



Coopetition between Small And Medium-Sized Enterprises to achieve Product Innovation: The relevance of Absorptive Capacity

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Abstract: Nowadays, innovation is a key factor in maintaining a sustainable competitive advantage. Nevertheless, Small and Medium-sized Enterprises (SMEs) face enormous challenges to achieve product innovation. Coopetition strategy (collaboration between competing firms) might be an appropriate way for SMEs which want to fulfill their needs in terms of resources and competences to create and bring new product to the market. However, SMEs should have an adequate level of absorptive capacity to take advantage of coopetition. This paper aims to show the importance of absorptive capacity in this type of strategy, by developing a conceptual framework that highlights the different role of realized and potential absorptive capacity in the relationship between coopetition and product innovation.

Key Words: Coopetition, Product innovation, Absorptive capacity, SMEs.

1. INTRODUCTION

The world's economic environment is in constant evolution forcing firms to be more proactive, flexible and open-minded to maintain their competitiveness. Firms are facing multiple constraints and external circumstances; therefore, they need to find new ways to manage their business to survive, increase their competitiveness and innovation performance (Kossyva, Sarri, & Georgopoulos, 2014). For this reason, cooperation between competitors (Coopetition) has become a sine qua non-requirements for global competitiveness and innovation. Coopetition is defined as the simultaneous pursuit of cooperation and competition (Bengtsson & Kock, 1999, 2000, Brandenburger & Nalebuff, 1996, 1995; Gnyawali, He, & Madhavan, 2008; Gnyawali & Park, 2009; Luo, 2007; Raza-ullah Bengtsson & Kock, 2014). A growing body of research defends the idea that Coopetition can stimulate the research for new rent-generating combinations of resources, skills and processes (Lado, Boyd & Hanlon, 1997; Yami et al., 2010), as it provides firms with superior product innovation performance (Belderbos, Carree, & Lokshin, 2004; Gnyawali & Park, 2011; Quintana-García-Velasco & Benavides, 2004; Le Roy, Marc, & Frank, 2013).

Although the importance of Coopetition for firms is acknowledged and supported, it is important to recognize some limitations in the implementation of this strategy which always fails to improve the competitive position of the partners, especially when the collaboration's costs are higher than future profits. These costs result from the need to maintain greater cognitive maps, behavioral routines, and organizational resources to pursue both competitive and cooperative actions (Lado et al., 1997; Garcia-Quintana & Benavides-Velasco, 2004). Problems can also arise when the absorptive capacity of partners is not sufficient or different (Cohen & Levinthal, 1990; Hamel, 1991), noting that this capacity plays an important role in the realization of product innovation because the ability to absorb and exploit external knowledge is an essential component of the innovation capacity (Cohen & Levinthal, 1990).

The relationship between Coopetition, absorptive capacity, and product innovation still poorly studied in the context of SMEs. Our paper follows this current research stream (Ritala & Hurmelinna-Laukkanen, 2009, 2013; Srivastava, Gnyawali, & Hatfield, 2015; Yu, 2013) which focused on the role played by the absorptive capacity in the relationship between Coopetition and product innovation. The main contribution of this conceptual

paper is to theoretically analyze the moderator and mediator roles of absorptive capacity in the accomplishment of product innovation through a Coopetition between SMEs. Thus, in our paper we try to answer the following question: *"In the context of SMEs, what role does the absorption capacity play in the relationship between Coopetition and product innovation?"*

In this conceptual paper, we argue that Coopetition might be an appropriate strategy for SMEs that want to fulfill their needs in terms of resources and competencies to achieve product innovation performance. We develop a conceptual framework that highlights the importance of absorptive capacity in this type of strategy, by distinguishing between the mediator and moderator role that absorptive capacity can play in the relationship between Coopetition and product innovation.

2. COOPETITION: A STRATEGY FOR SMEs

2.1. Definition of Coopetition

Coopetition is a relatively new concept, the term was mentioned in the 1980s by Raymond Noorda when describing the strategy of his company Novell Inc. (Luo, 2007; Rusko, 2011). Then it was introduced and popularized in strategic management research by Brandenburger & Nalebuff (1995). Studies on Coopetition were conducted for more than two decades. Literature shows that there is a lack of unified definitions, and since its apparition, various definitions of coopetition were used in studies (Bengtsson & Kock, 2014). In literature, two main definitions had been developed:

- Coopetition is either broadly defined as a value network including suppliers, customers, substitutes and complementary firms (Brandenburger & Nalebuff, 1995, 1996). In this first conception, Brandenburger & Nalebuff, (1995) perceive Coopetition from a general view, where any player in the industry may be a potential coopetitor. According to these authors, the world of business demands the simultaneity of war and peace, and argue that *« Coopetition means cooperating to create a bigger business "pie", while competing to divide it up »* (Brandenburger & Nalebuff, 1996: 5).

- In the second conception, Coopetition is reduced to cooperation between two directly rival firms (Bengtsson & Kock, 1999; Luo, 2007; Padula & Dagnino, 2007). From this, Coopetition represents an organizational behavior that simultaneously

combines co-operative and competitive actions between firms producing similar products and/or services for consumers in the same segment (Pellegrin-Boucher, Roy, & Gurău, 2013). This conception considers Coopetition as a relationship generated by cooperation between direct competitors at a horizontal level (Bengtsson & Kock, 1999, 2000).

Recently, Bengtsson & Kock (2014) defined Coopetition as *"a paradoxical relationship between two or more actors simultaneously involved in cooperative and competitive interactions, regardless of whether their relationship is horizontal or vertical"* (Bengtsson & Kock, 2014: 182). Through this definition, the authors suggest that the paradoxical simultaneity of competition and cooperation implies that Coopetition should be described along two continua: one of the cooperation and other of competition (Bengtsson, Eriksson & Joakim, 2010).

We assume that the definition offered by Bengtsson & Kock (2014), is the most appropriate definition to describe the reality of Coopetition relationship, since it takes into consideration the paradoxical nature of these relationships, and on the other side the business environment becoming more dynamic, complex and changeable, where firms are increasingly developing a portfolio of alliances and involved in multiple vertical and/or horizontal relationships.

2.2. Coopetition between SMEs

Coopetition literature is more focused on large and/or multinational firms. However, Gnyawali & Park (2009) stipulate that the interest in Coopetition seems to be even more important in the context of SMEs. According to Morris, Koçak, & Özer (2007), Coopetition offers more potential resources for SMEs, and it's a way to conquer new markets. Also, relationships with competitors may allow SMEs to develop or use technologies that could not develop alone. SMEs could compete more efficiently against big actors if they cooperate, by acquiring and using relevant resources held by others (Gnyawali & Park, 2009). Although the importance of Coopetition as an appropriate strategy for SMEs has been acknowledged, most of the current studies are focusing on large firms (e.g. Fernandez, Le Roy & Gnyawali, 2014; Gnyawali & Park, 2011; Yami & Nemeh, 2014) and neglecting SMEs. Therefore, we know less about the drivers and

consequences of Coopetition in SMEs (Gnyawali & Park, 2009), and even less about the combination of specific organizational resources and capabilities which allows for SMEs better exploitation of the benefits of the Coopetition relationship to generate innovations. In light of these shortcomings, we will focus on internal capacity, specifically, the absorption capacity that might occupy an important position in the relationship between Coopetition and product innovation.

2.3. Absorptive capacity

The concept of absorptive capacity originates in the field of macroeconomics, where it represents the capacity of an economy to absorb and use external information and resources (Adler, 1965). Cohen & Levinthal (1990) are the first authors to adopt this concept at the micro-economic level, which means to the organization. According to those authors, absorptive capacity is *"the ability to recognize value of new, external information, assimilate it, and apply it to commercial ends"* (Cohen & Levinthal, 1990: 128). Another definition by Lane, Koka, & Pathak (2006: 856) from an in-depth study of the different theoretical contributions on absorptive capacity, underlines that *"absorptive capacity is a firm ability to utilize externally held knowledge through three sequential processes: (1) recognizing and understanding potentially valuable new knowledge through the use of exploratory learning, (2) assimilating valuable new knowledge through transformative learning, and (3) using the assimilated knowledge to create new knowledge and commercial outputs through exploitative"*. Zahra & George (2002: 186) define absorptive capacity as *"a set of organizational routines and processes by which firms acquire, assimilate, transform, and exploit knowledge to produce a dynamic organizational capability"*.

Absorptive capacity is a complex and multidimensional construct that lies at the intersection between the field of organizational learning (Huber, 1991, Kim, 1998), knowledge management (Chiva & Alegre, 2005, Oshri, 2006), and dynamic capabilities (Mowery, Oxley, & Silverman, 1996, Zahra & George, 2002). Cohen & Levinthal (1990), as well as Lane & Lubatkin (1998), Van den Bosch, van Wijk, & Volberda (2003), consider absorptive capacity according to three essential dimensions: recognition of the value of external knowledge, the assimilation of knowledge, and the use of knowledge. Also, Zahra & George (2002) propose a more elaborate view of absorptive

capacity compared to that of Cohen & Levinthal (1990), they conceive it as a dynamic process of knowledge management composed of four distinct but complementary dimensions (Table 1), which they have ranked in two under absorptive capacities. The acquisition and assimilation dimensions, forming the potential absorptive capacity, and the transformation and exploitation dimensions forming the realized absorptive capacity.

ACAP dimensions		Definition
Potential absorptive capacity	Acquisition	The ability of the enterprise to identify, value and obtain new knowledge from the external environment that is essential to the organization's various operations (Lane & Lubatkin, 1998, Zahra & George, 2002). It depends on R&D, pre-existing knowledge, and previous investments (Noblet & Simon, 2010).
	Assimilation	Refers to the organizational routines and processes that enable the firm to analyze, process, interpret and understand information obtained from external sources (Zahra & George, 2002).
Realized absorptive capacity	Transformation	The ability of a firm to develop and refine routines that facilitate the combination of existing knowledge with newly acquired and assimilated knowledge (Zahra & George, 2002).
	Exploitation	Based on routines that can refine, extend, and leverage existing skills, or create new ones, incorporating the knowledge gained and transformed into the company's day-to-day operations (Zahra & George, 2002).

Table -1: Dimensions of absorptive capacity (adapted from Zahra & George, (2002); Lane & Lubatkin (1998))

3. DEVELOPMENT OF CONCEPTUAL FRAMEWORK

3.1. Coopetition between SMEs and product innovation

Innovation is one of the fundamental activities that contribute to growth, profitability and firms' survival (Park, Srivastava & Gnyawali, 2014). However, SMEs have fewer resources, pursue fewer R&D activities, and generally face more uncertainties and obstacles related to the innovation (Zeng, Xie, & Tam, 2010). Inter-organizational networks provide a supplementary reply to insecurity resulting from the development and use of new technologies. Firms, especially SMEs, call upon external sources of knowledge, especially knowledge and skills of their strategic partners because alliances are a very important reservoir of external resources (Ahuja, 2000; Park et al., 2014; Srivastava & Gnyawali, 2011). In the same line of thinking, a large number of studies stressed that cooperation has become increasingly necessary to promote firms' innovation capacity (Belderbos et al., 2004; Yami et al., 2010; Zeng et al., 2010). Today, innovations are not introduced by isolated firms but rather by firms

that create various relationships with external partners (Le Roy, Robert & Lasch, 2016).

Several researchers have suggested that firms should look at both the benefits of competition as well as cooperation (Bengtsson & Kock, 1999; Brandenburger & Nalebuff, 1995; Dagnino & Padula, 2002; Hamel, Doz & Prahalad, 1989; Yami et al., 2010). Lado et al. (1997) assume that *"the syncretism between competition and cooperation will foster greater knowledge development, economic and market growth, and technological progress than either competition or cooperation alone"* (Lado et al., 1997: 118).

The competitors have relevant resources and face similar pressures, collaboration with competitors allows firms to acquire, create new technological knowledge, combine complementary resources and use them in developing new technologies and new products (Gnyawali & Park, 2009; Quintana-García-Velasco & Benavides, 2004; Ritala, Hurmelinna-Laukkanen, & Blomqvist, 2009).

Empirically, various studies (e.g. Belderbos et al., 2004; Neyens, Faems & Salts, 2010; Quintana-García-Velasco & Benavides, 2004) were conducted to study the impact of inter-organizational relationships on product innovation in SMEs (Table 2).

Authors	Purpose	Sample	Finding
Wu (2014)	Collaboration with competitors and product innovation performance	1499 of SMEs and Large firms	Bell-shaped curve between cooperation and product innovation performance
Zeng, Xie & Tam (2010)	Network of collaboration and innovation performance	137 SMEs	Inter-firm collaborations (including competitors) impact positively the innovation performance
Neyens, Faems & Sels (2010)	Alliances and innovation performance	217 start-up	Positive effect on product innovation performance (radical and incremental innovation)
Belderbos, Carree & Lokshin (2004)	R&D collaborations and firm's performance	CIS 1996, 1998	Product innovation turnover improvement
Quintana-García & Benavides-Velasco, (2004)	Collaboration, competition and innovation capacity	73 SMEs	Positive impact of cooperation on innovation capacity

Table -2: Positive impact of cooperation on product innovation performance (authors)

These studies agree on the positive impact of cooperation with direct competitors for the development of new products. According to these studies, Cooperation is important not only to acquire

new knowledge and skills for the partner but also to create and access other capabilities based on intensive exploitation of existing ones (Gnyawali & Park, 2009; Garcia-Quintana & Benavides-Velasco, 2004). According to this, we think that Coopetition between SMEs has a positive impact on product innovation.

H1: Coopetition between SMEs positively impacts product innovation.

3.2. Coopetition and realized absorptive capacity

According to the absorptive capacity concept, firms with strong internal capacities will more benefit from relational resources than firms that do not have these capabilities (Srivastava & Gnyawali, 2011). Competing firms, operating in a similar context, often confront similar issues and, thus, develop overlapping dominant logic (Dussauge, Garrette, & Michell, 2000). Therefore, alliances with competitors are likely to create an environment that fosters inter-organizational learning (Hamel, 1991). From their point of view, Park and Russo (1996) support the idea that the potential knowledge appropriation in a joint venture is noticeably higher when partners are direct competitors. This means that competitors have to some extent, a knowledge base and a common understanding of technologies, concepts and relevant infrastructure because of their positions in similar markets. Thus, they can quickly acquire knowledge from each other, and quickly apply it to markets (Ritala & Hurmelinna-Laukkanen, 2013).

It is known that firms use alliances with their competitors to acquire new technologies and competencies; this reflects the commitment of each partner to absorb competences of the other (Hamel et al., 1989). In a coopetitive relationship, partners are in a learning race (Quintana-García & Benavides-Velasco, 2004), because learning from the partner is paramount, firms that see the alliance as a window on their partners' capabilities, use this to acquire skills outside the formal agreement, and systematically diffuse new knowledge throughout their organizations (Hamel et al., 1989). Thus, we introduce the proposition below:

H2: Coopetition between SMEs develops the realized absorptive capacity of partners.

3.3. Absorptive capacity and product innovation

SMEs highly rely on external knowledge to innovate (Ortega-Argilés et al., 2009; Rammer et al., 2009). Compared to large firms, they may be in a better position to benefit from external knowledge due to their management practices that are less bureaucratic and more flexible (Moilanen et al., 2014). Indeed, SMEs that invest regularly in the assimilation and exploitation of new external knowledge are more likely to capitalize on evolutionary environmental conditions by generating innovative products and satisfying the needs of emergent markets (Kostopoulos et al., 2011) (Table 3 in appendix).

Previous studies have provided empirical support for the idea that absorptive capacity allows SMEs to achieve product innovation performance (Kocoglu et al., 2015; Koubaa, 2015; Wang et al., 2010), because innovation is based on organization capacity to acquire and transform internal and external knowledge into actions (Wang & Yan, 2011). The absorptive capacity appears to be essential for organizational learning, and R&D activities (Chen, Lin, & Chang, 2009), it can also act as a knowledge transfer mechanism, between different organizational units, that contribute to facilitating firm's innovation activities (Tsai, 2001). Therefore, SMEs' absorptive capacity may support their product innovation performance, by operating at the same time as a tool of new external knowledge processing, also as a way to transfer this knowledge for cross-organizational innovation activities (Kostopoulos et al., 2011).

H3: Realized absorptive capacity positively impacts product innovation.

3.4. Absorptive capacity's roles in the relationship between Coopetition and product innovation

3.4.1. The moderating role of potential absorptive capacity

In literature, empirical studies show inconclusive results about the impact of Coopetition on product innovation performance, some research affirms a positive impact (Belderbos et al., 2004; Neyens et al., 2010; Quintana-García and Benavides-Velasco, 2004), In contrast, other research claims a

negative impact (Nieto & Santamaria, 2007), and other research found no impact (Knudsen, 2007).

We suppose that some firms are better placed to take advantage of Coopetition in an innovation context than others. According to Ritala & Hurmelinna-Laukkanen (2013), these differences lie not only in exogenous factors such as the dynamics of the industry but also in the firm's specific factors. Some researchers focused on these endogenous factors as firms' absorptive capacity that could be important in determining the company's gain from its partner's resources (Ritala & Hurmelinna-Laukkanen, 2013; Srivastava et al., 2015).

In a recent research on the moderating role of the firm's absorptive capacity in achieving technological innovations from the alliance network, Srivastava et al. (2015) show that although resources emanating from alliances are generally beneficial to generate technological innovation, the extent to which a company benefit from these resources is largely affected by the internal firms' characteristics (absorption capacity). Similarly, Yu (2013) shows that absorptive capacity significantly moderates the relationship between a firm's network and innovation. He confirms that there is a complementary relationship between a firm's absorptive capacity and its external network for achieving the innovation objectives. Indeed, the more this firm can access, assimilate, and use knowledge from external sources to innovate. Also, according to Yu (2013), there is a nonlinear relationship between firm's network diversity and its innovation performance, which confirms the moderating role of absorptive capacity in such a relationship the more the firm's absorptive capacity is high. Therefore, this paper suggests that when the absorptive capacity is high, firms are more likely to benefit from technological knowledge held by their competitors-partners thereby increasing their level of product innovation. This leads to the following proposition:

H4a: Potential absorptive capacity positively moderates the relationship between Coopetition and product innovation

3.4.2. Realized absorptive capacity's mediating role:

Coopetition allows firms to acquire the new external knowledge required for product innovation, SMEs with low absorptive capacity will not be able to

identify, understand, and apply this new external knowledge, and bring product innovation to the market. However, absorptive capacity does not focus only on the acquisition and assimilation of external knowledge but also encompasses the firm's ability to address this knowledge internally (Rothaermel & Alexander, 2009). This explains why some organizations that acquire and assimilate new external knowledge through the different inter-organizational relationships they undertake could not convert and exploit this external knowledge effectively to achieve product innovation performance.

Absorptive capacity is not just a goal, it can mediate some organization outcomes (Fosfuri & Tribó, 2008; Najafi Tavani, Sharifi & Ismail, 2013). Several studies confirm that the absorptive capacity plays a mediating role in the relationship between the acquisition of new external knowledge and performance product innovation (Escribano, Fosfuri, & Tribo, 2005; Lioa, 2010; Moilanen, Østbye, & Woll, 2014). For Lioa (2010), absorptive capacity shows a strong mediating role in the relationship between knowledge acquisition and innovation capability. Likewise, Moilanen et al. (2014) found that knowledge flows coming from national or international competitors have an indirect effect on positive and significant product innovation for SMEs, with a partial mediation of absorptive capacity, their result is in line with Huang et al. (2010), emphasizing those competitors are an important information source. Accordingly, Cohen & Levinthal (1990) state that the more of competitors' spillovers there are out there, the more incentive the firm has to invest in its absorptive capacity, they also state that when this incentive is large, spillovers may stimulate absorptive capacity (Moilanen et al., 2014).

Specifically, when competing SMEs work together in a product innovation project, the knowledge that they acquire and disseminate is processed by the members of the product innovation team. The interaction between the project team members allows competing SMEs to combine this knowledge with their existing knowledge and used it to refine their organizational process and capabilities to introduce new products. Consequently, this interaction endorses employees' participation which increases knowledge exchange, transformation, and exploitation. Through that, SMEs that cooperate with a competitor for product innovation can improve their realized absorptive capacity. In this case, we suggest that the realized absorptive capacity fully

mediates the causal link between Coopetition and product innovation. In other words, product innovation is not directly related to Coopetition, therefore, external knowledge provided by this type of strategy must be transformed and exploited through the realized absorptive capacity to enhance the potential of product innovation.

H4b: Realized absorptive capacity positively mediates the relationship between Coopetition and product innovation

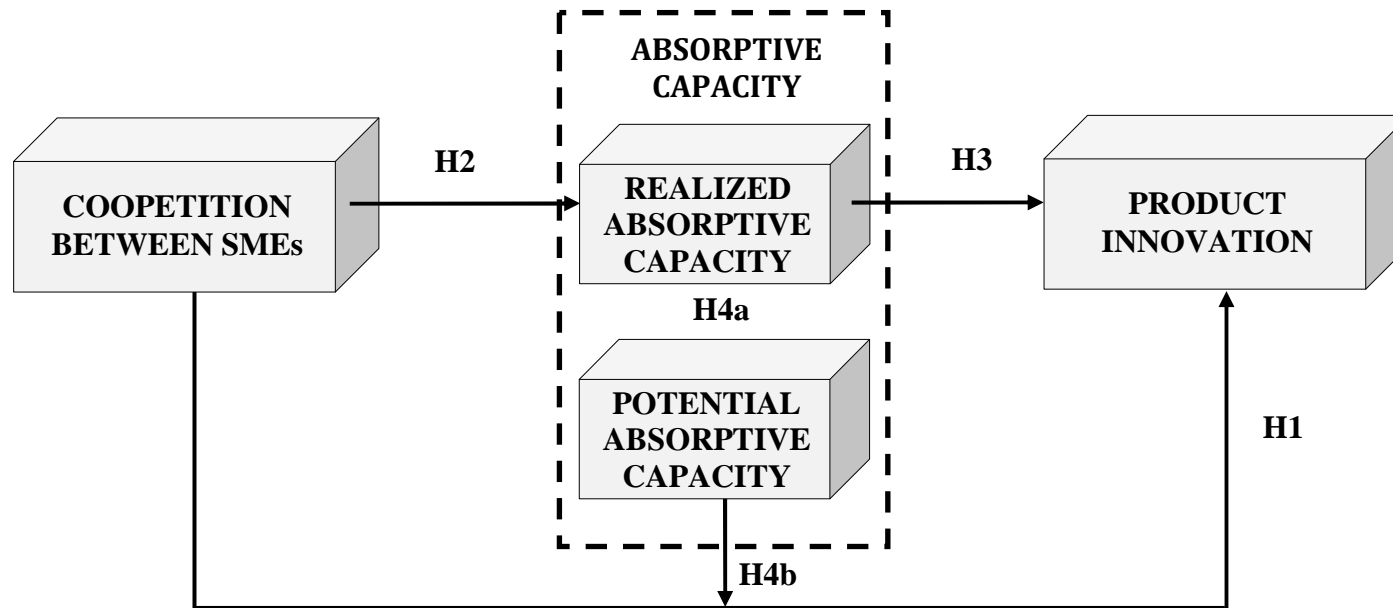


Figure 1: Role of absorptive capacity between competition and product innovation: a conceptual model

4. CONCLUSION

This conceptual paper attempts to explain how SMEs could generate a greater performance in terms of product innovation through cooperative relations, by highlighting the role of absorptive capacity. This role remains very ambiguous; literature does not theoretically and empirically distinguish the nature of the role played by absorptive capacity. That is to say, we are still unable to determine whether it plays a mediator or moderator role in the relationship between Cooperation and product innovation. In other words, we wonder if this capacity can be developed by Cooperation to achieve a product innovation (mediator role), or on the other hand, if both competitors- partners should have a certain level of absorptive capacity to support the effect of Cooperation on product innovation (moderator role).

We think that this paper will theoretically contribute to the enrichment of knowledge in the field of Cooperation in SMEs, as well as product innovation research field. At the managerial level, it will help SMEs' managers to have a better understanding of the issue of Cooperation and innovation to face the rapid development and the uncertainties of their environments. Because in those conditions, cooperation with competitors may be an appropriate response for SMEs to fulfill their needs in the resources and skills required for innovation (Gnyawali & Park, 2009; Quintana-García-Velasco and Benavides, 2004). Besides, it is not sufficient that SME follows only a Cooperation strategy to innovate, but it should possess or develops a necessary degree of absorptive capacity to identify, understand, and exploit the advantages in terms of know-how, competencies, and resources provided by a Cooperation relationship.

The preliminary conceptual framework developed provides useful guidelines for future research. As a first perspective, we invite researchers to develop a more complex model that takes into account other exogenous variables such as industry type, firm's age and experience in inter-organizational relationships. A confrontation of this model with the empirical reality seems to be the second perspective of this paper, by conducting an exploratory qualitative study to refine the model and define clear hypotheses, then a quantitative study with a large sample will be required to test the absorptive capacity's roles in the relationship between co-opetition and product innovation.

REFERENCES

- Ahuja G. 2000. The duality of collaboration: inducements and opportunities in the formation of interfirm linkages. *Strategic Management Journal*, 21: 317–343.
- Ali, M., & Park, K. (2016). The mediating role of an innovative culture in the relationship between absorptive capacity and technical and non-technical innovation. *Journal of Business Research*, 69(5), 1669-1675.
- Ali, M., Kan, K. A. S., & Sarstedt, M. (2016). Direct and configurational paths of absorptive capacity and organizational innovation to successful organizational performance. *Journal of Business Research*, 69(11), 5317-5323.
- Belderbos R, Carree M, Lokshin B. 2004. Cooperative R & D and Firm Performance. *Research Policy*, 33(10): 1477–92.
- Bengtsson M, Eriksson J, Joakim W. 2010. Cooperation dynamics – an outline for further inquiry. *Competitiveness Review: An International Business Journal*, 20(2): 194–214.
- Bengtsson M, Kock S. 1999. Cooperation and competition in relationships between competitors in business networks. *Journal of Business & Industrial Marketing*, 14(3): 178–194.
- Bengtsson M, Kock S. 2000. "Coopetition" in Business Networks—to Cooperate and Compete Simultaneously. *Industrial Marketing Management*, 29: 411–426.
- Bengtsson M, Kock S. 2014. Cooperation—Quo vadis? Past accomplishments and future challenges. *Industrial Marketing Management*, 43(2): 180–188.
- Brandenburger AM, Nalebuff BJ. 1996. *Coopetition*. Currency Doubleday: New York.
- Brandenburger BJ, Nalebuff A. 1995. The right game: Use game theory to shape strategy. *Long Range Planning*, 28: 128.
- Chang, S., Gong, Y., Way, S. A., & Jia, L. (2013). Flexibility-oriented HRM systems, absorptive capacity, and market responsiveness and firm innovativeness. *Journal of Management*, 39(7), 1924-1951.
- Chen Y-S, Lin M-JJ, Chang C-H. 2009. The positive effects of relationship learning and absorptive capacity on innovation performance and competitive advantage in industrial markets. *Industrial Marketing Management*, 38(2): 152–158.

- Chen, Y. S., Chang, C. H., & Lin, Y. H. (2014). The determinants of green radical and incremental innovation performance: Green shared vision, green absorptive capacity, and green organizational ambidexterity. *Sustainability*, 6(11), 7787-7806.
- Cohen WM, Levinthal DA. 1990. Absorptive Capacity : A New Perspective on and Innovation Learning. *Administrative Science Quarterly*35(1): 128-152.
- Dagnino GB, Padula G. 2002. Coopetition Strategy: Towards a new kind of interfirm dynamics. *EURAM* (May 2002): 9-11.
- Dussauge P, Garrette B, Michell W. 2000. Learning from competing partners: outcomes and durations of scale and link alliances in Europe, North America and Asia. *Strategic Management Journal*, 21(August 1999): 99-126.
- Escribano A, Fosfuri A, Tribo J. 2005. Managing knowledge spillovers: the impact of absorptive capacity on innovation performance. In *32e Conférence de l'Association européenne de la recherche sur l'industrie et l'économie*.
- Expósito-Langa, M., Molina-Morales, F. X., & Capovicedo, J. (2011). New product development and absorptive capacity in industrial districts: a multidimensional approach. *Regional Studies*, 45(3), 319-331.
- Fernandez A, Le Roy F, Gnyawali DR. 2014. Sources and management of tension in Coopetition case evidence from telecommunications satellites manufacturing in Europe. *Industrial Marketing Management*, 43(2): 222-235.
- Fosfuri, A., Tribó, J. A. (2008). Exploring the antecedents of potential absorptive capacity and its impact on innovation performance. *Omega*36(2): 173-187.
- Gao, S., Xu, K., & Yang, J. (2008). Managerial ties, absorptive capacity, and innovation. *Asia Pacific Journal of Management*, 25(3), 395-412.
- George, G., Zahra, S. A., Wheatley, K. K., & Khan, R. (2001). The effects of alliance portfolio characteristics and absorptive capacity on performance: A study of biotechnology firms. *The Journal of High Technology Management Research*, 12(2), 205-226.
- Gnyawali D., He J, Madhavan R. 2008. Coopetition Promises and Challenges.pdf. In *Encyclopedia of 21st Century Management*. Chapter 38 in C. Wankel (Dir), *The 21st Century Management : A Reference Handbook*, Sage Publications, Volume 1: 386-398.
- Gnyawali DR, Park B-J (Robert). 2009. Coopetition and Technological Innovation in Small and Medium-Sized Enterprises: A Multilevel Conceptual Model. *Journal of Small Business Management*, 47(3): 308-330.
- Gnyawali DR, Park BJR. 2011. Coopetition between giants: Collaboration with competitors for technological innovation. *Research Policy*, 40(5): 650-663.
- Hamel G, Doz YL, Prahalad CK. 1989. Collaborate with your competitors and win. *Harvard Business Review* : 133-139.
- Hamel G. 1991. Competition for competence and interpartner learning within international strategic alliances. *Strategic Management Journal*, 12(Special Issue: Global Strategy): 83-103.
- Knudsen MP. 2007. The relative importance of interfirm relationships and knowledge transfer for new product development success. *Journal of Product Innovation Management*, 24(2): 117-138.
- Kocoglu I, Akgün AE, Keskin H. 2015. The Differential Relationship between Absorptive Capacity and Product Innovativeness: A Theoretically Derived Framework. *International Business Research*. Canadian Center of Science and Education,8(7): 108.
- Kossyva D, Sarri K, Georgopoulos N. 2014. Coopetition : a business strategy for smes in times of economic crisis. *South-Eastern Europe Journal of Economics*, 1: 89-106.
- Kostopoulos K, Papalexandris A, Papachroni M, Ioannou G. 2011. Absorptive capacity, innovation, and financial performance. *Journal of Business Research*, 64(12): 1335-1343.
- Koubaa S. 2015. Management stratégique des connaissances et capacité d'absorption dans le contexte des relations interentreprises. *La Revue des Sciences de Gestion*. Direction et Gestion (La RSG) (2): 109-120.
- Lado AA, Boyd NG, Hanlon SC. 1997. Competition, Cooperation, and the Search for Economic Rents: A Syncretic Model. *Academy of Management Review*, 22(1): 110-141.
- Le Roy F, Marc R, Frank L. 2013. Coopérer avec ses amis ou avec ses ennemis Quelle stratégie pour l'innovation produit ? *Revue française de gestion*, 232: 81-100.
- Le Roy F, Robert M, Lasch F. 2016. Choosing the Best Partner for Product Innovation. *International Studies of Management & Organization*, 46(2-3): 136-158.
- Leal-Rodríguez, A. L., Ariza-Montes, J. A., Roldán, J. L., & Leal-Millán, A. G. (2014). Absorptive capacity, innovation and cultural barriers: A conditional

- mediation model. *Journal of Business Research*, 67(5), 763-768.
- Leal-Rodríguez, A. L., Roldán, J. L., Ariza-Montes, J. A., & Leal-Millán, A. (2014). From potential absorptive capacity to innovation outcomes in project teams: The conditional mediating role of the realized absorptive capacity in a relational learning context. *International Journal of Project Management*, 32(6), 894-907.
- Liao, S. H., Wu, C. C., Hu, D. C., & Tsui, K. A. (2010). Relationships between knowledge acquisition, absorptive capacity and innovation capability: an empirical study on Taiwan's financial and manufacturing industries. *Journal of Information Science*, 36(1): 19-35.
- Luo Y. 2007. A coopetition perspective of global competition. *Journal of World Business*, 42: 129-144.
- Moilanen M, Østbye S, Woll K. 2014. Non-R&D SMEs: external knowledge, absorptive capacity and product innovation. *Small Business Economics*, 43 (2): 447-462.
- Morris MH, Koçak A, Özer AA. 2007. Coopetition as a Small Business Strategy: Implications for Performance. *Journal of Small Business Strategy*, 18(1): 35-55.
- Murovec, N., & Prodan, I. (2008). The influence of organizational absorptive capacity on product and process innovation. *Organizacija*, 41(2), 43-49.
- Najafi Tavani, S., Sharifi, H., & S. Ismail, H. (2013). A study of contingency relationships between supplier involvement, absorptive capacity and agile product innovation. *International Journal of Operations & Production Management*, 34(1), 65-92.
- Najafi Tavani, S., Sharifi, H., S. Ismail, H. (2013). A study of contingency relationships between supplier involvement, absorptive capacity and agile product innovation. *International Journal of Operations & Production Management*, 34(1):65-92.
- Najafi Tavani, S., Sharifi, H., Soleimanof, S., & Najmi, M. (2013). An empirical study of firm's absorptive capacity dimensions, supplier involvement and new product development performance. *International Journal of Production Research*, 51(11), 3385-3403.
- Neyens I, Faems D, Sels L. 2010. The impact of continuous and discontinuous alliance strategies on startup innovation performance Dries. *International Journal of Technology Management*, 52(3/4): 392-410.
- Nieto MJ, Santamaria L. 2007. The importance of diverse collaborative networks for the novelty of product innovation. *Technovation*, 27(6-7): 367-377.
- Padula G, Dagnino G. 2007. Untangling the Rise of Coopetition: The Intrusion of Competition in a Cooperative Game Structure. *International Studies of Management and Organization*, 37(2): 32-52.
- Park BR, Srivastava MK, Gnyawali DR. 2014. Walking the tight rope of coopetition: Impact of competition and cooperation intensities and balance on firm innovation performance. *Industrial Marketing Management*, 43(2): 210-221.
- Park HS, Russo M V. 1996. When competition eclipses cooperation: An event history analysis of joint venture failure. *Management Science*, 42(6): 874-890.
- Pellegrin-Boucher E, Le Roy F, Gurău C. 2013. Coopetitive strategies in the ICT sector: typology and stability. *Technology Analysis & Strategic Management*, 25(1): 71-89.
- Quintana-García C, Benavides-Velasco C a. 2004. Cooperation, competition, and innovative capability: A panel data of European dedicated biotechnology firms. *Technovation*, 24(12): 927-938.
- Raza-ullah T, Bengtsson M, Kock S. 2014. The coopetition paradox and tension in coopetition at multiple levels. *Industrial Marketing Management*, 43(2): 189-198.
- Ritala P, Hurmelinna-Laukkanen P, Blomqvist K. 2009. Tug of war in innovation - coopetitive service development. *International Journal of Services Technology and Management*, 12(3): 255-272.
- Ritala P, Hurmelinna-laukkanen P. 2009. What 's in it for me? Creating and appropriating value in innovation-related coopetition. *Technovation*, 29(12): 819-828.
- Ritala P, Hurmelinna-laukkanen P. 2013. Incremental and Radical Innovation in Coopetition- The Role of Absorptive Capacity and Appropriability. *Product Development & Management Association*, 30(1): 154-169.
- Rothaermel FT, Alexandre MT. 2009. Ambidexterity in technology sourcing: The moderating role of absorptive capacity. *Organization science*, 20(4): 759-780.
- Rusko R. 2011. Exploring the concept of coopetition: A typology for the strategic moves of the Finnish forest industry. *Industrial Marketing Management*, 40(2): 311-320.
- Sheng, M. L., & Chien, I. (2016). Rethinking

- organizational learning orientation on radical and incremental innovation in high-tech firms. *Journal of Business Research*, 69(6), 2302-2308.
- Shu, S. T., Wong, V., & Lee, N. (2005). The effects of external linkages on new product innovativeness: an examination of moderating and mediating influences. *Journal of Strategic Marketing*, 13(3), 199-218.
- Song, Z. H. (2015). Organizational learning, absorptive capacity, imitation and innovation: Empirical analyses of 115 firms across China. *Chinese Management Studies*, 9(1), 97-113.
- Srivastava MK, Gnyawali DR, Hatfield DE. 2015. Behavioral implications of absorptive capacity: The role of technological effort and technological capability in leveraging alliance network technological resources. *Technological Forecasting and Social Change*, 92: 346-358.
- Srivastava MK, Gnyawali DR. 2011. When Do Relational Resources Matter? Leveraging Portfolio Technological Resources for Breakthrough Innovation. *Academy of Management Journal*, 54(4): 797-810.
- Tsai W. 2001. Knowledge transfer in intraorganizational networks: Effects of network position and absorptive capacity on business unit innovation and performance. *Academy of management journal*. *Academy of Management*, 44(5): 996-1004.
- Wang Changfeng, Yan H. 2011. Linking properties of knowledge with innovation performance: the moderate role of absorptive capacity. *Journal of Knowledge Management*, 15(5): 802-819.
- Wang Y-L, Wang Y-D, Horng R-Y. 2010. Learning and innovation in small and medium enterprises. *Industrial Management & Data Systems*, 110(2): 175-192.
- Whangthomkum, N., Igel, B., & Speece, M. (2006). An empirical study of the relationship between absorptive capacity and technology transfer effectiveness. *International Journal of Technology Transfer and Commercialisation*, 5(1-2), 31-55.
- Wu, L. W., Lii, Y. S., & Wang, C. Y. (2015). Managing innovation through co-production in interfirm partnering. *Journal of Business Research*, 68(11), 2248-2253.
- Yami S, Castaldo S, Dagnino GB, Le Roy F, Czakon W. 2010. Coopetition strategies: towards a new form of inter-organizational dynamics. In *Coopetition Winning Strategies for the 21st Century*, Elgar E (ed). Edward Elgar Publishing Limited: 272.
- Yami S, Nemeah A. 2014. Organizing coopetition for innovation: The case of wireless telecommunication sector in Europe. *Industrial Marketing Management*, 43(2): 250-260.
- Yu S. 2013. Social capital, absorptive capability, and firm innovation. *Technological Forecasting & Social Change*, 80(7): 1261-1270.
- Zeng SX, Xie XM, Tam CM. 2010. Relationship between cooperation networks and innovation performance of SMEs. *Technovation*, 30(3): 181-19

Authors	Purpose	Sample	Finding
Ali, Kan&Sarstedt (2016)	Study investigates how firms can achieve high levels of organizational performance under different configurations of absorptive capacity and organizational innovation.	195 large and SME	Three of the four dimensions of ACAP (acquisition, assimilation, and exploitation) are key drivers of organizational innovation, which in turn increases organizational performance, except transformation.
Ali & Park (2016)	Investigate the relationship among PACAP, RACAP, innovative culture (IC), and organizational innovation (OI).	195 large and SME	- PACAP and RACAP happen in sequence and influence OI directly and through the intervening variable IC. - PACAP leads to higher level of RACAP.
Song (2015)	The purpose of this paper is to examine the relationships among organizational learning, absorptive capacity, imitation and innovation in the Chinese context.	115 large and SME	Absorptive capacity positively affects innovation.
Wu, Lii& Wang (2015)	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.	221 large and SME	Absorptive capacity and self-efficacy enhance innovation.
Shen &Chien (2015)	Does organizational learning orientation impede radical innovation?	200 large and SME	- Potential absorptive capacity has a stronger effect on radical innovation than on incremental innovation. - RACAP has a stronger effect on radical innovation than on incremental innovation. - Potential absorptive capacity negatively moderates the relationship between learning orientation and incremental innovation. - RACAP positively moderates the relationship between learning orientation and incremental innovation.
Leal-Rodríguez, Roldán, Ariza-Montes & Leal-Millán (2014)	This study separately treats its two dimensions – potential absorptive capacity (PACAP) and RACAP (RACAP) – and analyzes their influence on innovation outcomes (IO) in project teams.	110 large and SME	-There is not a direct relationship between PACAP and IO - The RACAP fully mediates the influence of the PACAP on innovation outcomes, and this indirect effect is positively conditioned by relational learning.
Leal-Rodríguez, Ariza-Montes, Roldán& Leal-Millán (2014)	This study addresses these two dimensions separately, and analyzes their influence on innovation outcomes (IO) in organizations. The study also examines the mediating role of RACAP in the relationship between PACAP and IO. Furthermore, the paper contains a discussion on the moderating role of cultural barriers (CB) in decreasing the PACAP–RACAP link	110 large and SME	- support does not exist for the direct relationship between potential absorptive capacity (PACAP) and innovation outcomes (IO). - RACAP fully mediates the influence of PACAP on innovation outcomes, and that cultural barriers negatively conditions this indirect effect.
Moilanen, Østbye&Woll (2014)	The relationship between external knowledge, absorptive capacity (AC) and innovative performance for small and medium-sized enterprises (SMEs)	431 SME	AC relates positively to IP
Najafi Tavani, Sharifi &Ismail (2013)	The purpose of this paper is to employ agility concept to develop a contingencyperspective of relationship between suppliers' involvement, absorptive capacity (AC) and product innovation (PI).	233 large and SME	- positive and direct effect of AC on both dimensions of API performance (general and agility) - invert-U shaped relationship between AC and GP which may offer better explanation for effects of a firm's AC on PI output.
Ritala&Hurmelinna-Laukkanen (2013)	This study examines why some firms are better able than others to reap benefits from collaborating with their competitors in innovation.	213 large and SME	- high level of potential absorptive capacity is associated with high innovation outcomes in terms of incremental innovations - high level of potential absorptive capacity isn't associated with high innovation outcomes in terms of radical innovations. - the effect of absorptive capacity is not as significant or strong in the case of radical innovations than in incremental innovations.
NajafiTavani, Sharifi, Soleimanof&Najmi (2013)	To examine relationships between AC' s sub-dimensions with NPD performance, and also their moderating effects on the relationship between supplier involvement and new	161 large and SME	Positive association between AC and new product development performance

	product development performance, on both financial and non financial aspects		
Chang, Gong, Way & Jia (2013)	impact of Flexibility-Oriented HRM Systems, Absorptive Capacity, on Market Responsiveness and Firm Innovativeness	139 large and SME	- AC had a significant association with realized AC and realized AC further had significant associations with both firm innovativeness (incremental, radical) and market responsiveness. - realized AC does not fully mediate the associations between potential AC and both dependent variables.
Expósito-Langa, Molina-Morales & Capó-Vicedo (2011)	To what extent the absorptive capacity of a firm influences its capacity to exploit new opportunities through new products, particularly in a specific context of industrial districts.	74 large and SME	- The greater the absorptive capacity, the greater the innovation capacity for the company - Assimilation capacity will not be positively associated with the creation of new products in the industrial district firms. - Exploitation capacity will be positively associated with the creation of new products in the industrial district firms.
Kostopoulos, Papalexandris, Papachroni & Ioannou (2011)	This study here examines the role of absorptive capacity as both a mechanism to identify and translate external knowledge inflows into tangible benefits, as well as a means of achieving superior innovation and time-lagged financial performance.	461 large and SME	- external knowledge inflows are directly related to absorptive capacity and indirectly related to innovation. - Absorptive capacity contributes, directly and indirectly, to innovation and financial performance but in different time spans.
Chang, Chen, & Lin (2010)	Explore the determinants and the consequent of absorptive capacity from the resource-capability-performance framework in the Taiwanese manufacturing and service industries.	430 large and SME	- Absorptive capacity of a company is positively associated with its new product development performance in the manufacturing industry. - Absorptive capacity of a company is positively associated with its service innovation performance in the service industry.
Liao, Wu, Hu & Tsui (2009)	Investigating the relationships between knowledge acquisition, absorptive capability, and innovation capability.	362 large SME	Absorptive capacity is the mediator between knowledge acquisition and innovation capability, and that knowledge acquisition has a positive effect on absorptive capacity.
Chen, Lin & Chang (2009)	Explore the positive effects of relationship learning and absorptive capacity on competitive advantages of companies through their innovation performances in Taiwanese manufacturing industry.	106 large and SME	- Relationship learning of firms is positively associated with their innovation performance. - the positive effect of absorptive capacity on innovation performance is highly significant
Fosfuri & Tribo (2008)	Empirically explore the antecedents of potential absorptive capacity (PAC), i.e. the ability to identify and assimilate external knowledge flows	2464 large and SME	Positive relationship between PACAP and innovation performance.
Gao & Yang (2008)	This paper examines the joint influence of managerial ties and absorptive capacity in two communities in China, one characterized by a high level of foreign direct investment (FDI) and the other consisting mainly of local corporations.	174 large and SME	- corporation with high absorptive capacity is likely to increase innovation more rapidly - We find that absorptive capacity moderates the effect of managerial ties on a corporation's innovativeness (radical product innovations/incremental product innovations/process innovations).
Murovec & Prodan (2008)	Relationship between ACAP and product, process innovation	548 large SME	Un impact fort et positif de la capacité d'absorption sur l'innovation processus, et encore plus grand sur l'innovation produit.
Whangthomkum & Ige (2006)	This study investigates the relationship of Absorptive Capacity (AC) and its elements to Technology Transfer Effectiveness (TTE) in the flexible packaging industry in Thailand	62 large and SME	All AC elements were found to have a positive correlation with two TTE dimensions, namely product and process performance and human resources capability.
Shu, Wong & Lee (2005)	The effects of external linkages on new product innovativeness	118 large and SME	- Horizontal linkages more strongly impact on new product innovativeness than vertical linkages. - The firm's learning ability or absorptive capacity increases new product innovativeness.
George, Zahra, Wheatley & Khan (2001)	Viewing alliances as a portfolio of strategic agreements, we suggest that portfolio characteristics will be associated with a high technology firm's innovative and financial performance.	143 large and SME	The results indicate that alliance portfolio characteristics and absorptive capacity jointly influence performance.

Table -3: Positive impact of ACAP on product innovation (authors)