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Product innovation through coopetition in alliances: Singular or plural governance?

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ABSTRACT

This study researches how firms can improve their product innovation in coopetition alliances through alliance governance. Our survey-based study of 372 vertical alliances in the medical device industry contributes to a clarification of prior studies' contrasting findings on product innovation when coopetition is present in alliances. Our results show that the singular use of relational governance improves product innovativeness in vertical alliances that experience growing levels of coopetition. In contrast, the singular use of transactional governance reduces product innovativeness with growing coopetition. When firms apply both relational and transactional governance as plural governance, vertical coopetition alliances get access to new ways to improve their product innovativeness.

1. Introduction

Firms search for pathways to improve innovation forming alliances that offer complementary resources and risk-sharing (Bosch-Sijtsema & Postma, 2009; Oxley & Sampson, 2004). However, firms have to master the alliances' challenges, particularly as alliances often include competition besides collaboration (Gnyawali & Park, 2009), i.e. situations in which firms compete and cooperate at the same time (Bengtsson & Kock, 2000; Brandenburger & Nalebuff, 1996), and where their interests partially overlap (Padula & Dagnino, 2007). Collaboration builds on convergent interests while competition is dominated by divergent interests. In coopetition, firms have partially convergent interests, a self-interest overlap (Padula & Dagnino, 2007).

Coopetition can improve innovation because partners achieve increased market power, resource complementarity, risk sharing (Gnyawali & Park, 2011; Quintana-Garcia & Benavides-Velasco, 2004; Ritala, Hurmelinna-Laukkanen, & Blomqvist, 2009), and synergies by joint R&D (Osarenkhoe, 2010; Walley, 2007). Yet the few studies analyzing how coopetition affects innovation have contrasting results (Bouncken & Kraus, 2013; Gnyawali & Park, 2011; Ritala & Hurmelinna-Laukkanen, 2013). _ENREF_100_ENREF_15Some studies indicate that coopetition has stronger advantages for incremental than for radical innovation (Ritala, 2012) or that coopetition has more merits of radical innovation than incremental innovation (Bouncken & Fredrich, 2012).

Cassiman, Di Guardo, and Valentini (2009) find that governance influences whether coopetition improves innovation. The right choice of governance mechanisms allows better coordination of activities and resource contributions among allying firms and provides safeguards against opportunism (Hoetker & Mellewigt, 2009). Therefore, adequate governance mechanisms can ensure both value creation and value appropriation among firms involved in partially convergent interests (Dekker, 2004).

Yet, which and how do governance mechanisms influence product innovativeness in coopetition alliances? How do only partially convergent and even divergent interests of coopetition work with governance mechanisms? So far, no study has analyzed the effects of governance mechanisms on product innovativeness in alliances considering different intensities of coopetition. We address this research gap by integrating the governance and the coopetition literature. We analyze how relational and/or transactional governance works with coopetition on product innovativeness in vertical alliances.

Governance can use various mechanisms i.e. contracts (Mayer & Argyres, 2004; Poppo & Zenger, 2002), formal control (Yang, Zhou, & Jiang, 2011), specified directives (Bouncken, 2009), reporting mechanisms (Hoetker & Mellewigt, 2009), trust (Das & Teng, 1998), reciprocity (Muthusamy & White, 2005), social bonds (Wuyts & Geyskens, 2005), social control (Li, Xie, Teo, & Peng, 2010b), or relational norms (Liu, Luo, & Liu, 2009). A prominent classification is between transactional and relational governance. Transactional governance centers on formal mechanisms and is based on transaction cost economics (TCE) (Williamson, 1975). Relational governance centers on the development of trust, reciprocity, and the social embeddedness of actions that, through mutuality and ongoing information exchange, prevent opportunism and coordination problems (Muthusamy & White, 2005).

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Previous research on the relationship between transactional or relational governance falls into two categories, i.e. presenting views on singular and plural governance (Cannon, Achrol, & Gundlach, 2000; Cao & Lumineau, 2015). The view on *singular governance* implies that firms should concentrate on one governance mechanism, whereas the view on *plural governance* assumes that alliances efficiently work using a combination of governance mechanisms (Bradach & Eccles, 1989; Cannon et al., 2000; Cao & Lumineau, 2015).

In the view of singular governance, some researchers evaluate transactional or relational governance as substitutive, i.e. one harming the other (Das & Teng, 1998; Sundaramurthy & Lewis, 2003). Other researchers show contextual factors that influence whether transactional or relational governance is more efficient than the other, advising the choice of one (singular) governance mechanism under certain conditions (Claro, Hagelaar, & Omta, 2003; Hoetker & Mellewigt, 2009). The view on plural governance instead assumes that both forms of governance mechanisms work complementarily (Poppo & Zenger, 2002). Contextual factors also influence the outcomes of plural governance of transactional and relational mechanisms (Cao & Lumineau, 2015; Hoetker & Mellewigt, 2009; Mesquita & Brush, 2008). We investigate whether coopetition interacts with (1) the singular governance of either transactional *or* relational governance, or (2) the plural governance of transactional *and* relational governance. We specifically analyze how increasing coopetition interacts with singular or plural governance on innovation.

2. Theoretical framework

2.1. Coopetition

Coopetition, "cooperation" and "competition" (Brandenburger & Nalebuff, 1996) describe inter-firm relationships that include convergent and divergent interests (Dagnino & Padula, 2002; Raza-Ullah, Bengtsson, & Kock, 2014). Competition is the pursuit of one's own interests at the expense of others, i.e. diverging interests; cooperation is the pursuit of mutual benefits, i.e. convergent interests (Dagnino & Padula, 2002; Das & Teng, 2000). The co-existence of convergent and divergent interests as partially convergent and partially diverging interests shape contradictory demands in coopetition. Tensions stem from behavioral uncertainty, role conflicts, and different perceptions of diverging and convergent interests among the partnering firms (for an overview see: Park, Srivastava, & Gnyawali, 2014).

Coopetition occurs between firms (Bouncken, 2015), within firms (Luo, Slotegraaf, & Pan, 2006) and between firms and other institutions e.g. universities (Baglieri, 2009). Coopetition between firms can include suppliers, customers, or complementors (Afuah, 2004; Brandenburger & Nalebuff, 1996; Zineldin, 2004). It naturally resides in horizontal relationships, but can exist in vertical relationships as well due to the multifaceted roles and relationships organizations can share with each other and with the present or future competitive tensions among sellers and buyers (Bengtsson & Kock, 2014; Giachetti & Dagnino, 2014; Kotzab & Teller, 2003).

Lado, Boyd, and Hanlon (1997) presume that the degree of cooperation and competition can vary. Bengtsson and Kock (2000) develop three typical forms of relationships: 1) cooperation-dominated; 2) equal; and 3) competition-dominated. Eriksson (2008) states that coopetition occurs in a continuum between pure cooperation and pure competition. Coopetition can be existent in different intensities due to different mixtures of competition and collaboration that change over time because of changing motives of the partners in different phases of the relationship (Hung & Chang, 2012; Raza-Ullah et al., 2014). Value creation takes place through the sharing of relevant knowledge and capabilities, joint problem-solving and development of relation-specific assets (Gnyawali & Park, 2011). Value appropriation is the ex post separation of the generated value to amortize investments into the alliance (Gnyawali & Park, 2011). While value creation requires mutual contributions to create common benefits, value appropriation is about the separation of private benefits (Fernandez, Le Roy, & Gnyawali, 2014). Because of this, coopetition simultaneously features converging interests regarding collaborative value creation and diverging interests regarding the appropriation of rents. Padula and Dagnino (2007) describe coopetition as a situation in which firms interact on the basis of a partially convergent interest structure. The convergent interests can also be understood as common interests stemming from a self-interest overlap (Padula & Dagnino, 2007). Depending on the degree of this self-interest overlap, coopetition can be existent in various intensities.

2.2. Vertical coopetition alliances and innovation

The lower similarity of the knowledge bases of vertical alliances compared to horizontal alliances can reduce the relative efficiency and speed of innovation development (Enberg, 2012; Osarenkhoe, 2010; Ritala & Hurmelinna-Laukkanen, 2009), but can increase the likelihood of scale advantages and connectivity (Dyer & Singh, 1998) that stimulate product innovativeness (Rindfleisch & Moorman, 2001). Vertical alliances include different intensities of competition – diverging interests – because of the risk of opportunism associated with multiple threats from the (mis-)use of knowledge and technology (i.e. learning races see Kale, Singh, & Perlmutter, 2000). Competitive tensions arise when partners have diverging interests about the value generation and appropriation. Threats emerge particularly if allies interact with third parties, changes occur, and if the coopetition includes innovations. For instance, if an innovation was developed with an industrial buyer, the supplier can (mis)-use the hardly or non-protectable knowledge from the alliance in interactions with other buyers (i.e. direct competitors), or can sell the resulting innovations directly to end customers. Vice-versa, the buyer can become a competitor to the supplier if it uses supplier technology to self-produce formerly outsourced components or services or if product blueprints are given to competing low cost-suppliers.

Environmental changes can lead to diverging views and conflicting approaches regarding how to accommodate the change in any single firm. Therefore, the viability of value creation and value appropriation strategies is weakened and alliance arrangements may be insufficient for reducing uncertainty (Padula & Dagnino, 2007). Environmental changes can even directly affect the evaluation of inputs into the alliance (i.e. previous contributions or equity conditions) and alter the eligibility of the alliance to support each firm's strategy. This may weaken the perception of the value of cooperation for individual interests (i.e. self-interest overlap) dynamics may change incentives, thereby affecting participants' behavior and performance and stability of the alliance.

This external effect is particular relevant for innovation alliances that covers novel products, services, technologies, and production processes that significantly depart from prior solutions as these are particularly affected by environmental, technological, and market uncertainties and changes (McKinley, Latham, & Braun, 2014). Greater innovativeness, associated with greater novelty, directly causes diverging interests related to value capture and at the same time reduces the possibility to control the dynamic knowledge-based assets contributed to and generated in the alliance. For example, firms have diverging interests of patent ownership and (exclusive) rights on future innovation (Carfi, Bagileri, & Dagnino, 2012). Greater innovativeness in the vertical alliance limits firms' ability to plan and to control tasks and responsibilities because of more frequent changes, high uncertainty, and the use of knowledge-based assets within innovation development. Therefore, greater innovativeness in alliances entails more dynamism in the partially convergent interests and goes along with greater threats for the stability of cooperation.

The more divergent the alliance partners' interests, the more tensions emerge between the firms to capture a certain share of the innovations' value (Cassiman et al., 2009; Fernandez et al., 2014). Thus, vertical alliances that work per se on a certain level of collaboration (more convergent interests) can experience increasing levels of competition (diverging interests). The partially convergent interests are thus