key driver of innovation (Chen, Tsou, & Ching, 2011). However, empirical research on co-production activities in partner relationships remains scarce (Payne, Storbacka, & Frow, 2008; Vargo, Maglio, & Akaka, 2008). This study contributes to filling this gap by addressing how firms integrate their partners as co-creators into the innovation process.

Co-production with partners can co-create value at a level that individual firms would struggle to achieve. In other words, co-production is a complex process that involves integrating resources from diverse networks (Vargo, 2009). This study proposes a framework for co-

production that stems from social capital approaches to organization. Indeed, social capital is an important part of co-production in which firms discover new opportunities and obtain new knowledge. Thus, social capital, as a strategic resource, may affect the determinants of co-production.

Studies on collaborative innovation suggest that co-production enhances innovation (Chen et al., 2011). On the one hand, firms with an adequate level of absorptive capacity tend to be sensitive to technological opportunities in innovation and proactive in exploiting such opportunities (Nicholls-Nixon & Woo, 2003; Rothaermel & Hill, 2005). On the other hand, building self-efficacy is an important first step toward developing a skill (Bandura, 1997). Firms with high confidence in their ability to provide valuable knowledge are more likely to accomplish specific tasks (Chen, Greene, & Crick, 1998). Therefore, co-production may operate through absorptive capacity and self-efficacy to increase innovation. These two complementary indirect effects explain the additional variance of innovation.

Service-dominant (S-D) logic views alliance partnerships as value co-creation networks (Paulin & Ferguson, 2010; Vargo & Lusch, 2008). Following this stream of research, this study applies the conceptual S-D logic to analyze co-production in partnership. This study investigates, first, the effects of absorptive capacity and self-efficacy on innovation; second, the direct effects of co-production on innovation, absorptive capacity, and self-efficacy; and third, the direct effects of social capital on co-production. Accordingly, the findings enrich the literature by integrating the research streams on social capital and co-production in the development of a comprehensive model for Taiwanese firms and their alliance partners. In particular, this study explores unexamined roles of co-production, absorptive capacity, and self-efficacy as mediators

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between social capital and innovation. The structural equations modeling (SEM) results offer a comprehensive and complete explanation to understanding the relationships among the factors that enhance innovation.

The rest of this study proceeds as follows: Section 2, literature review and hypotheses; Section 3, method; Section 4, analysis and results; Section 5, discussion; and Section 6, conclusions and contributions.

## 2. Literature review and hypotheses

### 2.1. Innovation

Damanpour (1991) defines innovation as the adoption of an internally generated or purchased device, system, policy, program, process, product, or service that is new to the adopting organization. In this respect, innovation encompasses the generation of novel ideas for products and services, as well as business processes, technological capabilities, and manufacturing methods. In general, innovation consists of product, process, and administrative innovation (Subramanian & Nilakanta, 1996).

### 2.2. Absorptive capacity

Absorptive capacity refers to the ability to recognize the value of new information, assimilating and applying that information to commercial ends (Cohen & Levinthal, 1990). Zahra and George (2002) define absorptive capacity as the set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability.

Tsai (2001) finds that absorptive capacity affects both innovation and performance. Firms with a high level of absorptive capacity are likely to enhance innovation through the exploitation of partners' knowledge (Nicholls-Nixon & Woo, 2003; Rothaermel & Hill, 2005). Firms' absorptive capacity allows for the effective expansion of organizational and technological boundaries (Rothaermel & Alexandre, 2009). Through this expansion, firms develop successful innovation practices. In other words, firms with a high level of absorptive capacity have the ability to enhance innovation.

**H1.** Absorptive capacity positively affects innovation.

### 2.3. Self-efficacy

Self-efficacy refers to a firm's belief in the capability to perform a specific task (Bandura, 1997). Cervone and Peake (1986) describe self-efficacy as the product of dynamic cognitive processes by which a firm integrates diverse hints to consider the components of the overall activity. In general, self-efficacy affects how firms decide on the ability to perform tasks (Bandura, 1997). Firms with high self-efficacy are likely to show intrinsic interest in the tasks and persistence in the face of challenges, and do much effort in tasks (Chen et al., 1998).

Firms with high self-efficacy can set the goals and make an effort on task performance (Bandura, 1997; Beaugard, 2012). Thus, self-efficacy provides a theoretically sound context in which firms can analyze tacit and cognitive knowledge (Endres, Endres, Chowdhury, & Alam, 2007). As a result, firms with high self-efficacy present high confidence in knowledge transfer because firms can recognize new knowledge's value. Self-efficacy is an important determinant of creativity and innovation (Tierney & Farmer, 2011). Therefore, firms with a high level of self-efficacy tend to be creative and hence, highly innovative.

**H2.** Self-efficacy positively affects innovation.

### 2.4. Co-production

Co-production refers to the constructive participation in creation and delivery (Auh, Bell, McLeod, & Shih, 2007). Co-production enhances

both parties' ability to share information and cooperate. Thus, co-production helps both parties increase coordination (Dyer & Singh, 1998). Muthusamy and White (2005) point out that co-production fosters a climate of openness and reciprocity, which leads to mutual understanding. Such mutual understanding results in positive outcomes (Auh et al., 2007). Most importantly, co-production creates a base for future integration of knowledge (Frost & Zhou, 2005).

External technical resources generally come from co-production and technology transfer. Particularly, innovation is a social process because innovation activities involve the implementation of ideas, and implementation relies heavily on people's involvement (Schilling & Phelps, 2007). Thus, collaboration positively affects innovation practices (Faems, Van Looy, & Debackere, 2005). The underlying rationale is that co-production provides access to new resources, abilities, and knowledge to achieving innovation (Chen et al., 2011; Malhotra, Gosain, & El Sawy, 2005; Wang, Bradford, Xu, & Weitz, 2008).

**H3.** Co-production positively affects innovation.

Coordination capability facilitates absorptive capacity (Jansen, Van Den Bosch, & Volberda, 2005). Coordination with partners frequently exposes the firm to new knowledge (Das & Kumar, 2007), which results in learning experiences that enhance absorptive capacity. In other words, co-production easily and effectively allows each partner to share strengths by exchanging different resources, ideas, and knowledge (Chen et al., 2011). As such, co-production expedites skills and experience development in knowledge transfer. Such knowledge integration during co-production assists in the development of absorptive capacity (Frost & Zhou, 2005).

**H4.** Co-production positively affects absorptive capacity.

Co-production facilitates good information and knowledge exchange between partners and consequently enhances the firms' self-efficacy. The underlying rationale is that the increased and broad competence and skills are likely to enhance confidence in behaviors such as providing suggestions for improvement and problem solving (Dong, Evans, & Zou, 2008). Co-production provides firms with resources and information. This provision affects the belief that firms can perform tasks effectively (Etagar, 2008).

**H5.** Co-production positively affects self-efficacy.

### 2.5. Social capital

The structural dimension of social capital includes social interactions; the relational dimension of social capital refers to assets rooting in these relationships such as trust; attributes like shared values embody social capital's cognitive dimension (Nahapiet & Ghoshal, 1998; Tsai & Ghoshal, 1998).

#### 2.5.1. Social interactions

Social interactions are channels that allow information and resources flow and one party's access to the other party's resources (Tsai & Ghoshal, 1998). Hansen (1999) defines social interactions as regularly occurring contacts between groups of partners. In general, the key determinants of effective social interactions comprise closeness, frequent contacts, and communication (Becerra & Gupta, 2003).

Social interactions facilitate knowledge transfer between parties, thus establishing the foundation for coordination (Jones, Hesterly, & Borgatti, 1997). Similarly, Wagner and Bukó (2005) suggest that social interactions are crucial for the development of a stable and cooperative relationship in a knowledge-sharing network. Social interactions can increase connectivity, thus helping partners exchange resources and engage in mutual problem solving (Hoegl, Parboteeah, & Munson, 2003). Therefore, social interactions increase the incidence of co-production.

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