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Better, faster, stronger, the impact of market oriented coopetition on product commercial performance

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Abstract. This paper examines the specific impacts of market-oriented coopetition on product commercial performance. Indeed, most contributions have focused on technology-driven coopetition with cooperation on activities that are far from the market (e.g., production, R&D), whereas most coopetitive agreements involve market-oriented coopetition in which the cooperation arises in activities that are close to the market (e.g., marketing, distribution). We first present the specificities of market-oriented coopetition and distinguish horizontal and vertical market-oriented coopetition. We then focus on the performance implications of market-oriented coopetition. Building on social network exchange theory, we elaborate a theoretical framework detailing the mechanisms through which market-oriented coopetition affects product commercial performance. Using a database from the real estate brokerage industry, we validate our hypotheses that horizontal market-oriented coopetition enhances product commercial performance compared to competition, whereas vertical market-oriented coopetition does not. Furthermore, we highlight the existence of a learning effect for horizontal market-oriented coopetition. This research contributes to coopetition theory by defining market-oriented coopetition and studying its performance implications.

Keywords: market-oriented coopetition, coopetition, bargaining power, product commercial performance, product level analysis, real estate industry.

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INTRODUCTION

Coopetition strategies, i.e., alliances with competitors, can be implemented in any firm activity, including purchasing, R&D, production, marketing and sales. However, most studies on coopetition have thus far (and somewhat surprisingly) focused on coopetition in which cooperation arises in R&D or production and involves a strong technological dimension (either regarding the production or the development of new technologies)—technology-driven coopetition (Bengtsson & Kock, 2000, 2014; Czakon, Mucha-Kus & Rogalski, 2014; Czernek & Czakon, 2016; Fernandez, Le Roy & Gnyawali, 2014; Gnyawali & Park, 2011; Ritala, 2012; Ritala & Tidström, 2014). However, *technology-driven coopetition* is not as common as market-oriented coopetition, and most agreements involve cooperation in activities close to the market (or close to the final customer), such as marketing or distribution activities (Association of Strategic Alliance

Professionals [ASAP], 2009). Furthermore, several recent contributions have highlighted coopetition agreements in which the collaboration involves market-oriented activities (Chiambaretto & Dumez, 2016; Chiambaretto, Gurău & Le Roy, 2016; Lindström & Polsa, 2016; Pellegrin-Boucher, Le Roy & Gurău, 2017; Rusko, 2011; Teller, Alexander & Floh, 2016). We characterize these agreements as "market-oriented coopetition", which we define as *a paradoxical relationship between two or more actors simultaneously involved in horizontal competitive interactions and vertical or horizontal cooperative interactions involving activities that are close to the market.* Consequently, more scholarly attention should be focused on coopetition agreements involving activities close to the market.

The coopetition literature indicates that coopetition should generate superior performance in comparison with other relational modes because it combines cooperative and competitive behavioral advantages (Bengtsson & Kock, 2000; Brandenburger & Nalebuff, 1996; Lado, Boyd & Hanlon, 1997). However, empirical studies have yielded mixed results. Some articles have indicated that coopetition has a negative impact on performance (Kim & Parkhe, 2009), whereas others have revealed neutral (Knudsen, 2007) or positive effects (Luo, Rindfleisch & Tse, 2007; Peng, Pike, Yang & Roos, 2012). Finally, some recent contributions have insisted on the necessity to account for moderating variables to better understand the link between coopetition and performance (Le Roy, Robert & Lasch, 2016; Ritala, 2012; Sanou, Le Roy & Gnyawali, 2016; Wu, 2014). However, most of these articles have focused on technology-driven coopetition and ignored market-oriented coopetition. In this study, we not only define market-oriented coopetition but also investigate the performance implications of various market-oriented coopetition strategies. Because market-oriented coopetition does not change the technical characteristics of the product for customers but instead changes how the product is sold, it might generate performance outcomes that differ from those of technology-driven coopetition.

Building on the coopetition and the social network exchange literature (Cook & Yamagishi, 1992; Easley & Kleinberg, 2010; Emerson, 1962; Luca, Younts, Lovaglia & Markovsky, 2001; Skvoretz & Willer, 1993; Willer, 1999), we develop a theoretical model in which we distinguish between vertical and horizontal market-oriented coopetition. Based on this model, we generate a set of hypotheses on the associations between the various types of market-oriented coopetition and product commercial performance.

To test these hypotheses, we construct a database in the real estate brokerage industry and investigate coopetition by using Multiple Listing Systems (MLSs). MLSs are local associations that competing agencies can join to share their listings with other agencies, and consequently, they rely on market-oriented coopetition strategies. Our study is based on the *Amepi List* (called the "*Fichier Amepi*" in French), which is the most important MLS in Europe and one of the few country-level MLSs worldwide. To avoid potential geographical biases and considering the local dimension of the real estate market, we extracted a sample from the *Amepi List* for a specific area in France, targeting a typical "French city" in terms of size, unemployment rate and housing prices. We selected the Avignon area in central Provence, which has more than 500,000 inhabitants. We collected data from every sale of these agencies in 2013 including those conducted outside of the formal association. A total of 467 sales that included horizontal market-oriented coopetition, competition and vertical market-oriented coopetition were compiled in our database. To test our

hypotheses, we ran several linear regressions (OLS) to study the impacts of various variables and their potential interactions.

In this paper, we first argue that studying the impact of market-oriented coopetition strategies on commercial performance requires a focus on the product level. Next, we find that horizontal market-oriented coopetition strategies lead to improved product commercial performance compared to pure competitive strategies, whereas vertical market-oriented coopetition strategies do not. In addition, we reveal that there is a learning effect for market-oriented coopetition strategies: the more firms engage in coopetition over time, the better they become at extracting value to their own advantage.

This study makes three important contributions to the coopetition literature. First, our research contributes to the understanding of the specificities of market-oriented coopetition. Second, our analysis contributes to an understanding of how market-oriented coopetition affects product commercial performance. Building on social network exchange theory, we elaborate a framework describing the impacts of market-oriented coopetition on product commercial performance. These theoretical insights provide a basis for advancing market-oriented coopetition research by using a social network exchange perspective. Finally, our research highlights the need to integrate coopetition research with other theoretical frameworks from marketing or social network theory and the valuable insights that can result.

THEORETICAL BACKGROUND

FROM TECHNOLOGY-DRIVEN COOPETITION TO MARKET-ORIENTED COOPETITION

Defining coopetition

In their seminal contribution, Bengtsson and Kock (1999) highlight that when interacting with their competitors, firms can adopt four types of behaviors according to their degree of cooperation and competition: co-existence (low cooperation and low competition); competition (low cooperation and intense competition); cooperation (intense cooperation and low competition); and coopetition (intense cooperation and intense competition). Because this last option is highly paradoxical for firms, coopetition has been at the center of many contributions over the last two decades.

Coopetition can be defined in numerous ways. Adopting a broad perspective, Brandenburger and Nalebuff (1996) first defined coopetition as a value net involving the focal firm's interplay with customers, suppliers, complementors, and competitors. In contrast, Bengtsson and Kock (2000) defined coopetition in a more restrictive way as the dyadic interplay between two firms that simultaneously compete and cooperate with each other. In our view, the paradox generated by the simultaneity of competition and cooperation represents the essence of the concept of coopetition (Bengtsson & Kock, 2000; Raza-Ullah, Bengtsson & Kock, 2014; Stadtler & van Wassenhove, 2016). The competitive dimension of coopetitive agreements is essential in avoiding complacency and maintaining creative tension both within and between organizations (Bengtsson & Sölvell, 2004; Quintana-García & Benavides-Velasco, 2004), whereas the cooperative dimension of the relationship allows firms to access key resources and/or technologies, launch new products and/or access new markets (Lado et al., 1997).

More recently, Bengtsson and Kock (2014: 182) 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"*. However, this definition encompasses cases in which the firms are not necessarily competitors, i.e., selling the same or similar products in the same markets. In addition, this definition also applies to cases in which the partnering firms are in conflict with regard to sharing the value jointly created. However, potentially all alliances are associated with issues regarding value appropriation (Adegbesan & Higgins, 2011; Chiambaretto, 2015; Koenig, 2012; Lavie, 2007; Zhang & Baden-Fuller, 2010) such that this definition of coopetition could potentially apply to all alliances. In contrast, we adopt a more restrictive definition of coopetition in which firms must be in competition: *a paradoxical relationship between two or more actors simultaneously involved in horizontal competitive interactions and vertical or horizontal cooperative interactions.*

Technology-driven and market-oriented coopetition

In previous research on coopetition, it has been argued that the cooperative dimension must operate in activities that are far from the market, such as production or R&D, whereas the competitive dimension usually takes place in activities close to the market, such as marketing and sales (Bengtsson & Kock, 2000, 2014; Czakon et al., 2014; Fernandez et al., 2014; Gnyawali & Park, 2011; Ritala, 2012; Ritala & Tidström, 2014). Several contributions clearly indicate that the cooperative dimension of coopetition should indeed occur far from markets and far from customers (Bengtsson & Kock, 2000; Blomqvist, Hurmelinna & Seppänen, 2005; Walley, 2007). These studies conclude that the paradox generated by coopetition cannot be understood by customers; therefore, it must remain "hidden" from them.

However, the cooperative dimension of coopetition can be implemented in not only activities far from the market but also activities close to the market, such as sales, retailing, branding, advertising, and after sale services. For example, a recent study from the Association of Strategic Alliance Professionals (ASAP, 2009) reports that R&D and production agreements represent only 16 percent of cooperative agreements, whereas co-marketing and sales partnerships represent 45 percent of all cooperative agreements. In addition, several recent contributions highlight the existence of coopetition in which the collaboration involves activities close to the market, such as marketing or retailing activities (Chiambaretto et al., 2016; Chiambaretto & Dumez, 2016; Lindström & Polsa, 2016; Pellegrin-Boucher et al., 2017; Rusko, 2011; Teller et al., 2016). Therefore, a stronger focus on coopetition agreements involving activities close to the market is needed. Here, we distinguish technology-driven coopetition (in which the cooperative dimension arises in activities far from the market and involves a strong technological dimension with respect to either the production or the development of new technologies) from market-oriented coopetition, which we define as *a paradoxical relationship between two or more actors simultaneously involved in horizontal competitive interactions and vertical or horizontal cooperative interactions regarding activities that are close to the market* (such as sales or distribution).

Even if technology-driven coopetition and market-oriented coopetition share some commonalities, we argue that market-oriented coopetition has specific features, which are detailed in Table 1. These

characteristics need to be understood before the performance implications of relying on market-oriented coopetition can be investigated.

First, by definition, market-oriented coopetition encompasses coopetitive agreements in which the cooperative dimension arises in activities close to the market (e.g., marketing, sales, distribution, promotion, services), whereas technology-driven coopetition focuses on agreements in which the cooperative dimension involves a technological dimension (either regarding the product development or the production process) and thus impacts activities far from the market (e.g., R&D, logistics, production, purchasing).

Second, the few studies that focus on market-oriented coopetition (although it is not referred to as such) demonstrate that as opposed to technology-driven coopetition, market-oriented coopetition does not necessarily involve changes to the characteristics of the products sold (Chiambaretto & Dumez, 2016; Chiambaretto & Fernandez, 2016; Kylänen & Rusko, 2011; Teller et al., 2016). Indeed, market-oriented coopetition changes only how the product is sold, whereas technology-driven coopetition changes the nature of the product and potentially how the product is sold.

Third, as mentioned above, in technology-driven coopetition, the cooperative part of the relationship arises far from the market so that it can remain hidden from customers, since they cannot understand this paradoxical strategy (Bengtsson & Kock, 2000; Lindström & Polsa, 2016; Walley, 2007). In contrast, market-oriented coopetition is located closer to the market, and in some cases, it can even be explicitly communicated to customers, such as in coopetitive branding (Chiambaretto et al., 2016).

Fourth, in contrast to technology-driven coopetition, which requires the sharing of technological resources (Bouncken & Kraus, 2013; Gnyawali & Park, 2009), market-oriented coopetition generally involves the sharing of market resources, such as information on customers, customer bases, brands, distribution channels, and advertisements (Chiambaretto & Dumez, 2016; Chiambaretto et al., 2016; Lindström & Polsa, 2016; Velu, 2016).

Fifth, in technology-driven coopetition, the value creation process is more innovation-focused, and the aim is to develop innovations, new products and/or new production methods (Gnyawali & Park, 2011; Ritala & Hurmelinna-Laukkanen, 2009, 2013). In contrast, in market-oriented coopetition, the value creation process is more market-focused, and it stems from the improved access to larger customer bases that is generated from more efficient distribution channels or higher levels of brand awareness (Chiambaretto et al., 2016; Teller et al., 2016).

Sixth, we assert that these two types of coopetition generate different types of learning. In technology-driven coopetition, partners share technologies and knowledge to develop synergies and new products. Technology-driven coopetition thus provides the opportunity for the competing partners to acquire technological competencies from one another (Delacour & Liarte, 2012; Estrada, Faems & de Faria, 2016; Fernandez et al., 2014; Gnyawali & Park, 2011; Le Roy & Fernandez, 2015). In market-oriented coopetition, the cooperation generates a different type of learning that is more market oriented. Market-oriented coopetition yields learning exchanges between the partners concerning aspects such as their respective markets, customer habits, and distribution channels (Chiambaretto & Dumez, 2016; Lindström & Polsa, 2016; Teller et al., 2016).

Seventh, in technology-driven coopetition, value appropriation is often related to each partner-competitor's ability to differentiate their

products from each other even if the products have common components (Gnyawali & Park, 2011). In contrast, in market-oriented coopetition, because the product remains unchanged, the ability to appropriate value comes from the differentiation in the services that surround the common product (Lindström & Polsa, 2016; Teller et al., 2016).

Finally, regarding the risks and tensions generated by coopetition, in technology-driven coopetition, the main risks are associated with technological theft and/or unintended technological spillovers (Baumard, 2010; Estrada et al., 2016; Fernandez & Chiambaretto, 2016; Hamel, 1991). Technology-driven coopetition can generate situations in which one of the partner-competitors mobilizes the technology used for the common project to improve its own products (over which it is in competition). In market-oriented coopetition, the risks and tensions are more related to unintended brand and market spillovers. Partnering competitors can use the coopetitive agreement as an opportunity to steal potential customers from one another (Chiambaretto et al., 2016).

Characteristics	Technology-driven coopetition	Market-oriented coopetition
Cooperative activities	Activities far from the market (e.g., R&D, production, purchasing, logistics)	Activities close to the market (e.g., marketing, sales, distribution, promotion, services)
Product characteristics	Changed	Unchanged
Visibility of the cooperation for consumers	Low (cooperation far from the market)	High (cooperation close to the market)
Type of shared resources	Technological (e.g., raw materials, knowledge)	Commercial / market (e.g., customers, customer bases, brands, distribution channels, advertisements)
Value creation process	Innovation-focused	Market-focused
Type of learning	Technological-focused (e.g., technologies, knowledge)	Market-focused (e.g., customer habits, distribution channels)
Value appropriation process	Differentiation on product	Differentiation on adjunct services
Tensions and risks	Unintended technological spillovers	Unintended brand and market spillovers

Table 1 - Characteristics of technology-driven and market-oriented coopetition

Horizontal and vertical market-oriented coopetition

Considering the many differences between technology-driven and market-oriented coopetition, we argue that it is necessary to study these two types of coopetition separately. Because most previous research has focused on technology-driven coopetition, we want to investigate market-oriented coopetition in more detail.

Accordingly, two types of market-oriented coopetition should be differentiated: vertical and horizontal (Chiambaretto & Fernandez, 2016; Lacoste, 2012; Pellegrin-Boucher, Le Roy & Gurău, 2013; Soppe, Lechner & Dowling, 2014). First, horizontal market-oriented coopetition involves two competing firms that are competing and cooperating on the same activities, in the same market, and/or for the same product. In horizontal market-oriented coopetition, both firms/partners cooperate and compete horizontally, i.e., on the same activities or products. For example, Lufthansa and Singapore Airlines combined their seats to strengthen their distribution in computer reservation systems while remaining in competition when selling seats to airline passengers (Chiambaretto & Dumez, 2016).

In contrast, vertical market-oriented coopetition involves two competing firms that are engaged in a supplier-retailer relationship with respect to a given product. Under these circumstances, while the competition remains horizontal, the cooperation is vertical and takes place at different levels of the firms' value chain as one of firm provides a "service" or "resource" to the other. For instance, Oracle supplies databases to SAP in a vertical cooperative relationship, although SAP and Oracle compete horizontally on the ERP market (Pellegrin-Boucher et al., 2013). The differences between horizontal and vertical market-oriented coopetition are detailed in Figure 1.

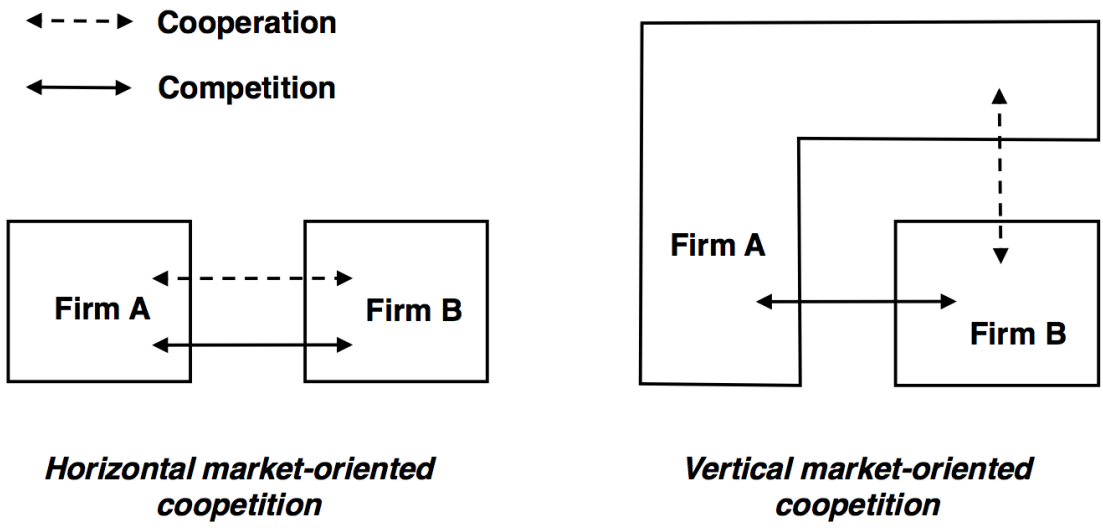

Figure 1 - Representation of horizontal and vertical market-oriented coopetition

COOPETITION AND PERFORMANCE: TECHNOLOGY-DRIVEN AND MARKET-ORIENTED PERSPECTIVES

Technology-driven coopetition and performance implications

From a performance viewpoint, theoretical models predict that coopetition should generate added value and offer superior performance in comparison with other relational models (cooperative or not). The primary benefits associated with coopetition arise from the combination of cooperative and competitive behaviors (Bengtsson & Kock, 2000; Brandenburger & Nalebuff, 1996; Dumez & Jeunemaitre, 2010; Gnyawali, He & Madhavan, 2006; Lado et al., 1997). The cooperative dimension allows firms to access key resources or technologies to launch new products or access new markets. In parallel, the competitive dimension of coopetitive agreements is essential to avoid complacency and maintain the creative tension between the applicable organizations (Park, Srivastava & Gnyawali, 2014b; Quintana-García & Benavides-Velasco, 2004; Raza-Ullah et al., 2014). That said, are these results empirically verified for technology-driven coopetition?

Without using the word "coopetition", several contributions have measured the impact of R&D collaborations with competitors (i.e., horizontal technology-driven coopetition) on performance using a variety of measures, including market performance and innovation. However, the results are often mixed. Some research shows no (Miotti & Sachwald, 2003; Santamaria & Surroca, 2011) or negative impact (Nieto & Santamaría, 2007; Un, Cuervo-Cazurra & Asakawa, 2010). Other research reveals that cooperation between competitors has a positive impact on product innovation (Belderbos, Carree & Lokshin, 2004; Neyens, Faems & Sels, 2010; Tomlinson, 2010).

With the development of specific databases, we observe the emergence of various studies attempting to specifically link R&D and production coopetition (i.e., technology-driven coopetition) and performance. Again, however, the results are mixed: some studies reveal negative relationships (Kim & Parkhe, 2009), whereas others find neutral relationships (Knudsen, 2007) or a positive effect (Bouncken & Kraus, 2013; Luo et al., 2007; Peng et al., 2012).

Finally, a new set of contributions has tried to make sense of these mixed results by using moderating variables. Ritala (2012) finds that market uncertainty and network externalities strengthen the positive impact of technology-driven coopetition on innovation and performance. Ritala and Hurmelinna-Laukkanen (2013) also show how absorptive capacity and appropriability strengthen or moderate the impact of technology-driven coopetition on innovation. Wu (2014) proposes the existence of a bell-shaped curve between the level of technology-driven coopetition and product innovation. More recently, Sanou et al. (2016) show that centrality in a coopetitive network positively affects market performance. Adopting a governance perspective, Bouncken, Clauß and Fredrich (2016) reveal that the positive impact of technology-driven coopetition on innovation depends on the governance mode adopted. Finally, Le Roy et al. (2016) demonstrate that technology-driven coopetition has a positive impact on product innovation when the parties are geographically distant.

Although this rich literature has investigated the links between technology-driven coopetition and performance (in terms of innovation or market performance), there is a lack of research regarding the ability of market-oriented coopetition to generate superior performance. Considering

the different characteristics of market-oriented coopetition, one might expect specific performance implications for this type of coopetition.

Market-oriented coopetition and performance implications: a bargaining power perspective

In their seminal contribution, Brandenburger and Nalebuff (1996) posit that the goal of coopetition is to generate greater value for customers in all circumstances, which is particularly true for technology-driven coopetition in which collaboration allows the coopetitors to develop new products or production modes that they would have been unable to develop alone (Fernandez et al., 2014; Gnyawali & Park, 2011). Most contributions in the coopetition literature build on this assumption, although this statement has not been empirically analyzed.

Alternatively, market-oriented coopetition involves activities close to the market, such as distribution and marketing activities. Consequently, market-oriented coopetition does not change the technical characteristics of the product for customers but instead changes the way in which the product is sold. Therefore, to measure the performance of market-oriented coopetition, we must assess it through its commercial results. In other words, market-oriented coopetition generates superior performance if it allows the firm to sell its products more quickly and at higher prices. Consequently, to assess the outcome of market-oriented coopetition strategies, we will need to investigate the commercial performance implications (measured as the firm's ability to sell its products more quickly and at higher prices).

As explained by Gnyawali and Park (2011), value creation and value appropriation play an essential role in understanding the dynamics of coopetition. The ability to create joint value while being able to capture a significant part of this value for the firm's benefit can be linked to the concept of performance. For technology-driven coopetition, firms can implement processes and devices (e.g., patents, intellectual property rights) to fix how the jointly created value will be shared between the partners; thus, technology-driven coopetition generally implies that coopetitors sell their products independently, and the value appropriation tensions are between the partners (Fernandez & Chiambaretto, 2016; Rai, 2016; Ritala & Hurmelinna-Laukkanen, 2009, 2013). However, in market-oriented coopetition, the partnering competitors may sell or distribute the products jointly. Consequently, the value appropriation tensions arise not only between the partners but also between firms and customers.

Traditionally, the market power of a firm plays a crucial role in its ability to extract value from customers for its own benefit. Defining performance as the ability of the organization to reach its own objectives, the link between performance and bargaining power is clear. The greater the bargaining power of the firm, the better its performance will be (Porter, 1980). Moreover, several scholars explain that inter-organizational relationships can change the relative power between actors in a social network (Chiambaretto, 2015; Gnyawali & Madhavan, 2001; Huxham & Beech, 2008). Consequently, inter-organizational strategies, such as market-oriented coopetition, should modify the bargaining power not only between firms but also between the focal firm and its stakeholders—including its customers.

To assess bargaining power between actors, most contributions build on the theory developed by Emerson (1962). Following Emerson's definition, actor *A* does not have power in a vacuum; instead, an actor has power over another actor (actor *B*). The power of actor *A* over actor *B*

$(P_A/_B)$ can thus be defined as the amount of resistance from *B* that can potentially be overcome by *A*. In fact, power implicitly resides in the other's dependence: the more dependent a partner is on an actor, the more power the focal actor has over that partner. The dependence of actor *A* on actor *B* $(D_A/_B)$ is thus (1) directly proportional to *A*'s needs that are mediated by *B* and (2) inversely proportional to the number of alternative actors that are able to provide the same resources to *A.* One of the key contributions of Emerson (1962) has been to link power and dependence in the following equation: $P_A/_B = D_B/_A$.

We develop our theoretical framework to illuminate how value is created and shared by a firm that engages in market-oriented coopetition when interacting with its customers.

THEORETICAL FRAMEWORK AND HYPOTHESES

PERFORMANCE ANALYSIS: FROM THE FIRM LEVEL TO THE PRODUCT LEVEL PERSPECTIVE

To shed new light on the link between market-oriented coopetition and commercial performance, we shift the level of analysis. We indeed observe that most contributions addressing the link between coopetition strategies and performance have remained at the firm level. In other words, whatever the measure used (e.g., financial performance, innovation), the performance of coopetition strategies was assessed at the firm level. However, most firms employ combinations of different strategies consisting of vertical coopetitive agreements, horizontal coopetitive agreements and individual strategies (Chiambaretto & Fernandez, 2016; Duysters, Heimeriks, Lokshin, Meijer & Sabidussi, 2012; Kim, 2014; Park, Srivastava & Gnyawali, 2014a; Stettner & Lavie, 2014; Wu, 2014). Consequently, even if previous studies used control variables to neutralize the effect of other strategies, the firm's performance was still mixing different elements. Firm-level performance might be affected by other business units or products that were not implementing coopetition strategies.

Because most firms have an entire line of products that must be addressed (Teece, 1982) and because each product is associated with a different relational mode (individual or vertically or horizontally coopetitive), we posit that to measure the real impact of market-oriented coopetition on performance, performance must be measured at the product level rather than at the firm level. We build on this approach to develop our theoretical framework and assess the performance of market-oriented coopetition strategies at the product level.

As explained earlier, market-oriented coopetition generates superior commercial performance if it allows the firm to sell its products more quickly and at higher prices. However, selling products more quickly and at the best price can also be perceived as a kind of market efficiency (Malkiel & Fama, 1970). Nevertheless, the market efficiency approach requires the adoption of a market-level approach in which it is the entire market that is efficient (or not). Under this approach, if the market were efficient, all the products sold in this market should be sold efficiently, independent of their relational mode. Because each product is associated with a different relational mode and has different performance levels, this market-level approach does not seem relevant, and we focus our investigation on the product-level commercial performance of market-oriented coopetition strategies.

COMPETITIVE AND MARKET-ORIENTED COOPETITIVE CONFIGURATIONS

Building on the contributions showing that market-oriented coopetition is a means of accessing more customers (Chiambaretto et al., 2016; Chiambaretto & Dumez, 2016; Kylänen & Rusko, 2011; Teller et al., 2016; Velu, 2016), we develop our theoretical framework. More precisely, we build on social network theory (Burt, 1992; Easley & Kleinberg, 2010) to represent how market-oriented coopetition allows firms to access more customers. One of the advantages associated with this social network representation is that it can integrate bargaining power issues (Easley & Kleinberg, 2010). The ways in which power can be rooted partly in the structure of a social network has indeed generated an entire field of research called "network exchange theory" (Luca et al., 2001; Skvoretz & Willer, 1993; Willer, 1999).

F_i represents firm i that is attempting to sell n_i products alone (i.e., in competition), which are denoted by P_{ia}, where *a* =1,2,…, n_i. In addition, this firm supplies s_{ij} products with market partner F_j and renounces the ability to sell them to create a vertical coopetition setting. These goods are noted as V_{ijb}, where b=1,2,…,v_{ij}. Moreover, the firm can share h_{ij} products with competitor *j* while maintaining the possibility of selling the product itself (i.e., in horizontal coopetition), which is noted as H_{ijc}, where c=1,2,…,h_{ij}. Finally, each firm F_i has its own customer base, which is composed of l_i customers, each identified as C_{id} where d=1,2,…,l_i.

If we consider the case of firm F_i operating alone, it has only n_i products to offer to its l_i customers. This case is depicted in Figure 2a with $n_i = 3$ and $l_i = 5$.

A second situation can occur when two competing firms, F_i and F_j, cooperate vertically (i.e., vertical coopetition). In this case, firm F_i cooperates with firm F_j by supplying a product it has tried (unsuccessfully) to sell to its l_i customers. By supplying this product to F_j and renouncing the ability to sell it, it lets partner F_j try to sell it to its own l_j customers. With regard to the product supplied by F_i to firm F_j, the number of customers accessed changes from l_i to l_j. Such a strategy can be relevant when l_j is larger than l_i or when the l_j customers are more interested in buying the product than are the l_i customers (for some niche products, for example). In such a configuration, the supplying firm F_i stops selling the product itself and shares the revenues from the sale earned by F_j. Consequently, there is no direct competition regarding the sale of this specific product, which is why we can categorize it as vertical coopetition. This case is depicted in Figure 2b with n_i =3; l_i =5 ; v_{ij} = 2 ; n_j = 2 and l_j =4.

Finally, we consider the case of two competing firms, F_i and F_j, both of which have products that they sell competitively (n_i and n_j) and products that they share with one another (H_{ijb}). Firm F_i has n_i of its own products to offer its l_i customers and H_{ijb} shared products to sell to l_i + l_j customers. Symmetrically, firm F_j has n_j goods to offer to l_j customers and H_{ijb} goods to sell to l_j + l_i customers. In contrast to the previous situation (i.e., vertical coopetition), both firms F_i and F_j can sell the shared product. They are consequently in simultaneous competition and cooperation for

these shared products. This last case of horizontal coopetition is represented in Figure 2c, with the following parameters: n_i = 3 ; l_i = 5 ; h_{ij} =4; n_j = 4 ; l_j = 6.

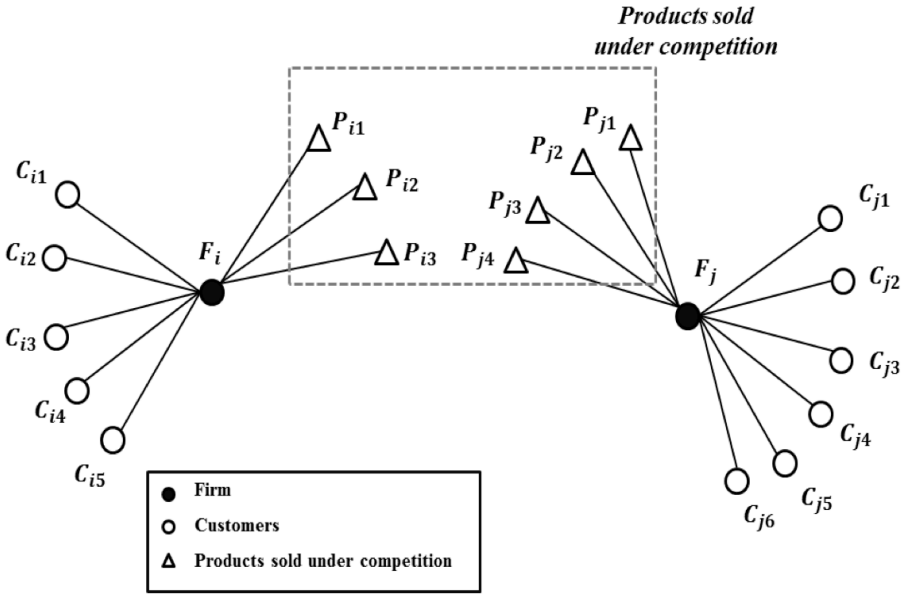

Figure 2 - Relationship configurations
Figure 2a. Competitive configuration for the firm F_i

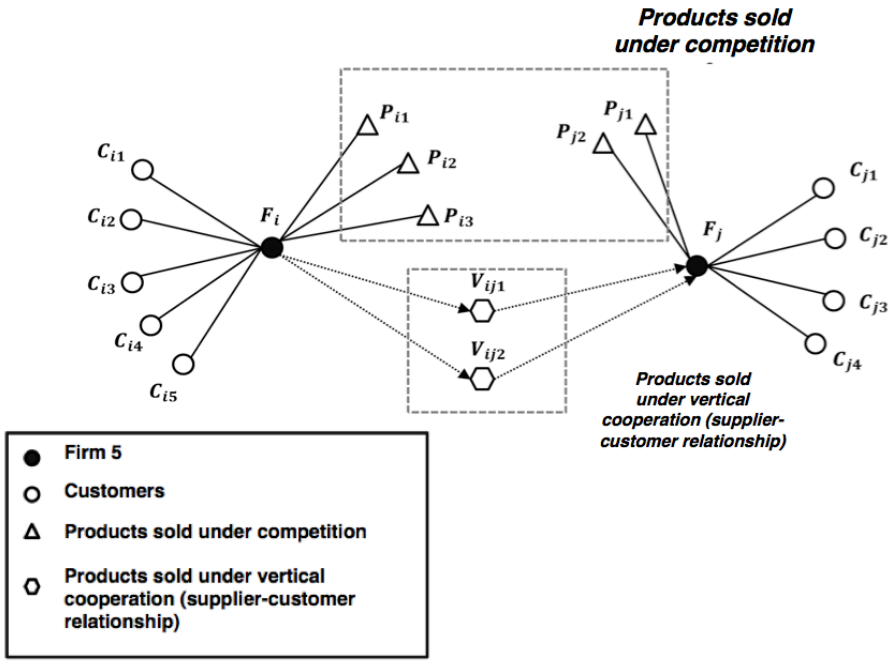

Figure 2 - Relationship configurations
Figure 2b. Vertical market-oriented coopetition configuration for firms F_i and F_j

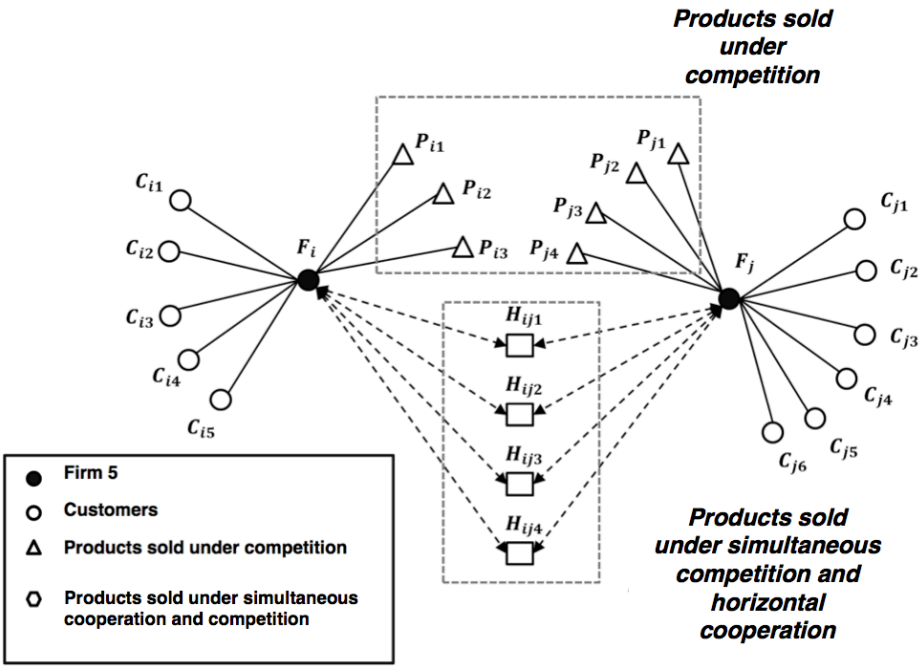

Figure 2 - Relationship configurations

Figure 2c. Horizontal market-oriented coopetition configuration for firms F_i and F_j

Notably, firm F_i does not gain access to the same number of potential customers based on the relational mode and the product it sells. For a product sold in competition, firm F_i has access to l_i customers for its product. For a product sold in vertical market-oriented coopetition, the firm now has access to l_j customers. Finally, for a product sold in horizontal market-oriented coopetition, firm F_i has access to $l_i + l_j$ customers for its products.

BARGAINING POWER AND PRODUCT PERFORMANCE

In our case, we study the evolution of the bargaining power between the seller (firm F_i) and any customer for goods sold either in competition (P_{ia}), in vertical market-oriented coopetition (V_{ijb}) or in horizontal market-oriented coopetition (T_{ijc}).

We apply Emerson's definition of power to the relationship between seller A and a customer, B. Positing that seller *A* has power over a customer *B* implies that (1) customer *B* needs seller *A* to realize its objectives (i.e., buy the product) and that (2) seller *A* has a high number of alternatives to customer *B* to sell its products. Symmetrically, customer *B* has power over seller *A* when (1) seller *A* needs customer *B* to fulfill its objectives (i.e., sell the product) and that (2) customer *B* has a high number of alternatives to seller *A* to buy the product.

The aim here is not to provide an algebraic formula linking the different components of the bargaining power of seller *A* over customer *B*. Instead, we aim to explain how bargaining power evolves when different coopetitive configurations are established (Casciaro & Piskorski, 2005; Chiambaretto, 2015; Klein, Crawford & Alchian, 1978). Building on Emerson's approach, we know that the larger the importance of the sale for the seller, the more the seller's bargaining power is reduced. We can thus state that (1) the bargaining power of the seller increases as its size increases. Indeed, a seller with a large turnover or with large sales numbers will be less impacted by an additional sale made with customer *B* than a smaller seller. Accordingly, we formulate the following hypothesis:

> Hypothesis 1: A product sold by a larger focal firm displays a higher product commercial performance.

Moreover, we set that for a given product, (2) the greater the number of potential customers, the greater the bargaining power of the seller over any customer. This last point is consistent with the fact that increased substitutability between customers makes them less critical to the seller.

With regard to the impact of vertical market-oriented coopetition strategies at the product level, our social network representation shows that products sold with this strategy are accessible to l_j customers instead of l_i customers (Cook & Yamagishi, 1992; Easley & Kleinberg, 2010). However, there is no theoretical grounding allowing us to say that l_j is systematically larger than l_i. It might be the case for some agreements but not for others. Consequently, we do not expect vertical market-oriented coopetition to have a significant impact on performance. We thus formulate the following hypothesis:

> Hypothesis 2: A product sold in vertical market-oriented coopetition does not display any significant lower or higher product commercial performance than a product sold in competition.

With regard to the impact of horizontal market-oriented coopetition strategies on commercial performance at the product level, our social network representation shows that products sold in horizontal market-oriented coopetition are accessible to more potential customers (l_i+l_j) than products sold in competition (l_i) or in vertical market-oriented coopetition (l_j). Consequently, with regard to the products sold in a horizontal market-oriented coopetition context, the seller has access to more substitutes (i.e., customers) and thus has greater bargaining power over its customers than in the context of competition (Chiambaretto et al., 2016; Chiambaretto & Dumez, 2016; Kylänen & Rusko, 2011; Teller et al., 2016). Measuring the bargaining power through the product performance, we propose the following hypothesis:

> Hypothesis 3: A product sold in horizontal market-oriented coopetition displays a higher product commercial performance than a product sold in competition.

Finally, a recent stream in the literature has highlighted that there is a learning effect in the bargaining process in strategic networks (Dutta, Zbaracki & Bergen, 2003; Gulati, Nohria & Zaheer, 2000; Pitsis, Kornberger & Clegg, 2004). We thus think that (3) firms using specific relational strategies over a long period are better able to exploit and extract

more value from their relationships. Consequently, we expect that firms selling products using horizontal market-oriented coopetition for a long period of time will be more likely to outperform the market. Indeed, as they have been using horizontal market-oriented coopetitive strategies for longer, they know more about how to take advantage of these strategies when selling products. Consequently, we posit the following hypothesis:

> Hypothesis 4: A product sold by a focal firm which has used horizontal market-oriented coopetition for a long period, displays a higher product commercial performance.

METHODS

INDUSTRY AND MARKET SELECTION

To study the impact of market-oriented coopetition on product commercial performance, we must find an industry in which products can be sold in the contexts of competition and/or horizontal and/or vertical market-oriented coopetition. Moreover, to avoid potential assessment biases, the characteristics of these products must remain unchanged regardless of the mode of sale (whether sold in competition or in horizontal or vertical market-oriented coopetition).

An industry that meets all these characteristics and requirements is the real estate brokerage industry. Indeed, even if customers do not always see the presence of cooperation between competing firms, this industry has used coopetition strategies since the end of the 19th century with MLSs — Multiple Listing Services. MLSs are local associations that competing agencies can join to share their listings with other agencies; i.e., MLSs appear as a pool of resources (listings) shared between competing agencies.

Real estate agencies receive listings from property owners to find a buyer and sell a property, and three options are available to them (Rutherford, Springer & Yavas, 2001). First, real estate agencies can choose to try to sell the property alone (in competition). Second, real estate agencies can look for a competing partner with whom to form a supplier-customer relationship for the distribution of a product that they did not manage to sell alone (in vertical market-oriented coopetition). The interest for these agencies is to reach a customer base they do not have. This procedure is completely transparent to the buyer. These agencies are in a supplier-distributor relationship with the other agency by providing the agency the property to be proposed to future buyers. The agency commission will be shared fifty-fifty between the two agencies (Robert & Mira, 2014). The low rate of conversion from simple mandates to real sales pushes agencies to use this procedure. Finally, for the third option, real estate agencies can choose to share the listing within the MLS with other members while also being allowed to sell the product (in horizontal market-oriented coopetition). In other words, MLSs are associations in which agencies can share resources by sharing brokers' exclusive listings and buyers (cooperative dimension of horizontal market-oriented coopetition) but remain in competition to find clients and share the margin (competitive dimension of horizontal market-oriented coopetition). A large portion of the theoretical literature has focused on MLSs and how the broker impacts the product's performance (Doiron, Shilling & Sirmans, 1985; Johnson, Springer & Brockman, 2005; Jud & Frew, 1986; Kamath & Yantek, 1982; Yavaş & Colwell, 1995), but the evidence from these studies is mixed (Huang & Rutherford, 2007).

DATABASE

Several studies on performance in coopetition have been conducted using databases or surveys (Park et al., 2014a, 2014b; Quintana-García & Benavides-Velasco, 2004; Ritala, 2012; Robert, Marques & Roy, 2009). We constructed our own database by collecting the data from sales of real estate agencies. We searched for a typical MLS that was of sufficient size to offer a broad perspective of the real estate market. We screened the largest MLSs in the world and decided to focus our attention on MLSs that gathered real estate agencies at the national level (i.e., in a monopoly at the country level). In most countries, several MLSs coexist at the national level (for instance, there are more than 800 MLSs in the US), so they do not encompass all the agencies or transactions made at the national level. In contrast, we chose the *Amepi List* (called "*Fichier Amepi*" in French), which is not only the largest MLS in Europe but also one of the few country-level MLSs existing worldwide. By adopting a national MLS, we limit potential representativity biases that could have arisen if we had picked only one MLS in a country in which several MLSs coexist.

The *Amepi List* works as a typical MLS and consequently relies on market-oriented coopetition strategies. As the only MLS in France, it includes all of the prominent franchises and real estate agencies. The *Amepi List* is divided into several local associations that group local real estate agencies. Every local association is self-managed by its members. Once a broker accepts a new listing, he can sell it alone with a traditional listing (competition), sell it in a supplier-customer relationship (vertical market-oriented coopetition), or sell it using an exclusive listing (horizontal market-oriented coopetition). In the second case (vertical market-oriented coopetition), the agency that received the listing for the product has tried, for a given period of time, to sell the product alone but failed to do so. The agency consequently renounces the ability to sell the product and decides to supply it to another agency that will try on its own to sell the product to its customer base. Once the product is sold by the entrusted agency, the commission is split between the two agencies[1]. Finally, in the last case (horizontal market-oriented coopetition), the agency must share its exclusive listings with the other members (cooperative dimension of horizontal market-oriented coopetition). If the focal agency sells the product itself, it earns the entire commission. However, if the sale is conducted by another agency, they share the commission in two equal parts (competitive dimension of horizontal market-oriented coopetition). The difference is that in horizontal market-oriented coopetition, until the transaction is signed, all the agencies remain in competition to sell the product.

To avoid potential geographical biases and considering the local dimensions of the real estate market, we extracted a sample from the *Amepi List* for a specific area in France. The real estate sales market is very localized. Each geographical area represents a proper market with specificities in terms of demand and supply and hence price and time on market. An apartment of 60 m2 in Paris with the same characteristics (number of rooms, parking spot or garage) and an apartment in Bordeaux will not have the same value and will not be sold in the same duration of time. To evaluate the impact of a strategy (in this case coopetition strategy) on product performance, it is essential to consider the properties sold from the same geographical area. The properties in different geographical areas are not comparable and should not be mixed in the same analysis. To

1. For instance, in our database, the 390th product is a house for which real estate agency A has received the listing. The initial listing price was set at 491,000 euros. However, real estate agency A failed to sell this product to its customers. It thus decided to renounce the ability to sell the product and supplied it to real estate agency B. Real estate agency B then managed to sell the house for 471,000 euros to one of its customers. Then, both real estate agencies decided to split the commission associated with the sale of this house.

avoid these geographical biases, we searched for a typical "French city" in terms of size, unemployment rate and housing prices and ultimately chose the Avignon area in the South of France. The city and its suburbs have a total of 500,000 inhabitants in the heart of Provence. The city has a history as one of the most dynamic real estate markets in France. The average price (per square meter) is about 2,250 euros, while the average price in France is equal to 2,300 euros. The city of Avignon is thus globally representative of the French market.

Fifteen agencies are members of the *Amepi List* in Avignon, and they control more than 70 percent of the entire local real estate market. We collected data from every sale of these agencies in 2013, even when they were conducted outside the formal association. We focused on the year 2013, 5 years after the subprime crisis, to avoid any variation due to the dynamics of the real estate market. This period is far enough away from the crisis and the market-supporting measures decided on by the French government. It is characterized by a certain stability that is no longer found due to a deterioration in economic activity from 2014 to the present. The real estate activity in 2013 is therefore the least disturbed by this crisis. An analysis with a temporal dimension spread over several years would not be appropriate in such a context of instability. It would appear very difficult to really assess the impact of horizontal and vertical coopetition on price and time performance under these conditions.

A total of 467 sales were recorded in our database, where 311 (67%) were conducted in horizontal market-oriented coopetition, 112 (23%) in competition, and 44 (10%) in vertical market-oriented coopetition. Of the properties sold, 64.2% were apartments, 30% were houses, 1.9% were entire buildings, 1.1% were business properties, 0.2% were sheds, 1.3% were garages, and 0.6% were land. The real estate agencies of Avignon, as all agencies in France, are almost exclusively positioned on the resale market, and only 2% of transactions concern new properties. The average age of properties sold is 10 years. Fifty percent of resales were made (see table below) at a price equal to or less than 131,000 Euros, and 75% of sales were made at a price equal to or less than 192,000 Euros. The most common time to sell second-hand properties was 30 days; 25% of sales were made in 26 days or less, 50% in 63 days or less, and 75% in 153 days or less.

VARIABLES AND MEASURES

Dependent variable

Our dependent variable is product commercial performance. Previous studies focusing on performance in the real estate brokerage industry have all used the same two measures of product commercial performance. The first one is price performance, calculated as the difference between the listing price and the selling price. The second one is time performance, which is calculated as the duration of the sale in days, also called time on market. In their seminal study, Yavas and Yang (1995) evaluate the relevance of the measure of performance by assessing price performance and time performance.

The landlord of a real estate property and his broker share the same objective: to sell the property at the highest price — *price performance* — and as quickly as possible — *time performance* (Yavas & Yang, 1995). Therefore, the higher the price paid by customers, the greater the price performance of the broker. Similarly, the sooner the product is sold, the better the broker is considered to be (Ford, Rutherford & Yavas, 2005;

Hendel, Nevo & Ortalo-Magné, 2009; Larsen, 1991; Munneke & Yavas, 2001; Rutherford et al., 2001; Yavaş & Colwell, 1995; Yavas & Yang, 1995).

In our study, we assess product commercial performance using two measures: (1) The first measure is price performance, which is the ability to sell the product at the highest price to the customer. The landlord of a property expects the real estate agent to sell his property at the highest price. At best, the sale will be made at the listing price, and at worst, it will be made far below that price. As a result, a selling price under the listing price represents a counter-performance. On the contrary, the less the price declines, the more efficient the agency has been in terms of price. The opposite of price decline (listing price - selling price) could therefore measure this performance. However, the opposite of the relative price decrease also removes the size effect of the goods. Consequently, the lower the relative price difference, the higher the price performance. We thus measure price performance as follows:

$$PricePerformance = \frac{SellingPrice - ListingPrice}{ListingPrice}$$

Price performance assesses the ability to reduce the relative difference between the listing price and the selling price. Because the Selling Price is usually lower than the Listing Price, our variable is always smaller than 0. It can be interpreted as the relative variation in price (compared with the Listing Price).

(2) The second measure is time performance, which is the ability to sell the product quickly. The landlord of a property expects the real estate agent to sell his property the quickest, that is, in the shortest period of time. Time performance assesses the ability to reduce the number of days on the market for the product. Consequently, the lower the number of days, the higher the time performance. A sale made after many months is a counter-performance in terms of duration. At best, the sale is made the day of the signature of the listing (extremely rare); at worst, it is made after many years but still occurs within a certain period of time. Time performance is thus measured as the opposite of the number of days between the moment in which the property is listed and the moment in which it is sold.

The relative price difference and duration are performance measures commonly used in the literature on property sales (Larsen, 1991).

Independent variables

Four independent variables are used in our models. The first independent variable is the size of the focal firm (SIZE), which is measured as the turnover realized by the real estate agency in 2013 (Follain, Lutes & Meier, 1987). The second independent variable is the use of vertical market-oriented coopetition for a given product (VCOOPET), which is measured with a dummy variable that takes a value of 1 if the product is sold in vertical market-oriented coopetition and 0 otherwise. The third independent variable is the use of horizontal market-oriented coopetition for a product (HCOOPET), which is measured using a dummy variable that takes a value of 1 if the sale of the product is made in the context of horizontal market-oriented coopetition or 0 otherwise. The fourth independent variable is the experience effect of selling products in coopetition (EXPER), which is measured with a dummy variable that takes a value of 1 if the firm previously belonged to the previous version of the MLS (and consequently has extensive experience with horizontal market-

oriented coopetition strategies) and 0 otherwise. Experience in real estate is an important broker characteristic that the literature considers. Several measures have been used to measure it, such as the number of years of experience of the real estate agent (Benjamin, Jud & Sirmans, 2000; Follain et al., 1987; Glower & Hendershott, 1988; Sirmans & Swicegood, 1997) or significant previous professional experience. In this work, we take into account the fact that the agencies had significant experience in coopetition, regardless of whether they were members of old coopetitive files, called FFIP and SIA.

Control variables

Several control variables are added to our model that allow us to neutralize the effects of the product's and the firm's characteristics. All of the previous studies that examined real estate sales performance used the same control variables (Ford et al., 2005; Hendel et al., 2009; Larsen, 1991; Munneke & Yavas, 2001; Rutherford et al., 2001; Yavaş & Colwell, 1995; Yavas & Yang, 1995). We build on this real estate literature by integrating the following variables: number of bedrooms (BED); number of bathrooms (BATH); type of property (TYPEPRO); type of parking (TYPEPKG); whether the firm is a member of a franchise (FRAN), and the age of the focal firm (AGEAG). The number of variables that can be used to measure and control the impact of the characteristics of the properties sold can be very high. However, many of them measure the same reality, which can generate collinearity bias between the independent variables. A careful selection must be performed to avoid this bias, which allowed us to obtain variances of inflation factors that were very low, less than 2 (Tables 5 and 6).

For example, the size of the property in m2 measures the same reality as the number of bedrooms and the number of bathrooms, variables that we have retained in this work. These numerical variables (BED) and (BATH) were chosen because they are the most widely used variables in the real estate literature that addresses performance in terms of price and time. They are systematically included in academic works (Elder, Zumpano & Baryla, 2000; Ford et al., 2005; Hendel et al., 2009; Huang & Rutherford, 2007; Johnson, Anderson & Benefield, 2004; Johnson et al., 2005; Larsen, 1991; Rutherford et al., 2001; Yavaş & Colwell, 1995; Yavas & Yang, 1995).

The type of property has also been retained in the literature (Huang & Rutherford, 2007; Miceli, 1991), as in this work via a nominal variable (TYPEPRO). In the case of Avignon, this measure covers the same reality as the geographical location of the property and its proximity to the city center. The apartments, the whole buildings, the commercial properties and the garages are located in the city center, and the houses, lands and sheds are located outside the city, extra-muros. This characteristic of localization is also often controlled (Elder et al., 2000; Johnson et al., 2004, 2005; Munneke & Yavas, 2001; Rutherford et al., 2001; Yavas & Yang, 1995). The possibility of parking next to the property is an important specificity for the property (Johnson et al., 2004, 2005; Larsen, 1991; Rutherford et al., 2001; Yavaş & Colwell, 1995; Yavaş & Yang, 1995). In this work, this characteristic has also been selected. It is measured via the nominal variable (TYPEPRO).

Finally, the characteristics of the focal real estate agency (or broker) have also been identified as factors that could influence the price and time performance of real estate sales. Numerous works have considered the membership of a franchised network (Benjamin, Chinloy, Jud & Winkler,

2006; Benjamin, Chinloy & Winkler, 2007; Ford et al., 2005; Lewis & Anderson, 1999; Zietz & Sirmans, 2011). In this study, membership (or not) in a franchised network is measured by the dummy variable (FRAN). Moreover, we use the numerical variable (AGEAG) to measure the age of the real estate agency, which is measured as the number of years since its creation, i.e. the age of the focal firm (Yinger, 1981). This age has been retained in the real estate literature, for example, measured by the broker's age (Elder et al. 2000; Huang & Rutherford, 2007), by the age the broker began to engage in real estate activities (Abelson, Kacmar & Jackofsky, 1990), or the length of the broker's tenure in real-estate activities (Abelson et al. 1990).

Type of variable	Name of variable	Definition	Nature of variable	Value
Dependent variables				
Price performance	"PP"	Relative price variation between the listing price (LP) and selling price (SP), i.e.,	Num.	[-1;0]
Time performance	"TP"	The opposite of the number of days between the moment in which the property is listed and the moment in which it is sold. It is the opposite of the time on market	Num.	]-∞;0] Days
Explanatory variables				
Size of the focal firm	"SIZE"	The turnover realized during 2013 by the real estate agency (Thousand euros)	Num.	[0; +∞[Euros
Vertical market-oriented coopetition	"VCOOPET"	If a broker accepts a new listing and supplies it to another agency that will sell it on its behalf If not	Dummy	1 0
Horizontal market-oriented coopetition	"HCOOPET"	If a broker accepts a new listing and shares it in the AMEPI while being able to sell it alone. If not	Dummy	1 0
Experience in horizontal market-oriented coopetition	"EXPER"	If the firm previously was a member of a previous MLS between 2004 and 2009 before joining this local Amepi List If not	Dummy	1 0
Control variables				
Number of bedrooms	"BED"	The number of bedrooms	Num.	[0; +∞[Rooms
Number of bathrooms	"BATH"	The number of bathrooms	Num.	[0; +∞[Rooms
Type of property	"TYPEPRO"	The type of the property: apartment, house-villa, building, premises, shed, garage, or land.	Nominal	Respectively positive real numbers of 1 to 7
Type of parking	"TYPEPKG"	Type of property's parking: no parking, outside parking, or garage	Nominal	Respectively positive real numbers of 0 to 2
Member of franchise	"FRAN"	If the firm is a member of a commercial franchise If not	Dummy	1 0
Age of the focal firm	"AGEAG"	The number of years since the creation of the real estate agency	Num.	[0; +∞[Years

Table 2 - Variables used in the analysis

ANALYSIS

To test our hypotheses, we created two models for each dependent variable (price performance and time performance) based on linear regressions (OLS). Most contributions studying the real estate market have indeed used OLS analyses (Johnson et al., 2005; Larsen, 1991). In addition to the linear model, the log-log and semi-log models were tested, leading to robust results (i.e., that do not change the signs or significativity of the coefficients tested). Model 1 aims mainly to measure the impact of the main control variables on the dependent variables. This model can be considered a baseline model, but it does not help us to validate or reject any of the hypotheses.

Model 1

$$PPorTP = \alpha_1 BED + \alpha_2 BATH + \alpha_3 TYPEPRO + \alpha_4 TYPEPKG + \alpha_5 FRAN + \alpha_6 AGEAG + \beta + \varepsilon$$

Model 2 adds four independent variables (SIZE, VCOOPET, HCOOPET and EXPER), allowing us to test Hypotheses 1 to 4.

$$PPorTP = \alpha_1 BED + \alpha_2 BATH + \alpha_3 TYPEPRO + \alpha_4 TYPEPKG + \alpha_5 FRAN + \alpha_6 AGEAG + \alpha_7 SIZE + \alpha_8 VCOOPET + \alpha_9 HCOOPET + \alpha_1 0 EXPER + \beta + \varepsilon$$

RESULTS

Table 3 shows the descriptive statistics for the variables, and Table 4 provides the correlation statistics between all the variables. Table 5 and 6 show the results of the impact of various relational strategies on performance at the product level. More precisely, Table 5 shows the incidence of these relational strategies on price performance (PP) and Table 6 assesses the impact of these different strategies on time performance (TP).

Numeric variables	Minimum	Maximum	Mode	Average	Median	Standard deviation	The first quartile	The third quartile
Price performance	-0.49	0	0	-.0639	-0.0526	57	-0.0886	-0.0278
Time performance	-660	0	-30	-106347	-63	113674	-153	-26
Size of the focal firm	65	575	380	347.31	340	117693	245	380
Number of bedrooms	0	8	2	1.97	2	1304	1	3
Number of bathrooms	0	7	1	1.13	1	586	1	1
Age of focal firm	0	42	11	14.21	11	9.6	7	17

Dummy variables and Nominal variables	**Modalities**	**Number of observations**	**% of all sample**
Member of franchise	No	103	22.1
	Yes	356	76.2
Vertical market-oriented coopetition	No	423	90.6
	Yes	44	9.4
Horizontal market-oriented coopetition	No	156	33.4
	Yes	311	66.6
Experience in horizontal market-oriented coopetition	No	97	20.8
	Yes	362	77.5
Type of parking	None parking	286	61.2
	Outside parking Garage	95 84	20.3 18
Type of property	Apartment House Building Commercial premises Shed Garage Land	300 140 9 5 1 6 3	64.2 30 1.9 1.1 0.2 1.3 0.6

Table 3 - Descriptive statistics for the numeric and dummy variables

	Performance		Number of		Type of					Market-oriented coopetition		
	Price	**Time**	**Bedrooms**	**Bathrooms**	**Property**	**Parking**	**Member of franchise**	**Experience in horizontal market-oriented coopetition**	**Size of the focal firm**	**Hori-zontal**	**Verti-cal**	Age of focal firm
Price performance	1											
Time performance	.246**	1										
Number of bedrooms	-.143**	-.140**	1									
Number of bathrooms	-.127**	-.228**	.598**	1								
Type of property	57	85	72	-.131**	1							
Type of parking	-17	.04	.167**	-64	-20	1						
Member of franchise	41	41	-75	-.168**	7	.223**	1					
Experience in horizontal market-oriented coopetition	.096*	-23	-54	54	-39	-.126**	-.112*	1				
Size of the focal firm	1	-9	35	.122**	-63	-.103*	-.239**	.638**	1			
Horizontal market-oriented coopetition	.091*	.168**	-.111*	-.126*	-22	.381**	.188**	-.117*	-.129**	1		
Vertical market-oriented coopetition	-15	-.094*	.116*	56	13	-.206**	-18	-47	-56	-.455**	1	
Age of the focal firm	10	-25	42	42	-13	-71	.102*	. 232**	.154**	31	-.028**	1

**. Correlation is significant at 0.01 (bilateral).

*. Correlation is significant at 0.05 (bilateral).

Table 4 - Correlation matrix (Pearson)

COMPETITION, MARKET-ORIENTED COOPETITION AND PRICE PERFORMANCE

Table 5 helps us analyze our three models regarding the impact on price performance. First, Model 1 addresses the control variables. One is significant: number of bedrooms BED (β= -0.120; $p<0.1$). The number of bathrooms BATH, type of property TYPEPRO, type of parking TYPEPKG, member of franchise FRAN and age of the focal firm AGEAG are not significant, with $p>0.1$

	Dependent variable: Price performance			
	Model 1	Model 2		
	β	Sig.	β	Sig.
(Constant)	****	0	****	0
Control variables				
TYPEPRO	67	165	70	144
BED	-0.120*	54	-95	133
BATH	-31	610	-37	545
TYPEPKG	-14	777	-39	471
FRAN	31	535	-23	653
AGEAG	-1	991	-35	475
Explanatory variables				
SIZE			-67	285
VCOOPET			73	161
HCOOPET			0.121**	30
EXPER			0.173***	6
Additional information on regressions				
R^2	26		53	
R^2 adjusted Fisher Sig. Fischer Durbin-Watson N	0.013 1.986 0.066 1.846 449		0.031 2.440 0.008 1.891 449	

OLS regressions; VIF<2, *p<0.1, **p<0.05, *** p<0.01, **** p<0.001

Table 5 - Output of OLS regressions for price performance

Model 2 allows us to shed light on Hypotheses 1, 2, 3 and 4 with the price performance variable. First, it appears that the variable SIZE does not have a significant impact on price performance (β=-0.067, p>0.1). This result is in contrary to our expectations, and Hypothesis 1 is thus rejected with this measure of product commercial performance.

Regarding the impact of vertical market-oriented coopetition (VCOOPET), we did not expect a significant effect of vertical market-oriented coopetition on price performance, and our results support this prediction (β=0.073, p=0.161). Consequently, Hypothesis 2 is validated using price performance as a measure of product commercial performance.

Concerning products sold using horizontal market-oriented coopetition, we expected a significant positive impact of horizontal market-oriented coopetition (HCOOPET) on price performance. Our results confirm our expectations (β=0.21, p<0.05), and we can therefore validate Hypothesis 3 regarding price performance.

Hypothesis 4 states that firms with greater experience involving horizontal market-oriented coopetition (EXPER) should have higher price performance because they are able to extract more value to their advantage. These results are in accordance (β=0.173, p<0.01) with Hypothesis 4 when using price performance as a measure of product commercial performance.

COMPETITION, MARKET-ORIENTED COOPETITION AND TIME PERFORMANCE

Table 6 helps us analyze our three models regarding the impact of various relational strategies on time performance.

	Dependent variable: Time performance			
	Model 1		Model 2	
	β	Sig.	β	Sig.
(Constant)	****	1	****	0
Control variables				
TYPEPRO	69	146	70	139
BED	-31	611	-2	970
BATH	-0.197***	1	-0.204***	1
TYPEPKG	40	419	-24	651
FRAN AGEAG	-0.001 -0.017	0.987 0.714	-0.001 -0.024	0.981 0.619
Explanatory variables				
SIZE			63	306
VCOOPET			-29	578
HCOOPET			0.144***	9
EXPER			-40	509
Additional information on regressions				
R^2	58		81	
R^2 adjusted	45		60	
Fisher	4538		3845	
Sig. Fisher	0		0	
Durbin-Watson	1969		2007	
N	449		449	

OLS regressions; VIF<2, *p<0.1, **p<0.05, *** p<0.01, **** p<0.001

Table 6 - Output of OLS regressions for time performance

First, Model 1 addresses the control variables. Regarding Model 1 and specifically the control variables, we can see that only the number of bathroom (BATH) is significant (β = -0.197; p<0.01).

Model 2 regarding time performance allows us to shed light on Hypotheses 1, 2, 3 and 4. First, it appears that the variable SIZE does not have a significant impact on time performance (β=0.063, p>0.1). This result contradicts our theoretical model, and Hypothesis 1 is thus rejected when we use time performance as a measure of product commercial performance.

Regarding the impact of vertical market-oriented coopetition (VCOOPET), we did not expect to find a significant effect of vertical market-oriented coopetition on time performance, and our results support our expectations (β=-0.029, p=0.578). We can validate Hypothesis 2 with the time performance measure.

With regard to products sold using horizontal market-oriented coopetition, we expected a significant positive impact of horizontal market-oriented coopetition (HCOOPET) on time performance. The results are also in line with our expectations (β=0.144, p<0.01), and we can thus validate Hypothesis 3 when product commercial performance is assessed through time performance.

Finally, according to Hypothesis 4, firms with longer experience in horizontal market-oriented coopetition (EXPER) should also have improved time performance. However, our results do not show any significant relationship (β=-0,040, p=0.509); Hypothesis 4 is thus rejected when we measure product commercial performance with time performance.

COMPETITION, MARKET-ORIENTED COOPETITION AND PRODUCT COMMERCIAL PERFORMANCE

In the two previous parts, we assessed the impact of various relational strategies on product commercial performance using two measures for robustness checks (price and time performance). We combine these results to determine whether our hypotheses are rejected, partially validated or validated regardless of the measure of product commercial performance used. The results are summarized in Table 7 below.

Hypothesis	Relation tested	Partial results	Results
H1	$SIZE \xrightarrow{+} PP$	Rejected	Rejected
	$SIZE \xrightarrow{+} TP$	Rejected	
H2	$VCOOPET \xrightarrow{0} PP$	Validated	Validated
	$VCOOPET \xrightarrow{0} TP$	Validated	
H3	$HCOOPET \xrightarrow{+} PP$	Validated	Validated
	$HCOOPET \xrightarrow{+} TP$	Validated	
H4	$EXPER \xrightarrow{+} PP$	Validated	Partially validated
	$EXPER \xrightarrow{+} TP$	Rejected	

Table 7 - Summary of results for the hypotheses

Hypothesis 1 is rejected regardless of the measure of the product commercial performance used. Consequently, the focal firm's size does not significantly enhance product commercial performance.

Hypothesis 2 is validated for both measures of product performance. We can thus state that vertical market-oriented coopetition does not significantly affect product commercial performance compared to competition.

Hypothesis 3 is validated regardless of the measure used. Therefore, we conclude that horizontal market-oriented coopetition enhances product commercial performance compared to competition.

In contrast, Hypothesis 4 is partially validated (only when product commercial performance is measured with price performance). Consequently, firms that have used horizontal market-oriented coopetition for a long period of time show higher product commercial performance, but only in terms of price performance.

THEORETICAL IMPLICATIONS AND DISCUSSION

MARKET-ORIENTED COOPETITION, BARGAINING POWER AND PRODUCT COMMERCIAL PERFORMANCE

The previous coopetition literature has yielded mixed results regarding the performance of technology-driven coopetition strategies (Kim & Parkhe, 2009; Knudsen, 2007; Luo et al., 2007; Ritala, 2009). Considering the growing role of market-oriented coopetition strategies (Chiambaretto et al., 2016; Chiambaretto & Dumez, 2016; Lindström & Polsa, 2016; Rusko, 2011; Teller et al., 2016), we sought to investigate in detail the performance characteristics and implications of market-oriented coopetition.

To investigate this relationship, we shifted the level of analysis from the firm level to the product level to better distinguish vertical market-oriented coopetition strategies from horizontal market-oriented coopetition strategies. This distinction yields interesting results, as we show that horizontal market-oriented coopetition significantly improves product commercial performance, whereas vertical market-oriented coopetition does not. This first result explains why most previous contributions have been self-contradictory, i.e., they combine different types of coopetition (horizontal and vertical) in their sample. Depending on the share of vertical or horizontal coopetition strategies in the sample, the impact of coopetition strategies would turn out to be positive, negative or neutral.

Because we analyze market-oriented coopetition at the product level, we can show how and why the different types of market-oriented coopetition strategies lead to different outcomes. More precisely, building on the bargaining power and social network exchange literature (Easley & Kleinberg, 2010; Emerson, 1962; Willer, 1999), we managed to link market-oriented coopetition strategies to bargaining power issues. We find that the various market-oriented coopetition strategies do not have the same impact on customers. Vertical market-oriented coopetition generates a transfer of the distribution network from the supplier firm to the customer firm. In the case of vertical market-oriented coopetition, there is no significant impact on the relationship between the focal firm and the final customer in terms of bargaining power. Consequently, vertical market-oriented coopetition does not significantly affect product commercial performance.

However, our model and results show that horizontal market-oriented coopetition leads to both partners' distribution networks to be combined, increasing the competition between a larger number of final customers for a given product. Therefore, horizontal market-oriented coopetition increases the focal firm's bargaining power over its potential customers and thus improves product commercial performance.

Future research on the performance of technology-driven or market-oriented coopetition strategies should be realized at the product level to distinguish various types of coopetition strategies (e.g., horizontal vs. vertical). In addition, integrating bargaining power issues in future studies might offer additional insight into coopetition theory and dynamics.

BENEFITS AND COSTS OF MARKET-ORIENTED COOPETITION STRATEGIES FOR CUSTOMERS

This framework sheds new light on the impact of coopetition strategies on customers. Thus far, the existing literature has assumed that coopetition is a *win-win-win* strategy for both partners and the final customers (Bengtsson & Kock, 2000; Brandenburger & Nalebuff, 1996; Peng et al., 2012). This assumption is mainly applied to technology-driven coopetition strategies in which the cooperation involves R&D or production activities. For technology-driven coopetition strategies, collaboration allows the coopetitors to develop new products that neither would have been able to develop alone (Fernandez et al., 2014; Gnyawali & Park, 2011).

However, our framework reveals that horizontal market-oriented coopetition actually reduces the bargaining power of customers in favor of the partnering firms. At first sight, market-oriented coopetition appears to be a welfare-reducing strategy for customers. Nevertheless, horizontal market-oriented coopetition reduces search costs for customers because they no longer must search many different firms to find the products they are looking for (Brandenburger & Nalebuff, 1996). Thanks to coopetition strategies, customers can thus gain access to a wider variety of products and may find a product closer to their ideal preferences. Consequently, if we have emphasized that customers pay a higher price for the products sold in horizontal market-oriented coopetition, we still do not know whether the value added for customers in terms of services outweighs the higher price paid.

Furthermore, our empirical setting (i.e., the real estate brokerage industry) is a typical example of a two-sided market in which real estate brokers act as platform between two types of customers: the seller and the buyer (Armstrong, 2006; Rochet & Tirole, 2006). In such a setting, the more potential buyers there are, the more sellers there will be. The more sellers there are, the more potential buyers there will be. In two-sided markets, platforms thus have two kinds of customers that interact with one another. If the economic effects on the downstream customers (i.e., the buyers) are unclear, the economic effects on the upstream customers (i.e., the sellers) are clearly positive. Consequently, an investigation of the benefits for customers of market-oriented coopetition strategies in two-sided markets requires a careful examination of the benefits of all the customers (not merely the final buyer).

Further research on market-oriented coopetition should investigate the monetary and non-monetary benefits and costs for customers associated with coopetition strategies in greater detail. To analyze these issues, a detailed analysis of customers' surpluses should be undertaken.

MARKET-ORIENTED COOPETITION AND OTHER TYPES OF PERFORMANCES

Our results show that horizontal market-oriented coopetition is the only type of market-oriented coopetition that yields superior product commercial performance. This conclusion confirms the notion that coopetition generates superior value only when the core resources shared are at the same level of the value chain (Gnyawali & Park, 2011; Ritala, 2009). Concurrently, sharing key resources in horizontal market-oriented coopetition generates more tension than vertical coopetition because the risk of opportunism and appropriation is much greater (Fernandez et al., 2014; Tidström, 2014). Nevertheless, for product commercial performance, horizontal market-oriented coopetition appears to be the most attractive strategy.

However, other types of performance must be investigated. Indeed, a product's superior commercial performance does not automatically generate better economic or financial performance for the firms. In horizontal market-oriented coopetition, the product is sold faster and at a higher price to the final customer, but the commission has to be shared with the partner. Furthermore, regardless of the type of market-oriented coopetition strategy selected, the development of such agreements can generate costs for the partnering firms (e.g., transaction costs, legal costs). Consequently, the global financial impact of horizontal market-oriented coopetition remains unclear and requires further investigation.

In addition, whereas market-oriented coopetition generates higher commercial performance at the product level, we do not know whether such a strategy should be applied to all the firm's products. Indeed, applying horizontal market-oriented coopetition to all products would mean faster sales at a higher price but more products with margins that are divided among partners. In this case, what would the overall impact of market-oriented coopetition strategies for the focal firm be? Prior research has shown that firms may need to have an optimal share of coopetition in their alliance portfolio to innovate (Chiambaretto & Fernandez, 2016; Park et al., 2014a; Wu, 2014). Can we expect a similar result with an optimal share of products sold using market-oriented coopetition for the firm?

MARKET-ORIENTED COOPETITION STRATEGIES: PRACTICE MAKES PERFECT

Another key result of our analysis derives from our study of the potential learning effects involved with market-oriented coopetition strategies. Indeed, our results show that firms that use coopetition over a long period tend to sell products more successfully. This result sheds light on the existence of a potential learning effect regarding market-oriented coopetition strategies for performance; moreover, to our knowledge, this effect has not been proposed previously in the literature. Similar effects have been proposed in the alliance literature regarding the notion of alliance experience (Heimeriks & Duysters, 2007; Rothaermel & Deeds, 2006); however, the coopetition literature has thus far focused only on the impact on innovation of the coopetition experience (Park et al., 2014b).

This result shows that in the value creation and value appropriation dilemma, firms that have more experience with coopetition strategies tend to become better at appropriating value from coopetition. This conclusion is supported by previous studies focusing on strategic networks that have shown the existence of a learning effect in the bargaining process in alliances (Dutta et al., 2003; Gulati et al., 2000). In other words, the more

firms have relied on coopetition, the more value they are able to extract for their own benefit. This outcome invites future researchers to investigate the modalities of a potential "coopetition capability" in greater detail (Bengtsson, Raza-Ullah & Vanyushyn, 2016; Gnyawali, Madhavan, He & Bengtsson, 2016; Park et al., 2014b).

KEY THEORETICAL CONTRIBUTIONS

In this study, we make three important contributions to the coopetition literature. First, our research contributes to the understanding of the specifics of market-oriented coopetition. As we discuss and summarize in Table 1, market-oriented coopetition is unique in several ways, because it presents features distinct from technology-driven coopetition. Whereas firms are increasingly using market-oriented coopetition agreements, few studies have investigated the implications of such agreements. Our research not only provides a definition of market-oriented coopetition but also details the mechanisms through which market-oriented coopetition operates.

Second, our analysis contributes to understanding how market-oriented coopetition impacts product commercial performance. Building on social network exchange theory, we elaborated a framework for understanding the impacts of market-oriented coopetition on product commercial performance. Distinguishing between vertical and horizontal market-oriented coopetition, we show that horizontal market-oriented coopetition positively impacts product commercial performance, whereas vertical market-oriented coopetition does not. The model and results provide insight into the impacts of coopetition on performance and can inform future market-oriented coopetition research using a social network exchange perspective.

Finally, our research highlights the need for and benefits of integrating coopetition research with other theoretical frameworks from marketing or social network theory.

MANAGERIAL IMPLICATIONS

From a managerial standpoint, our research also yields some interesting results.

First, based on our results, we show that within a coopetition network, firms should prefer to use horizontal market-oriented coopetition over vertical market-oriented coopetition to sell their products more quickly and at a higher price. Furthermore, our contribution highlights the existence of a virtuous circle regarding the use of coopetition strategies. The more a firm relies on market-oriented coopetition, the better it will be at it. In other words, more experienced firms that have used horizontal market-oriented coopetition strategies for a long time will be better at extracting more value from their sales.

Second, our findings raise a puzzling question: if coopetition is that efficient, why do firms rely on other strategies to sell their products? Three possible answers can be given. The first possible answer is related to the dynamics of the implementation of coopetition. In our sample (based on French firms in the real estate industry), coopetition has been a quite recent option for firms (compared to the MLSs in the US that have existed for more than a century). In France, around 40% of the products sold in the real estate industry are sold in coopetition, while in the US, this figure is around 90%. This fact seems to confirm the idea that coopetition requires time to become a standard strategy in a given industry. The second

possible answer is related to the type of product sold. For some categories of products (that fulfill a very specific need), only a limited number of customers are interested in the product. Under this configuration, what matters is not the total number of customers reached (through horizontal market-oriented coopetition) but the type of customers reached by finding the right partner in a vertical market-oriented coopetitive agreement. The last possible explanation stems from the distinction we drew earlier between the commercial and financial performance of coopetition strategies. While horizontal market-oriented coopetition clearly improves commercial performance, we do not know whether it always improves financial performance. In other words, while horizontal market-oriented coopetition clearly improves commercial performance (creating higher value together), we do not know if it always improves the financial performance of a company (capturing value for itself).

One last managerial implication is related to industry policy. Our empirical setting (the real estate brokerage industry) is very interesting because in recent years, several new entrants (such as *Leboncoin*) have changed the rules of the market by offering landlords the possibility to sell their products directly, without the help of a real estate agency. Facing this threat, real estate agencies have used market-oriented coopetition to restructure the industry and develop a sustainable competitive advantage to remain attractive to potential sellers. It is thus interesting to keep in mind how market-oriented coopetition can be used by firms and associations as a tool to structure an industry and maintain their attractiveness when they face the threat of disruptive new entrants.

LIMITATIONS AND FUTURE RESEARCH

In addition to the limitations and research directions discussed above, we identify additional limitations for our study that can be used as directions in future research.

A first criticism may come from the industry setting for our analysis. We justified the use of the real estate brokerage industry by the presence of different types of relational strategies that do not impact the product's characteristics. However, this industry may present many idiosyncrasies that might bias our results. Further investigation of the empirical boundary conditions of our results might be necessary (Busse, Kach & Wagner, 2016). We think that our results might be replicated in other brokerage industries such as art and/or antique dealers. Nevertheless, we do not know the extent to which these results are robust in non-brokerage industries, and future research is thus required.

A second limitation is related to the nature of the firms implicated in market-oriented coopetition strategies. In our setting, even if some firms benefit from a better reputation or have more resources, the selling techniques or competencies are distributed rather homogenously among the firms. As a consequence, it is much more the size of their customer base than their own characteristics (or capabilities) that gives them the chance to sell a given product. Under these circumstances, the relevance of horizontal market-oriented coopetition is quite clear. It would thus be interesting to test the validity of our conclusions in industries in which firm characteristics (capabilities, resources, business models, etc.) play a more significant role.

A third limitation comes from our measure of product commercial performance. Because our industry is a brokerage industry, the time and price performance measures made sense. Nevertheless, in other industries, product commercial performance could be assessed through

other constructs such as market share (especially in network industries) or the level of brand awareness or brand image (in luxury industries, for instance). A broader investigation of product commercial performance in other industries might yield interesting results.

One final limitation is related to the composition of our sample. Our sample consists mainly of small firms (most with less than 10 employees). The strong majority of small firms in our sample may bias the results regarding the impact of coopetition strategies on product performance. Consequently, future research should integrate firms with different sizes to check the robustness of our results.

CONCLUSION

In summary, our research not only defines the concept of market-oriented coopetition but also generates new insights on the impacts of market-oriented coopetition on product commercial performance. By reasoning at the product level, we highlight that horizontal market-oriented coopetition strategies improve product commercial performance, whereas vertical market-oriented coopetition strategies do not. In addition, we propose the existence of a learning effect regarding market-oriented coopetition strategies. The more firms coopete over time, the better they become at extracting value to their own advantage. Our research provides insight into the importance of market-oriented coopetition and the association between market-oriented coopetition and commercial performance and opens new directions for future research.

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