Open coopetition: a research program

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Résumé:

Cette recherche a pour objectif de définir un programme de recherche pour l'Innovation Coopétitive. L'Innovation Coopétitive est définie comme l'Innovation Ouverte entre concurrents. L'Innovation Ouverte est composé de trois processus : « inside-out », « outside-in » et « coupled process ». Ces trois processus sont étudiés ici dans un contexte d'Innovation Ouverte entre concurrents. Nous montrons ainsi que peu de recherche se sont centrées sur ces trois processus d'Innovation Coopétitive, et notamment les processus « inside-out between competitors » et « outside-in between competitors ». Nous proposons alors des voies de recherche inspirée par ce nouveau concept d'Innovation Coopétitive.

Mots-clés : Coopétition, Innovation Ouverte, Innovation Coopétitive

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INTRODUCTION

Open innovation between competitors is a growing area of interest for both researchers and practitioners. Many important industrial success stories began with competitors working together to achieve radical innovation. For instance, the innovative and successful program Airbus A300 was launched in the seventies through the collaborative effort of three European competitors (Sud Aviation, Hawker Siddeley Aviation and Deutsche Aviation). This pooling enhanced knowledge-sharing among competitors and allowed the success of the Airbus Consortium to challenge Boeing worldwide. More recently, Samsung and Sony worked together to develop LCD technology and became the leaders in the flat-screen television market (Gnyawali and Park, 2011). Sanofi and Bristol-Myers Squibb collaborated to bring two blockbuster drugs successfully to market (Bez et al, 2016).

These examples of open innovation (OI) between competitors are conceptually interesting due to the massive financial investments required. For instance, in the satellite industry, Arabsat was the most important space program of the decade. The program, which is worth 1.8 billion dollars, was achieved by close collaboration between the two European competitors Airbus and Thales (Fernandez *et al.*, 2014). In another instance, the European firm Sanofi and the American firm BMS invested billions of dollars to develop and jointly sell two drugs: Plavix and Aprovel. These examples are collaborations between direct competitors and involve tremendous sums of money. They deserve more attention than they have received to date from academic scholars because they raise interesting questions about innovation, collaboration, competition, and governance.

However, most previous scholars in open innovation do not consider the fact that the openness of innovation could be conducted with competitors. The OI literature has focused on the analysis of three core process: inbound flows (i.e., the importation of knowledge - buying), outbound flows (i.e., the exportation of knowledge - selling) (Dahlander and Gann, 2010), and “coupled innovation” (Piller and West, 2014). These three core processes are not

differentiated on whether the source or the destination of the knowledge flow is a competitor.

Therefore, this paper highlights how the three core processes of innovation should be organized and managed when the open innovation process concerns direct rivals. We seek to show how OI between competitors affects each of the three OI processes and leads to new potentially fruitful research areas. We also attempt to define a research program for OI involving full collaboration with competitors: in the outside-in from a competitor, the inside-out to a competitor and the coupled innovation process between competitors. We call this strategy open coopetition and use OI and coopetition the literature to highlight the main promising research avenues inspired by this new concept.

1. OPEN INNOVATION DEFINITION AND CORE PROCESSES

There are limits to the ability of vertical integration to achieve the scale and scope required for companies to achieve and sustain industry leadership in the 21st century. In areas such as cloud computing, artificial intelligence, and geo-mapping, achieving very high volume is vital for competitive success. As a result, opening the innovation process is occasionally a necessary form of organization for the emergence of technical innovation and economic performance (Chesbrough, 2003, 2006; Cassiman and Veugelers, 2006). Openness facilitates access to information regarding new customer needs and new production techniques from a much broader set of sources than traditional internal R&D. Therefore, by increasing firms' strategic flexibility and learning capacity, opening the innovation process becomes crucial for supporting innovation activity (Chesbrough, 2006). This openness helps manage complex coordination (i.e., situations that are difficult to manage with simple price systems) by avoiding dysfunctions sometimes associated with internal hierarchy (Belderbos *et al.*, 2004).

Opening the innovation process is the main topic of scholars interested in open innovation (Chesbrough, 2003, 2006; Chesbrough and Brunswicker, 2014; West *et al.*, 2014). Open innovation appears as a pervasive question for both practitioners and academics. Because useful knowledge is increasingly dispersed around the world in multiple industries and contexts, firms must open up their innovation processes to harness this wealth of knowledge. Such openness allows firms to foster their innovation process at a lower cost. Openness presents several advantages. Firms benefit from outside-in knowledge, resulting in better

outcomes, faster time to market, and greater sharing of risk (Chesbrough, 2006). When firms pursue inside-out open innovation strategies, they can expect higher revenues from the commercialization of intellectual property rights and greater exploration of new markets and new business models to apply to those rights (Chesbrough, 2006).

The definition of open innovation has evolved over time. It began as “a paradigm that assumes that firms can and should use external ideas as well as internal ideas, and internal and external paths to market, as the firms look to advance their technology” (Chesbrough, 2003). The definition was subsequently refined to be the “use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation, respectively,” (Chesbrough et al., 2006). More recently, it has been defined as "a distributed innovation process based on purposively managed knowledge flows across organizational boundaries, using pecuniary and non-pecuniary mechanisms in line with the organization's business model (Chesbrough and Bogers, 2014). The business model of the firm dictates the knowledge to be brought into the firm and the knowledge that is allowed to go outside the firm. This business model creates value and captures a portion of the value to enable the firm to sustain its innovations over time (Chesbrough, 2010).

Three core processes of openness have been identified in OI literature: the outside-in process, the inside-out process and the coupled process (Gassman and Enkel, 2004).

- The outside-in process means that companies choose to integrate external knowledge in their innovation process. The ways to accomplish that are numerous. Companies can in-license, purchase patents, purchase companies, etc. Chesbrough (2003) used the case of Cisco to show how a company can save costs by reducing internal R&D efforts and increase its knowledge by opening its innovation process to outside technology.
- The inside-out process means that companies externalize their knowledge to bring ideas into the market faster than could be done by internal development. Companies can out-license, sell IP, create spin-offs, etc. This process enables the creation of new sources of revenues in areas in which the company has not developed its products. Chesbrough (2003) used the case of Xerox to show how this company missed its chance to create revenues by failing to license-out its non-core innovations.
- The third process is coupled innovation. This process allows companies to combine the outside-in and inside-out processes. The coupled process internalizes the

knowledge of partners and externalizes a company's own knowledge to them. The coupled innovation process should extend deeper than technology internalization and externalization. Companies can choose to collaborate to create new knowledge together, and partners can be clients, suppliers, universities, companies in other industries, competitors, etc.

These three core processes are the pillars underlying open innovation research. The most investigated core process is the outside-in process. A significant amount of research has been dedicated to the question of using outside technology to lower costs and increase the efficiency of innovation processes. The inside-out process is less studied and perhaps the least used by companies. Many companies prefer to keep their patents inside and do not want them to be developed by other companies, thereby missing the revenues of licensing or selling their technology. The third process has been more frequently examined by open innovation and other types of scholars. This process should be a coupled outside-in and inside-out process, with licensing agreements or technology selling. In addition, it should be a broader process involving real cooperation between companies. In this case, this is not only a question of technology exchange by licensing agreement but also a question of creating new technology together. This is this last coupled innovation process that corresponds to collaboration with competitors for innovation.

2. COOPERATION WITH A COMPETITOR FOR INNOVATION

Collaboration with a competitor for innovation includes both a cooperative and a competitive relation between firms offering the same type of product for the same type of customers (Gnyawali and Madhavan, 2008; Fernandez *et al.*, 2014; Le Roy and Fernandez, 2015). In an apparent paradox, cooperating with a competitor does not lead to lower levels of competition between coopetitive firms.

A variety of factors explain the development of coopetition strategies for innovation (Gnyawali and Park 2009; Pellegrin-Boucher *et al.*, 2013). The first relates to firms' objective of achieving critical mass against the background of a globalized economy to compensate for insufficient resources. This factor is particularly important in so-called digital industries, where high volumes of data are needed for analytics, for improving algorithms, and for spreading the resulting high fixed costs over more transactions. The second explanatory factor is technological in nature. It is increasingly difficult for a single

firm to gather all the resources necessary to develop innovations in its industry. The ongoing growth of R&D budgets forces an increasing number of firms to pool their research. Coopetition enables firms to reach a critical R&D budget size that is required for effective innovation programs. As a consequence, coopetition strategies have become crucial in industries affected by both globalization and technology.

Despite its importance, coopetition challenges intuition and common sense. Indeed, *a priori,* two competing firms have an interest in relying on their own resources and skills and particularly in not allowing their competitor to benefit from such resources and skills. However, collaboration between competitors is common in high-tech industries. How do we explain this anomaly? We suggest that the most interesting partner for a firm is the one that develops similar or highly complementary products (and frequently for the same consumers). Paradoxically, the more dangerous a competitor is, the more attractive it may be as a partner (Hamel *et al.*, 1989; Hamel, 1991). From this perspective, the best partners are simultaneously potentially the most dangerous competitors (Hamel *et al.,* 1989).

Cooperation with competitors differs from cooperation with non-competitors because partners face higher risks of technology imitation and entry into the target market for the innovation (Gnyawali and Park, 2011; Le Roy and Fernandez, 2015). This means that there are important potential disadvantages to collaboration between direct competitors that also must be considered, as one's intuition would suggest. The early work of Gary Hamel (1991) reminds us that many horizontal alliances are actually learning races between competitors. The competitor that learns the most first wins in this conception. Competitor alliances can become entangled in litigation between the parties. In other cases, alliances between competitors can initially be between equal partners, but subsequent events can tip the alliance towards one of the parties. In the worst case, collaborating with a competitor might not be the solution to competitiveness but instead might be the problem. Indeed, the real agenda of a competitor-partner might not be to create value together but rather to have direct access to coopetitor knowledge. The common innovative project acts as a lure, and the collaborative plan becomes a Trojan horse designed to plunder the partner's technology. Therefore, the outcome of collaborating with an aggressive competitor would be damaging for the collaborator. At the end of such collaboration, an overly naïve firm would be a firm without distinctive knowledge and, therefore, one without a competitive advantage.

Despite these high levels of risk, certain companies nonetheless widely collaborate with their competitors. As noted above, the most salient cases of this open coopetition arise when large investments are required to innovate. In such cases, the alternative may be even less attractive than coopetition. Going it alone without a competitor may doom the innovation project to insufficient resources or unacceptably high risks. With all the attendant risks that open coopetition involves, it may nonetheless be preferable to the counterfactual situation.

Knowledge-sharing is a necessary part of cooperation, and trust is an important vector in achieving effectiveness and cooperation performance. However, in the context of coopetition, tensions are higher, and trust and confidence are more difficult to establish (Fernandez *et al.*, 2014). Appropriately defining a good knowledge absorption/protection balance and a level of trust renders coopetition more complex, risky and presumably less efficient. We might thus expect a lower innovation performance for coopetition compared to cooperation among non-competitors. However, we find no agreement in the literature regarding this point.

The literature reveals contradictory findings. Some studies find negative (or no) effects of coopetition on innovation performance (for example, on the novelty of innovation, Nieto and Santamaria, 2007; Santamaria and Surroca, 2011), whereas others present a picture that is less negative or observe positive effects (Table 1). Kang and Kang (2010) describe an inverted U-shaped relationship for R&D coopetition (for product innovation). A positive effect of coopetition is described for the innovation performance of a firm in general (Tomlinson, 2010) and labour productivity in particular (Belderbos *et al.*, 2004). Focusing on intensity, Neyens *et al.* (2010) suggest that continuous coopetition increases radical innovation performance and that discontinuous coopetition increases incremental innovation performance. Thus, the impact of opening the innovation process to competitors remains unclear.

3. A FULL RESEARCH PROGRAM ON OI BETWEEN COMPETITORS

Following the open innovation the literature, opening the process of innovation to competitors should be done in three ways: outside-in from a competitor, inside-out to a competitor and through a coupled innovation process. Therefore, we highlight how openness with a competitor affects these three core processes;

Outside-in from a competitor means using the knowledge of a competitor to develop one's own technology. This type of process has not been extensively studied in past research. It seems counter-intuitive for a company to use the technology of its competitor instead of developing its own technology.

Two basic situations should be distinguished: the outside-in process without collaboration and the outside-in process with collaboration. In the first situation, there is only knowledge flow without collaboration. For instance, a company uses a patent from a competitor or purchases technology from a competitor. To the best of our knowledge, there is no research on this topic. However, certain cases could be identified. For example, in the Chinese automotive industry, the Chinese company CRCC used licenses from the German company Siemens to develop its own technology (Meng, 2016). Research is needed to better understand this type of strategy. The Chinese company had to choose between the costs and risks of internal development and the opportunity to use the Siemens technology. Using the Siemens technology could decrease the time to market. However, this strategy hurts the past investments of CRCC. CRCC must change its core process, and the risk is the difficulty to be equally as good as Siemens, which could transfer its past technologies and keep and advance the new one.

In the second situation, a company can use the knowledge of its competitor and collaborate with this competitor to create new knowledge. For example, in the *Enterprise Resource Planning* (ERP) industry, SAP used the Oracle database to develop its ERP; however, this could not be done without a close relationship. SAP had to collaborate with Oracle to obtain relevant databases. At the same time, SAP and Oracle were competing to sell their own ERP solutions (Pellegrin et al., 2013). The customer could make a choice between a pure Oracle solution and an Oracle-SAP solution. This situation seems very usual in the TIC industry but is not frequently studied. The fundamental problem stems from the fact that the company must share its knowledge with its competitor-supplier to provide a better solution for the client. However, in doing so, the company opens its technology to its competitor-supplier, which creates the risk of plunder. Even if the supplier is not a strong competitor at the beginning, collaborating increases the overlap and creates an opportunity to enter the market.

The inside-out process is the mirror of the outside-in process. This type of process also has not been extensively studied in past research. It seems very counter-intuitive for a company

to reveal its knowledge to a competitor. Two basic situations should also be distinguished: the inside-out process without collaboration and the inside-out process with collaboration. The process without collaboration is a strategy in which a company opens its knowledge to a competitor without collaborating with the competitor. For example, Siemens licensed its technology to CRCC. Siemens obtained revenues from this licensing and had access to the Chinese market. However, this strategy is risky. If the competitor-client is able to quickly imitate the technology, it could become a more dangerous rival in the market. Therefore, companies balance the opportunity to create new revenues with the risk of enforcing the competitor-client. In the Siemens case, the Chinese company rapidly imitated the Siemens technology and became a strong competitor in both the Chinese and the global market. Siemens never won a new call of tender in the Chinese market and now faces a competitor with similar technology and lower prices in the international market.

The inside-out process can also be performed with collaboration. A company can open its technology to a competitor-client and collaborate to improve the technology. For example, as previously shown, Oracle collaborated with SAP to sell its database to this competitor-client. By collaborating, Oracle increased its revenues from the database. However, Oracle gave provided SAP with access to its technology. SAP developed its own database, and now Oracle is no longer a provider for SAP. Therefore, a company must strike a balance between collaborating with a competitor-client to make money and protecting its knowledge ensure that this client will need it in the future. Regarding the other strategy, additional research is required to better understand the opportunity and risk involved in opening the innovation process to a competitor.

The third OI process is coupled innovation, a mix of the outside-in and inside-out processes. Two competitors could decide to open their innovation processes to each other. Two basic situations could be distinguished: the coupled process without collaboration and the coupled process with collaboration. The coupled process between competitors without collaboration has not been extensively studied in past research. This type of strategy is based on behaviour, such as using the license from a competitor and simultaneously licensing to this competitor. To the best of our knowledge, there is no research to date on this topic. We suggest that this type of strategy creates a significant opportunity for both companies but also produces significant risks of technology imitation. Further research is needed to examine this strategy.

The coupled process could be extended to intensive collaboration between competitors to create new knowledge. Sony and Samsung together developed the LCD technology for flat screen television (Gnyawali and Park, 2011). Sony brought its own technology and patents in television to the collaboration, and Samsung came with its technology and patents in LCD technology. Together, they created new technologies and new patents. The companies shared the flat-screen and patent revenues. This strategy was very successful; they became the number one and number two companies in the market. LCD technology became the standard, replacing plasma technology in the flat-TV industry. Another interesting case is the collaboration of BMS and Sanofi in the drug industry (Bez et al., 2016). Sanofi discovered a new high-potential drug, but the costs and the risks of development were too high for this company. The firm also lacked access to the US market. Therefore, Sanofi decided to collaborate with a US competitor, BMS, to develop, produce and commercialize the drug, sharing the patent for the final new drug. This strategy has been a great success for both companies.

The coupled process is full of strong incentives for competitors. On one hand, they can decrease many of the costs and risks of innovation. One the other hand, they can combine their knowledge to co-create a new and efficient product. However, this strategy is also risky because the risk of plunder is very high. Therefore, OI between competitors can produce the best but also the worst. Additional research is required to determine under which conditions the coupled process between competitors creates high values for companies.

Table 1: OI with competitor based on licensing

OI	Outside-in from a competitor	Inside-out to a competitor	Coupled process with a competitor
Without collaboration between competitors	Licensing-in from a competitor	Licensing-out to a competitor	Both licensing-in from a competitor and licensing-out to this competitor
With collaboration between competitors	Licensing-in from a competitor and collaborating with him to develop the technology	Licensing-out to a competitor and collaborating with him to develop the technology	Both licensing-in from a competitor and licensing-out to this competitor, and collaborating with him to develop the technology

OI with competitors includes six different processes: outside-in from a competitor without collaboration, outside-in from a competitor with collaboration, inside-out to a competitor without collaboration, inside-out to a competitor with collaboration, coupled process without collaboration and coupled process with collaboration. These six processes could be detailed for OI behaviours such as licensing and patents (see table 1 and 2). They could also be detailed for other OI behaviours.

The majority of these processes have not been fully studied in past research on OI, particularly the outside-in and inside-out processes with competitors (without or with collaboration), even if these processes appear to be counter-intuitive and to challenge theory and practice. These processes, as well as the coupled innovation process, continue to provide new avenues for future studies.

Table 2: OI with competitor based on patents

OI	Outside-in from a competitor	Inside-out to a competitor	Coupled process with a competitor
Without collaboration between competitors	Buying patents from a competitor	Selling patents to a competitor	Both selling patents to a competitor and buying patents from this competitor
With collaboration between competitors	Buying patents from a competitor and collaborating with him to develop the technology	Selling patents to a competitor and collaborating with him to develop the technology	Both selling patents to a competitor and buying patents from this competitor, and/or collaborating with him to develop the technology

4. RESEARCH QUESTIONS

The six processes of OI with competitors are future research fields. We here focus on the three processes with collaboration. The three processes without collaboration are clearly shown in the OI literature but do not concern coopetition. Indeed, coopetition involves collaboration. In the section, we focus on coopetitive OI with competitors, i.e., OI between competitors involving collaboration. We name this type of strategy “open coopetition”.

We define open coopetition as OI between competitors including collaboration. Open coopetition includes licensing agreements and/or buying and selling patents when they involve collaboration. In open coopetition, patents or licenses are the explicit asset but are only the visible face of the iceberg. Collaboration exists to permit the exchange and sharing

of more tacit knowledge. However, open coopetition also includes more complex elements than simply licensing and patenting, although these may be the most concrete, tangible elements to observe. In open coopetition, companies should collaborate to define a technological standard, to build and develop a platform, to create and expand an ecosystem, etc. Open coopetition means that the basis of the relationship to innovate is simultaneously competitive and collaborative, from the perspective of creating an entirely new industry, business model, platform, ecosystem, etc. In this way, open coopetition extends the dyadic perspective of coopetition to a broader context of third parties, networks, and ecosystems[1].

As open coopetition is a novel concept, we build on OI and coopetition the literature to highlight this type of strategy. Given the high risk of opportunism in opening innovation to a competitor, OI and coopetition the literature accepts the idea of « pre-competitive » collaboration in an upstream technology market, followed by competition downstream in the product market (Hunter and Stephens, 2010; Quintas and Guy, 1995). There is a clear separation of upstream activities based on collaboration and downstream activities based on competition. However, this point of view does not fully conform to company behaviour. Le Roy and Fernandez (2015) show the case of Airbus and Thalès in the satellite industry. These two competitors collaborate to win certain calls for tenders in the global market. When they win a call for tender, they collaborate to create the technology, to manufacture the satellite and to supply the client. They share their knowledge on the project from upstream to downstream activities. This situation in which companies are coupled in both the upstream technology market and the downstream product market has not been extensively studied.

From this perspective, the research question examines the conflicting incentives in cooperating with direct competitors (and not only in a pre-competitive upstream market) in inside-out, outside-in and coupled open innovation based on collaboration with a competitor. The basic assumptions are as follows. Coopetition for new products involves the sharing of resources and knowledge (Le Roy and Fernandez, 2015). By sharing their resources, firms have access to important economies of scale. The opportunity for new knowledge creation is very high. However, this is a risky strategy because there is significant opportunity for

[1] This definition differs from that of Teixeira and Tingting (2014), in which open coopetition is coopetition with an open source.

plunder. This risk of plunder is so high that conflict could damage the common work. The common project could fail and never end in the creation of a new product.

Unfortunately, the literature has not previously examined the performance implications of direct competitors engaging in inside-out, outside-in and coupled open innovation based on collaboration with a competitor. We can theorize about several of those implications.

In a collaborative OI process with a competitor, there is repeated interaction between the competing firms over time, providing a repeated game setup to the competitive behaviour of firms. Under these conditions, more cooperation can be sustained over time than in single-shot games (Axelrod, 1984). A coupled competitor can credibly threaten to punish an overly aggressive partner's behaviour by withholding her coupled contribution to the partner. Coopetition for innovation creates both a high potential of knowledge creation and a high risk of plunder. The more coopetitors open their knowledge, the higher the opportunity of creating new knowledge, and the higher the risk of plunder. As the number of coopetitors increases, the risks of free-riding or defecting by one of the parties also increase, while the ability to police behaviour becomes more complex (Olson, 1991).

The central question is therefore to know how companies should be successful in inside-out, outside-in and coupled open innovation processes based on collaboration with a competitor. The literature on OI highlights this question in several non-conclusive ways.

First, literature on open innovation highlights the general dilemma of opening the innovation process (De Marco *et al.*, 2016). As a general rule, companies face the paradox of openness, in which they must be open and collaborate with many partners and simultaneously must focus on the way to capture the value created together (Laursen and Salter, 2014). One of the main risks of OI is the loss of internal assets (knowledge, resources and technology). The challenge for a company is to find the right balance between opening its knowledge and protecting its core technologies (Henkel, 2006; Chesbrough and Brunswicker, 2014). In the same way, companies face the "disclosure paradox" regarding the costs of collaboration and the uncertainty of its outcome (Dalhander and Gann, 2010). Defining the explicit and tacit knowledge to share is a very difficult task when uncertainty about the outcome is high.

These OI paradoxes are even more intense when the partner is an industrial one and/or a competitor (Chiaroni *et al.*, 2011). However, the OI literature does not provide sufficient focus on solving these paradoxes (De Marco *et al.*, 2016). For example, the question of IP relevance is ambiguous in the open innovation the literature (Holgersson and Granstrand,

forthcoming). For certain authors, the implementation of IP is a key point in securing the appropriation of profit (Henkel, 2006). IP are necessary to protect knowledge both in the early stage of collaboration (Huizingh, 2011) and in the exploitation stage (West and Gallagher, 2006). For other authors, however, IP implementation does not really solve the problem, but rather is a source of the problem (Mortara and Minshall, 2011). Indeed, IP strategy can be costly and can negatively affect the willingness to collaborate (Dahlander and Gann, 2010). Therefore, the question regarding the relevance of IP strategy in open innovation between competitors remains open.

Second, the OI literature examines the management of collaboration (De Marco *et al.*, 2016). As a general rule, managing the openness of innovation with partners is a difficult task (Enkel *et al.*, 2009). The challenge is to establish a partnership in which the partners are close enough to collaborate, but far enough to create cross-fertilization with their different skills (Dalhander and Gann, 2010). In this perspective, competitors are potentially good partners. They have some similar but not fully analogous skills. Therefore, the potential for cross fertilization is high. However, the OI literature suggests that the challenge begins once the partner has been selected. Once the partnership is launched, partners should try to turn the partnership to their own advantage (Dahlander and Gann, 2010) by exploiting asymmetric information and increasing their negotiation power to capture the majority of the collaboration's value. This opportunistic behaviour could damage the effectiveness of the common project. If the partner is a competitor, the opportunism risk is higher and it might be difficult to have a fully collaborative relationship. As a general rule, the OI literature does not indicate how to solve these problems, especially when the partner is a competitor.

In conclusion, questions concerning the key success factors of open innovation based on collaboration with a competitor remain open. The questions include the following: Which managerial tools do companies use to manage the open coopetition process? Are there specific organizational designs? What is the role of IP in the success of the open coopetition process? How is IP managed in the event of a discontinued collaboration? What are the incentives for being fully collaborative? Why are companies fair or unfair in the open coopetition process? What are the full benefits of this process? These research questions provide several avenues for future empirical and theoretical responses.

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