Knowledge brokers and the management of internal coopetition: The Ubisoft case

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Résumé :

The phenomenon of coopetition, i.e. cooperation between competing actors, has gained wide ground in strategic management research. The primary focus of these studies is set on inter-firm relationships, highlighting benefits, limits and configurational patterns of cooperative relationships between competing firms. Only a small, emerging group of studies seeks for extending the concept on the intra-firm level, stressing the existence and effects of competition between units which are part of the same organization. This paper contributes to this latter group by investigating the effects of internal coopetition on knowledge and innovation sharing. Based on a qualitative case study of the video game publisher Ubisoft, we analyze the tensions raised by the coopetitive setting and the way they limit knowledge sharing between competing units. We then identify the facilitating role of knowledge broker agents who actively contribute to weakening these tensions and to promoting knowledge and innovation transfer across units

Mots-clés : Internal coopetition, internal coopetitive tensions, management of internal coopetition, knowledge brokers, knowledge transfer, innovation sharing.

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INTRODUCTION

The phenomenon of coopetition, i.e. cooperation between competing actors, has gained wide ground in strategic management research (Bengtsson and Kock, 2014). The primary focus of these studies is set on inter-firm relationships, highlighting benefits, limits and configurational patterns of cooperative relationships between competing firms. Only a small, emerging group of studies seeks for extending the concept on the intra-firm level, stressing the existence and effects of competition between units which are part of the same organization (Luo, 2005; Luo et al., 2006; Seran et al., in press; Tsai, 2002).

Building on Luo et al. (2006), we define internal coopetition as the joint and simultaneous occurrence of cooperation and competition across functional areas within a firm. In his seminal paper, Luo (2005, p. 73) explains that "cooperation and competition coexist simultaneously because subunits are enticed or enforced to collaborate but meanwhile they encounter conflicts arising from competing for limited parent resources, corporate support, power delegation, market expansion and global position". Far from being a threat, the competition between the subunits can be very beneficial for the firm if managed properly (Birkinshaw, 2001). Luo et al. (2006) indeed show that internal coopetition can actually improve the firm's customer and financial performance. However, internal coopetition generates conflict and tensions between business units and requires specific tool to get the most of it.

The aim of this paper is to analyze the effects of internal coopetition on knowledge and innovation sharing. In particular, we investigate how knowledge brokers might reduce tensions stemming from simultaneous needs for cooperation and competition between units

and neutralize related barriers to innovation and knowledge sharing. Based on coopetition and knowledge broker literatures, we develop a theoretical framework and advance three propositions on the mitigating role of knowledge brokers in the context of coopetition. We then confront these propositions to the empirical case of the video game publisher Ubisoft, using a qualitative case study design. The Ubisoft case offers indeed an interesting case for addressing internal coopetition and associated tensions. Units are encouraged to share innovative features developed on distinctive projects all the while they are at the same time competing around internal resources and market shares.

We find knowledge brokers to play a significant role in overcoming organizational inertia in knowledge and innovation sharing, due to the internal coopetitive setting. Thanks to the neutral position of the knowledge broker and by assuming the role of identifying, standardizing and diffusing innovative ideas and technology, coopetition-related tensions are reduced, so that knowledge sharing can actually be promoted among competing units.

1. THEORETICAL BACKGROUND

1.1. From inter-organizational coopetition to internal coopetition

In highly uncertain environments, it is harder and harder for firms to conduct purely individual strategies. They need to cooperate with partners to have access to specific resources or knowledge they do not own internally (Dyer and Singh, 1998; Eisenhardt and Schoonhoven, 1996). But often, the partners presenting the best level of resource complementarity and compatibility are competitors (Arranz and Arroyabe, 2008; Gnyawali and Park, 2009). Consequently, one observes the emergence of alliances between competitors.

To understand the specificities of this strategy, the concept of coopetition has been developed (Brandenburger and Nalebuff, 1996). Coopetition can be seen as "a paradoxical

relationship between two or more actors simultaneously involved in cooperative and competitive interactions, regardless of whether their relationship is horizontal or vertical" (Bengtsson and Kock, 2014, p. 182). Building on this definition, we consider that coopetition is the situation in which organizations are in competition on some activities, markets and products while being simultaneously on cooperation for other activities, markets and products. The primary benefits associated with coopetition arise from the combination of cooperative and competitive behaviors (Brandenburger and Nalebuff, 1996; Lado et al., 1997; Bengtsson and Kock, 2000). 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 to maintain the creative tension between organizations (Quintana-Garcia and Benavides-Velasco, 2004; Park et al., 2014; Raza-Ullah et al., 2014).

If the concept of coopetition has mainly been developed to study interorganizational relationships, several scholars have observed that coopetition dynamics could also be observed within firms (Bengtsson and Kock, 2014; Tsai, 2002). As it is noted by Walley (2007), it has been taken for granted that units in firms cooperate to reach the overall objectives. But it is not always true and interdepartmental relationships can be seen as a double-edged sword because business units are very often in competition too (Ruekert and Walker, 1987). Tsai (2002, p. 181) explains that these business units "compete with each other to maximize their own benefits. Internally, they vie for limited resources within the organization. Externally, they try to outperform other units that offer similar products or services on the marketplace". Different terms have been coined to describe this phenomenon such as "inter-unit coopetition" (Tsai, 2002; Luo, 2005) or "cross-functional coopetition" (Luo et al., 2006). In fact, most literature reviews on coopetition consider that these specific types of coopetition

can actually be categorized as a form of "internal coopetition" (Bengtsson and Kock, 2014; Chiambaretto and Dumez, 2016; Czakon et al., 2014; Walley, 2007).

Building on Luo et al. (2006), we define internal coopetition as the joint and simultaneous occurrence of cooperation and competition across functional areas within a firm. In his seminal paper, Luo (2005, p. 73) explains that "cooperation and competition coexist simultaneously because subunits are enticed or enforced to collaborate but meanwhile they encounter conflicts arising from competing for limited parent resources, corporate support, power delegation, market expansion and global position". Far from being a threat, the competition between the subunits can be very beneficial for the firm if managed properly (Birkinshaw, 2001). Luo et al. (2006) indeed show that internal coopetition can actually improve the firm's customer and financial performance. However, internal coopetition generates conflict and tensions between business units and requires specific tool to get the most of it.

1.2. Sources and management of tensions in internal coopetition

By combining simultaneously two opposite behaviors (collaboration and competition), coopetition can be understood as a paradoxical strategy (De Rond and Bouchiki, 2004; Smith and Lewis, 2011; Raza-Ullah et al., 2014). The combination of collaborative and competitive behaviors contributes to the emergence of tensions at different levels: inter-organizational, intra-organizational and inter-individual (Bengtsson and Kock, 2000; Czakon, 2010; Fernandez et al., 2014; Le Roy and Fernandez, 2015; Luo et al., 2006; Padula and Dagnino, 2007). Tensions between cooperation and competition are driven by the conflict between generating shared benefits and capturing private benefits (Khanna et al., 1998; Czakon, 2010; Ritala and Tidström, 2014).

Among the numerous intra-organizational tensions that arise from coopetition, the tension between sharing and protecting information is critical (Baruch and Lin, 2012; Fernandez et al., 2014; Levy et al., 2003). Although partners must share information and knowledge to achieve the common goal of the collaboration (Dyer and Singh, 1998; Gnyawali and Park, 2011), they remain competitors and therefore must protect the strategic core of their knowledge from their competitors (Baruch and Lin, 2012; Baumard, 2010; Khanna et al., 1998; Lane and Lubatkin, 1998; Ritala et al., 2015). The knowledge shared within a common collaborative project potentially could be used in a different market or for a different project in which the business units compete (Fernandez and Chiambaretto, in press). This dilemma is even greater in coopetitive projects related to innovation because the risk of opportunism and appropriation is particularly high in such projects (Baruch and Lin, 2012; Bouncken and Kraus, 2013; Hurmelinna-Laukkanen and Olander, 2014; Ritala and Hurmelinna-Laukkanen, 2009, 2013).

Because coopetition can be understood as a paradoxical strategy (Gnyawali et al., in press; Raza-Ullah et al., 2014), it appears essential not to avoid these tensions but to build on them to increase the firm's performance). Instead of trying to reduce these tensions, firms must accept and manage these tensions, whose outcomes can be highly beneficial if managed properly (Luo et al., 2006; Chen, 2008; Bengtsson et al., 2010; Park et al., 2014).

The coopetition management literature has identified two theoretical principles. The first principle, separation (Bengtsson and Kock, 2000; Herzog, 2010; Poole and Van de Ven, 1989), advocates a functional, temporal or spatial separation of the management of competition and the management of collaboration. By contrast, the second principle, integration, encourages individuals to transcend paradoxes (Chen, 2008; Farjoun, 2010; Luo et al., 2006; Oliver, 2004). Managers involved in coopetition must thus develop a coopetitive mindset to in-

ternalize the paradoxical nature of coopetition and to efficiently manage the related tensions (Chen, 2008; Gnyawali and Park, 2011; Luo et al., 2006; Raza-Ullah et al., 2014).

As a consequence, several contributions have tried to present the specificities of the management of coopetition strategies (Bengtsson and Kock, 2000; Fernandez and Chiambaretto, in press; Fernandez et al., 2014; Le Roy and Fernandez, 2015; Tidström, 2014). They shed light on the management tools and mechanisms used by firms to combine value creation and value appropriation tensions in an optimal way (Park et al., 2014). Most of these recent contributions show that instead of opposing these two principles, firms must combine the separation and the integration principles to manage optimally coopetitive tensions (Fernandez et al., 2014; Fernandez and Chiambaretto, in press; Herzog, 2010; Le Roy and Fernandez, 2015).

However, so far, only little attention has been paid to the management of internal coopetition and its specific tensions (Seran et al., in press). This lack of interest is quite problematic because a firm's competitive advantage very often relies on its ability to transfer knowledge and foster cooperation across its departments (Maltz and Kohli, 1996, 2000). Business units need to cooperate by exchanging information to reach the overall objectives, but at the same time, each business unit can consider its knowledge as an idiosyncratic resource that will be useful to outperform the competing business units. Considering that combining cooperation and competition is not always easy, Tsai (2002) compares two coordination mechanisms (hierarchical structure and informal lateral relations) and assess their relevancy to foster the transfer of knowledge between units. He shows that hierarchical structure and coordination have a negative effect on knowledge sharing while social interactions tend to foster knowledge sharing among competing business units. Luo (2005) goes a bit further by identifying different organizational infrastructures to manage internal coopetition: the development of a dedicated intranet, the implementation of an encapsulation system, the creation of

an incentive system and the deployment of a coordination system. But his approach remains mainly theoretical and does not detail how these systems can foster the cooperation between the competing business units. More recently, Seran et al. (in press) investigate the management of internal coopetition in the banking industry. Their findings indicate that firms simultaneously use formal and informal coordination to manage coopetitive goals. Moreover, to reduce tensions due to coopetition, they show that banks have developed an original organizational model that allows for the distribution of the antagonist powers and fosters integration. More precisely, their research shows that inter-unit projects balance responsibilities across the firm, while horizontal coordination and social interaction also eliminate blocking and facilitate decision-making.

Literature investigating innovation and knowledge transfer processes, albeit beyond the specific context of coopetition, stresses the influential role of agents or entities acting as intermediaries or brokers to facilitate and even actively structure coordination between partners.

1.3. Broker agents and knowledge transfer within organizations

In the literature on innovation and knowledge transfer, attention has been drawn to a set of actors who play a role as intermediaries, or coordinators, in such processes. They are labelled under various terms, such as "brokers" (Aldrich & Von Glinow, 1992), "knowledge brokers" (Hargadon & Sutton, 1997), "knowledge intermediaries" (Millar & Choi, 2003), "innovation intermediaries" (Howells, 2006), "superstructure organizations" (Lynn et al., 1996), "boundary organizations" (Guston (1999), "boundary spanners" (Tushman, 1977), or "gatekeepers" (Katz & Tushman, 1980). The study of intermediaries in the innovation process has especially developed since the 1990s in literature on technology transfer and diffusion, innovation man-

agement, innovation systems and networks and knowledge-intensive businesses. The following literature review uses, in line with Howells (2006), the term "innovation intermediaries" as all-embracing term, and only zooms in a second step on a more specific type, "knowledge brokers".

Innovation intermediaries are broadly speaking actors who play major roles in the identification, transfer and integration of knowledge between two distinct organizations or sub-parts of an organization. A large part of research stresses in this regard third party organizations (such as consulting firms, associations, public agencies), which link two firms through transferring knowledge or technology between them. The other, smaller part analyzes more particularly structures within organizations which aim at transferring knowledge and technology between divisions, subsidiaries, departments, etc. After an extensive literature review on boundary spanners, gatekeepers and knowledge brokers, Haas (2015) concludes that this is notably the main distinction between these three sets of actors. Whereas boundary spanners and gatekeepers bridge the firm which they are part of with its environment, knowledge brokers facilitate knowledge transfer between groups they do not belong to.

Knowledge brokers generally designate actors who are intermediaries between unrelated groups or individuals geared towards knowledge gathering and dissemination (Haas, 2015). The concept is rather recent and less developed than other types of innovation intermediaries. In a rather broad sense, Brown & Duguid (1998) define knowledge brokers as individuals belonging to overlapping communities who allow knowledge sharing between them. Gould and Fernandez (1989) stress here a more narrow definition, in line with Brown and Duguid's (1998) characterization of "translators", stressing that these individuals (or entities) do not belong to the units they link. This definition is in line with the concept of brokerage as developed in social network analysis (Burt, 2000) where brokers are actors bridging a sys-

tem's disconnected sub-parts. Hargadon and Sutton (2000) propose an encompassing definition, considering knowledge brokers as "intermediaries (…) between otherwise disconnected pools of ideas. They use their in-between vantage points to spot old ideas that can be used in new places, new ways, and new combinations" (p.158).

Knowledge brokers play a major role in knowledge transfer and innovation since they occupy a pivotal position in the process. According to Hargadon (1998), their output consists of innovative solutions to novel problems. They 'exploit [their] position to learn about and link a wide range of existing problems and solutions, creating innovative solutions in the form of new combinations of these existing ideas' (p.210). Research on inter-firm knowledge brokers (like consultancies) stresses here the derived competitive advantage of a large and heterogeneous network. Access to a range of otherwise disconnected industries allows knowledge brokers to transfer ideas in the form of new products or processes to industries that had little or no previous knowledge of them. They create the opportunity to overcome the frequent tradeoff between the quality of ties (in terms of strength and relatedness) and the ease and speed of knowledge transfer (Hargadon, 2003).

Whereas studies of the role of external brokers has gained ground these past decades (e.g. Hargadon, 1998, 2002, 2003; Hargadon & Sutton, 1997, Verona et al., 2005), some studies have explicitly looked into internal brokers' role and functions. Pawlowski and Robey (2004) stress here the primary function of initiating a "process of translation (that) involves framing elements of one community's world view in terms of another community's world view" (p.649). According to Bechky (2003), knowledge brokers allow to make local knowledge understandable and graspable by different units (or communities) in the company. Bechky (2003) and Cillo (2005) identify two factors that make knowledge transfer between units difficult and where knowledge brokers bring about their raison d'être: the complexity of

knowledge used in the innovation process and the level of cognitive distance between the contexts where knowledge is produced.

2. THEORETICAL FRAMEWORK

As stressed above, coopetition between internal units is generally associated with performance gains. Competition between units acts as stimulant for increasing unit-based performance, motivated by outpacing other units in the struggle around market share, resource allocation or reputation (Tsai, 2002; Luo, 2005). When the same units are ought to cooperate simultaneously to competing with each other, a paradoxical situation arises where cooperation might be hard to achieve and tensions develop. A key topic is thus how to manage these tensions. In this section, we develop a theoretical framework building on the notion of knowledge brokers as coordination mechanism to manage internal coopetition. We advance that knowledge brokers as third parties may be a suitable means for weakening such tensions and coordinate internal coopetitive relations.

Generally, two main functions are attributed to knowledge brokers: information scanning and gathering, and communication (Howells, 2006). Seaton and Cordey-Hayes (1993) refer here to the "scan and recognize" phase, followed by the "communication and assimilate" phase. These functions are supported by technologies which intermediaries help to transfer between different organizations, where these technologies find then new uses and applications (Alrich & Glinow, 1992; Hargadon & Sutton, 1997; Hargadon, 1998; Hoppe & Ozdenoren, 2005). According to Howell (2006), studies are lacking about specifying more closely how these technologies are controlled by knowledge brokers, and how the latter and the parties they link more concretely interact. Research remains in regard to this second point on a broad level, referring to the "cross-pollinating" or "bridging" role of knowledge brokers

(Bessant & Rush, 1995; McEvily & Zaheer, 1999), linking members of a given social system to new ideas created or developed elsewhere (Aldrich & Von Glinow, 1992).

Exception is made by a study from Hargadon and Sutton (1997), identifying the proactive role of intermediaries in technology and innovation transfer, going beyond scanning and acquiring knowledge to furthermore storing and manipulating it in order to make it 'usable' by other consumers elsewhere. They distinguish four critical steps of knowledge brokerage as linear and distinct phases: (1) access, (2) acquisition, (3) storage and (4) retrieval. Knowledge brokers have thus not only the mandate to collect and diffuse knowledge but moreover to translate and recode knowledge in a way that makes it diffusible among different types of users. They need to be capable of understanding and translating contrasted coding schemes (Katz & Tushman, 1980) and play active liaison and coordination roles (Paul & Whittam, 2010).

In the following, we summarize the identified roles of broker agents in three different sequences: i.e. (1) identifying and accessing, (2) standardizing and (3) diffusing knowledge. We develop for each role propositions on the influence on coopetition-related tensions and the coordination of knowledge and innovation flows between coopeting units.

2.1. *Identifying and accessing knowledge*

The competition of units around internal resources and market share creates a situation where units have an interest to protect information about new innovative ideas or strategic competencies they possess from spreading within the company (Fernandez and Chiambaretto, in press). In order to prevent imitation from others and maintain their unique competitive advantage, units try to limit interactions and to share information which would allow other units to identify and ultimately pinch innovative ideas (Tsai, 2002). In this context, developing a

sound awareness of the knowledge and competencies withhold by other units is thus strongly limited (Luo, 2005).

Broker agents can be considered as neutral third parties as they do not participate in the competition around resources and market shares. Units might thus be more likely to share information with a neutral broker than with a direct competitor. Also, since this is one of their main functions, broker agents can invest more time and effort to scan the organization's knowledge base and accumulate unit-based knowledge into a company-wide system.

Proposition 1: In the context of coopetition, broker agents contribute to identifying and accessing knowledge withhold by competing units.

2.2. Standardizing knowledge

Inter-unit knowledge transfer creates costs for the sharing and the receiving units. The sharing unit needs to translate its knowledge into a format that can be communicated beyond its own boundaries. This implies translating the knowledge and making it sufficiently explicit to be shared (Nonaka and Takeuchi, 1995). The receiving unit needs to translate and adapt this knowledge in turn to its specific context and needs. In a context of coopetition, these transfer costs are all the more likely to limit a unit's willingness to transfer its knowledge as both units are competing (Loebbecke, Fenema and Powell, 1999).

The knowledge standardizing role of broker agents consists of translating specific or complex knowledge developed in a given context into a format and content that can be adapted in a different context (Katz & Tushman, 1980). By standardizing complex knowledge, broker agents make this knowledge more easily adoptable by other units, decreasing this way costs of assimilation for the receiving unit and, more importantly, transfer costs from the sharing unit.

Proposition 2: In the context of coopetition, the standardization of knowledge by broker agents promotes knowledge sharing among competing units.
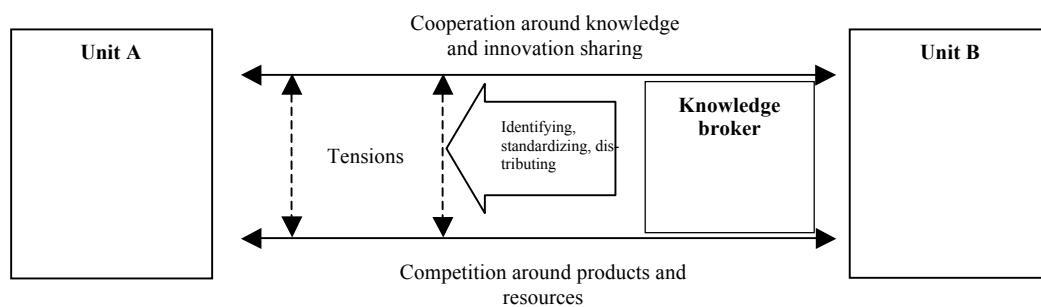
2.3. Diffusing knowledge

In the same vein, the diffusion of knowledge is limited by the increased transfer and adoption costs in coopetitive settings (Mione, 2009). In addition, the assessment of these costs might be all the more restraining as units might evaluate the risks of transferring or receiving knowledge as particularly high (Loebbecke et al, 1999). These risks concern, on the one hand, the quality of the knowledge to receive. In other words, a unit needs to perceive that the knowledge to acquire is actually valuable (Loebbecke et al, 1999). On the other hand, they are determined by the likelihood of reciprocity in the knowledge sharing process. The sharing unit's willingness to diffuse its knowledge is influenced here by the perceived likelihood to receive valuable knowledge in return (Luo, 2008; Muthusamy and White, 2005). Both types of risks, lack of knowledge quality and of sharing reciprocity, are emphasized in the context of coopetition by the fact that the competition of units makes it more difficult for trust relationships to develop (Castaldo and Dagnino, 2009, Czernek and Czakon, 2016).

Broker agents act here as a sort of warrant for knowledge quality and reciprocity. As they filter useful knowledge, risks of adopting invaluable knowledge are diminished. By the same token, as broker agents accumulate knowledge into a commonly shared knowledge base accessible for all units, the likelihood for a sharing unit to consume the knowledge of other units in return appears increased.

Proposition 3: Broker agents promote the diffusion of knowledge among competing units.

In sum, broker agents in the context of inter-unit coopetition act not only as intermediaries but also as mediators who allow internal knowledge flows to materialize. Their active liaison and coordination roles (Paul & Whittam, 2010) bypass somehow the tensions caused by direct competition between units. By acting as a neutral third party on the organization-wide level, dyadic rivalries that limit knowledge transfer on the inter-unit level are made less relevant. Figure (1) sums up the theoretical framework.

Figure 1: Broker agents' role in intra-firm coopetition

3. METHODS

3.1. Research design

In this article, we rely on Hoffmann (2007)'s approach which consists in illustrating our theoretical propositions through an in-depth and explanatory case study (Yin, 2009). This approach will not allow us to test the external validity of our framework but rather to test its usefulness in shedding light on the role of brokers to manage tensions generated by internal coopetition. This approach is less conventional than the grounded theory-based inductive approach used in most of coopetition studies (Fernandez and Chiambaretto, in press; Fernandez et al., 2014; Gnyawali and Park, 2011). Nevertheless, several authors have noted the usefulness of case studies to illustrate and discuss theoretical insights (Bogenrieder and Noteboom,

2004; Chiambaretto, 2015; Chiambaretto and Fernandez, in press; De Rond and Bouchikhi, 2004; Hoffmann, 2007; Vaara and Monin, 2008). As explained by Hoffmann (2007), the case study research strategy has several advantages relative to other methods. First, because we have a pre-existing theoretical framework, the case selection and data collection are more relevant to the research question than those in a pure inductive study. Consequently, compared with inductive approaches, theory development in case studies is better grounded in the previous literature. Finally, unlike large empirical studies that test hypotheses with large samples, this research method allows the in-depth investigation of a phenomenon by considering the context of a firm.

3.2. Industry and case selection

Our choice of a single-case study approach (Eisenhardt, 1989; Yin, 2009) to illustrate and discuss our theoretical framework is also grounded in the suitability of this approach for studying in details management tools implemented to deal with coopetitive tensions (Fernandez et al., 2014; Fernandez and Chiambaretto, in press; Le Roy and Fernandez, 2015; Seran et al., in press). To address our research questions, we looked for a firm relying on internal coopetition to foster the competition between its business units while encouraging the cooperation between them. Furthermore, this firm should have implemented specific tools to manage the tensions generated by the internal coopetition.

To address this research question, we decided to focus our attention on the video game industry for several reasons. First, the video game industry is a very large and dynamic one with more than 80 $bn revenues in 2015 (twice as much as the cinema industry) and a two-digit growth rate. This large market attracts many firms so that the competition between firms is fierce and innovation is essential to survive. Second, coopetition strategies have always

been investigated in the video game industry. Starting with Brandenburger and Nalebuff (1996) seminal contribution, several scholars have used this innovative industry to study the drivers or the outcomes of coopetition strategies (Hamouti et al., 2014; Ngo and Okura, 2008; Ohkita and Okura, 2014; Rusko, 2015). However, to our knowledge, no study has used this empirical setting to study coopetitive tensions and/or internal coopetition.

To investigate the role of brokers to manage tensions generated by internal coopetition, we decided to study Ubisoft, one of the leading video game publishers in the world. The choice of this firm appeared very relevant, because Ubisoft relies intensively on internal coopetition to push its competing studios across the world to innovate and create state-of-the-art video games.

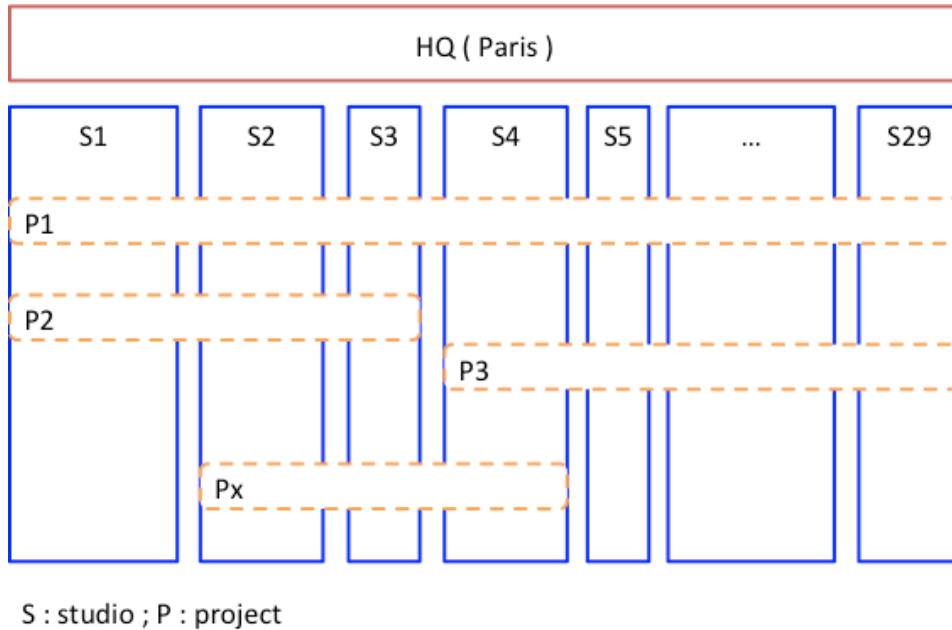### 3.3. Empirical setting: Ubisoft and the video game industry

Ubisoft is a company which publishes video games. It was formed in 1986 in the little Breton village of Carentoir at the initiative of the five Guillemot brothers. In just a few years, the number of small French publishers increased but only a handful of these managed to establish themselves over the long term. This was the case with Ubisoft, which, over the space of twenty-eight years became an international company publicly quoted on the stock exchange (from 1995), and one of the three largest global independent publishers (after Activision-Blizzard and Electronic Arts). For the 2014-15 financial year, the company's turnover was 1.5 billion US dollars with an operating profit of 171 million US dollars.

Ubisoft has expanded its own development studios and adopted a growth strategy through creation (especially in China in 1996 and Quebec in 1997) or takeover of studios abroad, such as Red Storm, Sunflowers and Massive Entertainment. It now has twenty-nine studios in nineteen countries employing over 80% of its 9,200 staff. These teams have made it

possible to achieve many successes, including nineteen blockbusters (games which have sold more than one million units). Based on this proven strategy, the company has enjoyed increasing success since the '90s, in particular thanks to the strong brands which were developed in-house, such as Rayman, Raving Rabbids and Assassin's Creed. These were acquired by taking over external subsidiaries (Tom Clancy, Settlers, Driver, and so on) or by commercialising games under licence, such as XIII and Tintin.

As a high-tech company, Ubisoft has undergone the typical development phases of start-ups in this sector. For instance, just after Rayman was released in 1995, it went through a growth phase marked not only by business expansion (opening of new studios, increase of teams working on projects), but also structuring, task specialisation and introduction of supervisory mechanisms. Hence, Ubisoft was organised logically into a decision-making structure with production being arranged into big projects with a lightweight corporate cross-disciplinary configuration. Teams are divided amongst various studios across the world and engaged to work on game projects which can bring together several hundred people while remaining in competition on other projects. Relying on internal coopetition to launch new project, Ubisoft appears as an interesting set up to study the tensions generated by internal coopetition and the use of specific management tools or structures (such as a broker) to manage these tensions.

Figure 2: Organisation of the Company's Studios and Projects

S : studio ; P : project

3.4. Data collection and analysis

Both primary and secondary data were collected to enable the use of triangulation techniques (Eisenhardt, 1989; Gibbert *et al.*, 2008; Lincoln and Guba, 1985). We collected primary data through 57 semi-structured interviews with vice-presidents, department heads, creative directors, video game producers, project managers and team members from different studios and from Ubisoft's headquarters in Paris. The duration of interviews ranged from 43 to 154 minutes, and the average duration was 77 minutes. All interviews were conducted face to face. Among these interviews, 28 of them were recorded and then transcribed as soon as possible to preserve the quality of the data (Gibbert et al., 2008). For the other 27 interviews, notes were taken down manually during the interview and then transcribed. Following Gioia et al. (2013), we assured the interviewees that the names of individuals and firms would not

be used. Throughout the remainder of this article, the interviewees remain anonymous and are only identified according to their functions within the innovation project.

Secondary data were obtained from various sources, including internal documents (e.g., contracts, presentations, meetings and reports) and external documents (e.g., news articles and industry reports). The combination of primary and secondary sources allowed us to triangulate the collected information by crosschecking facts and dates to avoid potential interpretation biases.

The primary and secondary data were coded according to the recommendations of Miles and Huberman (1994). The selected method is abductive; accordingly, the phases of the empirical investigation were alternated with theoretical reviews. Two stages can be differentiated within the analytical process.

An initial round of coding followed the literature to identify the existence of internal coopetition at Ubisoft, the tensions generated by internal coopetition and the tools used to deal with them. This round was essentially deductive and allowed us to ensure that our chosen case and industry were relevant to the study of tensions related to information.

Then, a more inductive round of coding was undertaken to reveal the role of the broker to manage tensions generated by internal coopetition. This second round was inspired by the method proposed by Corley and Gioia (2004) and Gioia et al. (2013) and entailed coding our material in different steps. We began by identifying first-order categories, which allowed us to label the interviews. Then, we attempted to arrange the first-order categories within second-order themes to link the first-order categories with the existing literature and to identify potential nascent concepts or mismatches. Finally, we attempted to combine the second-order themes into aggregate dimensions to study the relationships between them. To implement the

different steps in the inductive round, we used NVivo 8 software to conduct the content analysis and to design arborescence.

4. FINDINGS

4.1. Organisation of Coopetition between the Group's Projects and Studios

The company is structured around a paradoxical injunction: whilst on one hand, it encourages competition between its studios and various projects, on the other, it advocates cooperation between the company's teams.

4.1.1. Organising competition

> *"We want the guys to compete with each other at an in-house level. In a sense, we pour fuel on the fire."*
> A Studio Vice-Chairman.

The type of entrepreneurial spirit espoused by Yves Guillemot, co-founder and Chairman of Ubisoft, supports organising competition within the group. He sees competition as a source of rivalry which drives the company's employees to excel themselves constantly. This culture results in a decentralised organisational structure via projects and studios which enjoy a high degree of independence in relation to the head office. In particular, the wide leeway given to studios and projects provides an opportunity for fresh ideas and expertise to emerge, bringing forth new games.

> *"Yves's belief is based on the ethos that good ideas emerge organically from teams who have independence."*
> A Producer.

This organisational structure helps several forms of in-house competition arise, which can be seen at different levels.

Firstly, the various game projects are competing within the same market. The seasonal nature of this business line (with a large proportion of the sector's games coming out in the

last quarter of the year in order to be available at Christmas), in combination with a gaming portfolio which targets the same type of player, foster competition between the various game projects. For example, the game, "Assassin's Creed Syndicate" which came out on the 23rd of October, 2015, and the game "Rainbow Six: Siege" which will be released on the 1st of December, 2015, are targeting the same player category (*the hardcore gamer*) who can allot funds from his income for buying only one game rather than the other. Thus, to attract future consumers, each project must stand out from the crowd through innovation.

Secondly, arbitration for apportioning the group's financial resources is carried out at the company's various studios. The studio's past performance and growth prospects in relation to new games are thus championed by each director who will obtain a budget to allocate to his various project teams. Thereafter, budget allowances at the project level are distributed sequentially depending on the progress of the project as monitored by a process of the stage gate type.

Thirdly, for a given project, remuneration of employees is proportional to the game's success on the market. Indeed, remuneration breaks down to a fixed salary and variable pay indexed to sales of the project's game. This variable component is calculated by taking into account the job, hierarchical level and seniority. It represents a considerable portion of each employee's annual remuneration. So, this is an individual incentive encouraging the project's employees to put in their best effort for the success of their project. The variable component is also a lever to attract the company's best employees into taking part in the development of a specific game rather than another one.

4.1.2. *Organising Cooperation*

Since the company was formed in 1986, the video game industry has changed considerably and the financial means required to develop a successful game have greatly increased. Accordingly, Watch Dogs, one of the company's new games, received a budget of 120 million (75 million US dollars for development and 45 million US dollars for promotion and marketing) and involved more than 800 people working full-time on the project. Against this background of increased production costs, the company has been gradually forced to revise its strategy, aiming to keep its expenditures in check by studios and projects cooperating with one another.

In the past, game projects were exclusively produced in a single studio which was responsible for the project. However, from 2010, the company's head office established a strategy to refocus production on the group's major brands (AAA games) which would force different studios to cooperate on the same game. A game such as Assassin's Creed Syndicate was steered by Ubisoft Québec, but required the cooperation of ten other studios across the world such as Annecy, Bucharest, Kiev, Montpellier, Montreal, Shanghai, Singapore, Sofia and Toronto. For the main part, the basis for cooperation involves dividing up the various game development tasks amongst the studios and a studio leader integrating the sundry components.

Additionally, amid the projects coming from a studio, circulation of knowledge between the project teams seems to be a factor in nurturing their creativity (Cohendet and Simon, 2007) and reining in the costs of game development. Hence, any technical breakthroughs made or particular knowledge acquired on a project must be shared with others as part of an approach based on mutual assistance and development. Therefore, some studios have set up a cross-projets department, which structures communities and ensures that knowledge is shared between employees working on separate projects (Cohendet and Simon, 2007). However, the

department has no hierarchical authority over the various employees and does not force participants in projects to share knowledge with each other. Instead, it fosters transfer of knowledge by organising social events such as dinners, meetings and thematic workshops on different production activities.

Thus, it is seen how the simultaneous organisation of competition and cooperation creates a paradoxical injunction within the company. Whilst some plans of action organise competition between employees, teams and studios, other initiatives and strategic decisions may promote cooperation between teams. This "coopetition" situation brings about a number of tensions which we shall detail later.

4.2.   The Emergence of Tensions Associated with Internal Coopetition

Internal Coopetition leads to tensions because project and group objectives are not exactly in accordance with one another. Plans of action encouraging competition cause protective and differentiation behaviours within project teams whilst the exhortation to cooperate fosters sharing and imitation amongst projects.

4.2.1. Tension 1: Protection versus Sharing

The first tension illustrates the difficulty there is in reconciling the pressing need to protect the project's competitive advantage and the instruction from the headquarters to share with other projects the knowledge acquired. Individual variable pay indexed on the project's performance encourages the company's employees to protect the game's innovative features so that their projects are the first to unveil the innovation on the market thus guaranteeing the game's success.

> *"There are several "features" which my producer regards as key to project X and he absolutely does not want to share them with another project because he considers that to be part of his competitive advantage."*

An Executive Producer.

After the game has been released, innovative features become public and it should be easy to share them. However, setting up the sharing process with other projects requires allocating specific human resources (i.e., the people who developed the features to be shared) which the donor project inevitably has to meet from its budget. Indeed, the technical complexity of the features developed within a project entails the obligation to accompany the recipient project in assimilating and implementing the shared features. This is an especially major problem when it comes to technical features such as tools and game engines.

> *"There's absolutely nothing to encourage sharing – rather the reverse. If I do my work well, I'm not going to spend my time communicating with project X so I can potentially acquire a feature for the future. If I take my objectives literally, I'm not going to share; I'm going to "ship" my project out."*
> An Architect of an AAA game brand.

Because of the desire to protect the project's competitive advantage and contain the costs of sharing, tension can arise between the project's profitability objectives and those of the company. Awkward communication between project teams results in many features which are developed within projects being wasted at the end of the undertaking, or projects redeveloping features which had already been developed by other projects.

> *"Today, I see sharing as a huge benefit for the company but not for my project. The desire to share is more of an altruistic gesture relying on people's good will."*
> A Producer.

4.2.2. Tension 2: Differentiation versus Imitation

The second tension demonstrates the reluctance of teams to retrieve features which other teams are willing to make available to them. Certainly, competition between projects encourages teams to distinguish themselves from other game projects on the market, whereas the order to cooperate implies a certain degree of imitation in order to facilitate sharing between projects (use of the same game engines, tools and programming language). This tension is

compounded by the lack of a Chief Technology Officer (CTO) within the company. Traditionally, in other firms, the CTO allows each game team to make their technical decisions depending on the game to be created. The high level of technological freedom their teams enjoy is one of Ubisoft's special features as compared with its rivals who have centralised technical tools which development teams are obliged to use.

> *"There's no CTO, so each project can pick whatever engines and tools they like. This fosters a great diversity of technological formats but the downside is that it's not easy to reuse resources between projects."*
> A Project's Technical Director.

Over time, the decentralisation of technical decisions across projects and the lack of co-ordination at a head office level have led to a great variety of game engine types which have now become incompatible. That is to say, it has become extremely tricky to retrieve or share features produced on another type of engine. On top of this is the team's keenness for hacking up solutions on an in-house basis within the project; and a mistrust of features developed by other projects. These two factors create the temptation to redo the features within one's own project, which considerably limits cooperation opportunities between teams.

> *"People tend to redo things to make them how they want them to be. There're a lot of things that get redone. We're particularly good at redoing things."*
> A Studio Productivity Director.

The two tensions expanded on in this section illustrate the difficulties teams have in reconciling competition and cooperation. In spite of the advantages associated with competition, this is a sub-optimal state of affairs as it is source to conflict between teams and a loss of efficiency at the company level, with projects constantly reinventing features which have already been developed elsewhere.

4.3.　　　The *Technology Group*: An In-house Broker for Creation Tools

The *technology group* (TG) is a unit of 240 people based at the Montreal studio (Canada). It now has an international mandate which aims at fostering the sharing of middleware technologies (creation tools) across all the group's studios to reduce the tensions described earlier.

Created in 1999, the unit was originally an R&D division at the Montreal studio which dealt with exploring new creation tools for various projects. Game projects have extremely short development horizons which do not allow major technical breakthroughs to be made. For example, a brand such as Assassin's Creed brings out a game instalment every year with an approximately two-year development cycle. Therefore, because of the unit's independence from projects, it was to take on R&D for major creation tools over development cycles which were longer than those for the projects. The creation of this unit fuelled hopes of economies of scale at studio management level. Nevertheless, these promises were not fulfilled because the R&D carried out was not applied enough. Very little research resulted in creation tools and those which were produced did not meet the requirements of production teams. In practice, each project continued to develop its own creation tools which corresponded to individual production needs. This finding is partly explained by the rapidly changing needs of projects, with the pace being set by different deadlines for game releases onto the market; and the rate at which new generations of game consoles and engines come out.

> *"Ubisoft's core business is to make games. At one point, the TG thought they were Autodesk. There were even ex-employees of Autodesk on the board of the TG. They began to think that the TG was one of Ubi's core businesses. It meant things had to be put back into perspective. The TG had to be put back into the production field."*
> Former Director of the TG (2008-2011)

This failure led to management at the Montreal studio initiating a complete revision of the TG's mandate. From 2008, the studio fully accepted that R&D must be conducted within projects; and that the TG would only be left with the function of broker, tasked with facilitating sharing between projects.

"The people who originally managed the TG very quickly saw it as an R&D entity, which, in my opinion, was a positioning error because it's not the job of the TG to do R&D – that's the job of production teams. We had to struggle with people who'd signed up to do R&D at the TG and explain to them that they needed to do something else."
Former Director of the TG (2008-2011)

Thus, during restructuring, three principal types of activities were developed within the unit: (1) identifying technological breakthroughs made within projects; (2) retrieving tools, making them generic and improving them; and (3) distributing products to all the group's projects.

4.3.1. Identifying the Technological Breakthroughs Made in Projects

One of the TG's activities is to monitor all the group's projects in order to identify the technological breakthroughs which have been made and which could be of use to other projects. This task is greatly helped by the formal and informal relationships between the TG's employees and the group's various teams. Moreover, in order to promote lasting relationships between the TG's teams and production teams, selected technical projects may be carried out in co-development with the TG. That is to say, the TG assigns experts to a technical development task for a particular game project. In this way, the assigned experts integrate geographically into the game project team and assist them in developing middleware.

"We've implemented a mechanism we call co-development. We ask a project's technology teams to provide their technology roadmap, so that forthcoming features are made involving production teams and the TG's teams. The aim of the TG's teams is to have more means because they'll negotiate for production resources and encourage commitment on the part of the production team to using their technology. And, at the same time, they'll be training the guys on the project…"
Director of the TG.

This initiative makes it possible for the TG to keep close links with the project teams and ensure active monitoring and use of the TG's products thanks to their involvement in production projects. Additionally, experts can stay alert to the various project teams' needs and issues.

This first activity also protects the donor project's competitive advantage and reduces the tension between "protection" and "sharing." The TG is a trusted neutral player which has no part in competing for resources and the market as do other company projects. As such, donor projects are more likely to cooperate with a player like the TG, including by granting access to their technology roadmap. Furthermore, the way in which the unit operates produces a lag between the time the tool is used first by the donor project and then the recipient project. This fosters greater trust when it comes to sharing and interacting with the TG.

> *"A drawback of the TG's is that it takes them quite a while to share out the tool we developed. But the advantage of this is that it gives us the time to ship out our game before the tool is retrieved by all the other production teams... that's fairer. To me, it seems only right that the project team, which put a lot of effort into developing a tool, should be the first to reap benefits from the market as a result of their hard work."*
> A Project's Technical Director.

For these reasons, the neutrality and time frame of the unit's activities make it easier to identify technological breakthroughs made within projects. The TG protects the donor project's competitive advantage, thus reducing the protective behaviour associated with the coopetition situation.

> *"There's been a change of ethos within the company regarding sharing tools with the TG. Five years ago, it was accepted, if not encouraged, for there to be secrecy between project teams. We've worked with the TG to change all that. There's still some deviant (anti-sharing) behaviour, but that's most unusual now."*
> An Executive Producer.

4.3.2. Retrieving, Improving and Making Tools Generic (standardisation)

Once the technological breakthroughs which are worth sharing have been identified, they are retrieved by the TG's teams. They will work on making them 'shareable' with other projects.

> *"Innovation within the TG involves the stuff they retrieve and then introduce into other projects... what we want is for the TG to relieve teams from working on the middleware section, so they can concentrate on doing R&D and innovation in other areas*

which will be retrieved by the TG afterwards, and given back by other production teams. It's a sort of never-ending cycle."
A Studio Vice-Chairman.

Every project will develop tools with special functions on a particular game engine to meet the production constraints unique to the project. Hence, beyond the issues of compatibility of the technology, interfaces are either undocumented or poorly documented. This makes using the tool extremely tricky for teams which did not develop it. So, the role of the TG is to rework the middleware to make it compatible, useable and understandable for everyone. This stage is also useful to improve the tool's performance for it to meet the requirements of the largest number of projects possible. After the tools have been reworked, they are then shared with all the company's teams.

Throughout this second stage, the TG supports sharing costs. In the initial situation (without the TG), although at the company level there were significant benefits to sharing, it was not in the interest of any project to bear single-handedly the cost of sharing its own tools. Moreover, it was this realisation that led the company to put in place incentives in the form of budget credits which proved to be unproductive across the company.

> *"At the time, we'd put in place a system where any project which had made technological advances could claw back part of the budget invested. But all that did was turn teams into hagglers and made them waste a lot of time filling in forms... It's much simpler and less tortuous with the TG... The cost of the unit is supported by head office and indirectly re-invoiced to the project."*
> A Studio Vice-Chairman.

Because of the unit's extensive advantages which involve all the company's projects, the TG's operating cost is borne by a budget at head office level, representing between 20 and 25 million dollars per annum. Thereafter, head office re-invoices these expenses equitably (divided up according to each project's budget) amongst all the company's projects. In this way, one of the chief impediments to sharing – namely, the donor project supporting its costs – can

be eliminated. So, the TG reduces the tensions associated with coopetition by encouraging project teams to share their tools with the TG.

4.3.3. Distributing Products to all the Group's Projects

The TG enjoys visibility within the company thanks to a website listing the 30 tools made available by the unit. In order to keep project teams up-to-date with improvements made to the tools, or the arrival of new tools in the catalogue, a monthly newsletter is sent to the management of each of the group's various projects.

> *"The TG represents around 30 products which comprise teams of 3 to 8 people. It's very organic. From one year to the next, there are projects which are created and others which come to an end."*
> Director of the TG.

A project team which is interested in using the product, gets in touch with the TG to make sure that the product is completely compatible with the project's technical constraints. Following on from this, there is guidance on how to implement the tool in the project, thanks to the TG's mobile teams who help integrate the tool into the game engine and train the team on how to use it. This stage varies in length depending on the project's special features and the technical difficulties in implementation.

> *"We can't ask a team which hasn't created a technology to implement it into a project. As a result, we've always asked the TG's teams to do a "reality check" on game projects. This is a good way to make sure you never lose track of what's going on in productions because it's only when you go and share the same workspace as the team designing Assassin's Creed that you realise the gizmo you thought was great isn't quite as good as you thought it was."*
> Former Director of TG (2008-2011).

This stage makes it possible to have constant feedback on the products in the catalogue and improve them on a continuous basis, in order to ensure that they meet the perpetually changing requirements of production teams.

Additionally, the distribution stage helps the TG foster a kind of trust in the tools provided in its catalogue. Indeed, one of the challenges of a project lies in picking the right tools in order to be able to complete the game as soon as possible. Starting a project with poor creation tools can cause a huge loss of time and effort, or even bring about the project's early demise. So, thanks to the TG's technical expertise and guidance in implementing project tools, it acts as a trusted player certifying reliable functioning tools for all the company's projects. Moreover, a tool which has already proved its worth in a completed, marketed project tends to lend credibility to its ruggedness and promotes trust on the part of other game project teams.

> *"...what's good about the TG when you start a game project is that you've got access straightaway to reliable, functioning tools."*
> A Project's Technical Director.

> *"In practice, what's reassuring for project teams is to know that the tool has already been used in projects which have shipped out a game. It's comforting to know that other projects are using the same tool."*
> A Former Director of the TG.

By increasing project teams' trust in the TG's products, the unit helps reduce the tensions inherent in coopetition by encouraging the reuse of tools retrieved by the TG.

Table 1: Summary of the Unit's Activities and Active Principles

?	**The TG's Activities**	?	**The "active principles" which reduce tensions relating to competition**
?	Identifying technological breakthroughs made within projects	?	Protecting the donor project's competitive advantage
?	Retrieving, improving and making tools generic	?	Supporting sharing costs
?	Distributing products to all the group's projects	?	Promoting the recipient project team's faith in the products to be retrieved

5. DISCUSSION AND CONCLUSIVE REMARKS

The aim of our paper is to analyze the role of knowledge brokers in the context of internal coopetition. In particular, we investigate how knowledge brokers might reduce tensions stemming from simultaneous needs for cooperation and competition between units and neutralize related barriers to innovation and knowledge sharing. To do so, we conceived a theoretical framework, based on coopetition and knowledge brokerage literatures which we studied and discussed then throughout a qualitative case study of the video game publisher Ubisoft.

The Ubisoft case offers indeed an interesting case for addressing internal coopetition and associated tensions. Units are encouraged to share innovative features developed on distinctive projects all the while they are at the same time competing around internal resources and market shares. As each unit's budget is determined by the market performance of the games it developed, the tendency is towards protecting unique features and innovative ideas, and hence sources of competitive advantage, rather than sharing these resources with other units. Moreover, cooperation between units is all the more inhibited as the costs for sharing knowledge are hold by the sharing unit, and as solutions are often complex and project-specific making their adoption by other units uncertain and costly. This coopetitive situation leads to tensions where benefits of cooperation (in terms of gaining access to valuable solutions from other units that could be incorporated in a unit's own product) are counterbalanced by risks and costs stemming from perpetual competition around market share and internal resources (in terms of budget and human resource allocations based on the relative standing of each unit and its performance). It eventually drove to a certain inertia and inefficient resource exploitation, where units tended to avoid cooperative practices and knowledge sharing, but to develop their own solutions independently from each other, even though similar or identical ones had already been conceived by other units in the past. In order to limit the dissipation of

resources and increase efficiency through solution sharing, the Technology Group (TG) was mandated as coordinator for internal knowledge and innovation sharing.

5.1. The role of knowledge brokers to manage internal coopetitive tensions

The TG is an independent entity acting as intermediary between units which aims at transferring knowledge, innovation and technology between them. Consistent with Hargadon and Sutton's (1997, 2000) definition of knowledge brokers, the TG fulfills three distinctive brokerage roles: the identification, the translation and standardization and the diffusion of knowledge between units. Drawing on our propositions, we will discuss in detail each role and the way it contributes to promoting knowledge sharing by neutralizing the coopetition-related tensions.

In line with proposition 1, the TG eases the identification and accessing of knowledge withhold by the different units. The neutral position of the TG as an independent third party, not involved in the race for market shares or resource allocations, helps overcoming unit's reluctances to share their knowledge and innovative solutions (Fernandez and Chiambaretto, in press). Social ties developed by the TG with each units thanks to integrating work teams on a periodical basis, also promoted trust and access to novel solutions and technology developments (Luo, 2005). Moreover, delays generated by the brokering process itself promote a donor unit's willingness to share innovative solutions, as the necessary time for the TG to collect and transfer the solution to another unit becomes sufficiently long to exploit its benefits already locally beforehand.

The second identified role of the TG as knowledge broker is the standardization of complex technology and knowledge which promotes knowledge sharing among competing units (proposition 2). By translating locally developed knowledge into generic solutions,

knowledge can be more easily exploited in a different context (Nonaka & Takeushi, 1995, Katz & Tushman, 1980). The standardization promotes knowledge sharing especially because it reduces the complexity of knowledge as well as the cognitive distance between the units where the knowledge is produced (Bechky, 2003; Pawlowski & Robey, 2004; Cillo, 2005). The latter can be considered to be all the more difficult to overcome as the competition context makes interactions and communication between units more difficult.

Finally, consistent with proposition 3, we find support for the TG as knowledge broker to promote the diffusion of knowledge among competing units. The TG as knowledge broker promotes knowledge sharing because it weakens an important barrier raised by inter-unit competition: the unwillingness to carry transfer costs in a context of uncertain benefits and the need for protecting unique resources (Loebbecke et al., 1999). By including a generic solution in its catalogue, the TG somehow acts as a warrant for usability, so that the risk for a receiver unit of spending time and resources to adopt and integrate a solution that finally is not compatible is importantly weakened (Hargadon, 1998). By the same token, transfer costs are no longer carried by the donor unit but by the TG, thus removing one previously important obstacle to knowledge sharing. As stressed in our theory development, the competitive context further amplifies the need for trust in the quality of solutions developed by other units as well as in the potential reciprocity of knowledge sharing (Hargadon, 2003). The TGs intermittence in selecting valuable solutions acts here as a guarantee for their quality. The continuous growth and renewal of the TG's catalogue further increases the probability for a donor unit to potentially make use of another unit's solution in the future.

5.2. Contributions to coopetition and knowledge broker literatures

Our research contributes to two fields of research: the coopetition literature and the broker agent literature.

Regarding the coopetition literature, our study contributes primarily to the literature on coopetitive tensions (Fernandez et al., 2014; Tidström, 2014) and internal coopetition (Luo, 2005; Tsai, 2002). Indeed, our analysis and our case study allowed us to shed light on the specific tensions associated to internal coopetition. While most contributions on coopetitive tensions focused their attention on inter-organizational relationships, our approach gave us the opportunity to identify tensions that are particular to internal coopetition (Chiambaretto and Dumez, 2016). We go beyond previous works identifying mainly the areas in which business units are in competition and in cooperation (Luo, 2005; Tsai, 2002) and put forward specific tensions that were not mentioned earlier in the literature such as the differentiation/imitation tension. Furthermore, we did not simply identify specific internal coopetitive tensions, but we also analyzed principles and management tools implemented by firms to manage optimally these tensions. In the coopetition management literature, most scholars have focused their attention on inter-organizational relationships (Chiambaretto and Fernandez, in press; Fernandez et al., 2014; Herzog, 2010; Le Roy and Fernandez, 2015). We thus investigated this issue at the intra-organizational level. Our results go beyond the first articles on internal coopetition, which suggested contradictory approaches. Our analysis tends to contradict Tsai (2002)'s conclusion stating that decentralization and social interactions have particular positive effects on promoting cooperation between competing units when these units compete around market positions. By contrast, our study is in line with Luo (2005)'s approach in which he suggests the use of a coordination mechanism to manage internal coopetitive tensions.

We further contribute to the literature on knowledge brokers, largely dominated by research on the inter-firm level, by investigating the roles and effects of internal knowledge

brokers on the intra-firm level. In line with Pawlowski & Robey (2004) and Bechky (2003), we found one of the main values of knowledge brokers stemming from the standardization of local complex knowledge, making its diffusion across units possible, less costly and risky. Further, the description of the broker's roles, processes and principles underlying its actions sheds new light on the structures and tools firms can use to manage internal coopetition. The analysis of the role of these broker agents brings us to find evidence for the need of linking the two traditionally opposed principles of coopetition management put forth in extant literature: separation and integration (Begtsson & Kock, 2000; Herzog, 2010; Chen, 2008; Luo et al., 2006). In our case, it is rather the simultaneous use of both principles that allows for overcoming coopetitive tensions and promote knowledge sharing. On the one hand, the independence of the TG has been shown to have fostered its presence as a neutral entity which units did not associate with direct competitors and with whom they were less reluctant to share innovative ideas (separation). On the other hand, direct and continuous social relationships between the brokering entity and the units were a strong promoter for accessing new solutions and technology, and trust building (integration). This result is in line with recent publications stating that firms need to combine the separation and integration principles to manage coopetitive tensions (Fernandez et al., 2014; Fernandez and Chiambaretto, in press; Le Roy and Fernandez, 2015). Our research extends the conclusions of these previous contributions that focused their attention on inter-organizational coopetitive tensions, while our study highlights this need for a combination of separation and integration principles at the intra-organizational level.

5.3. Limitations and research directions

Inevitably, this study has a number of limitations. First, our analysis focused on knowledge tensions and the role of knowledge brokers in internal coopetition (Tsai, 2002). As explained in the case and in the existing literature, other tensions can appear in internal coopetition and if brokers are a relevant solution for knowledge tensions, there might not be useful for all types of internal coopetitive tensions. A more systematic assessment of the management of internal coopetitive tensions could be a promising direction for future research.

Second, if our analysis showed how knowledge brokers contribute to reducing tensions, we did not investigate knowledge brokers from a performance point of view. A more detailed analysis of the performance implications of the presence of brokers to manage internal coopetition could be realized using procedures and databases close to the one used by Tsai (2002).

Finally, from an empirical and methodological perspective, our decision to use a single case study to illustrate our theoretical insights may limit the generalizability of our findings. We are confident, however, that our findings are relevant not only to the videogame and creative industries but also to other industries, in which business units are often put in competition on some parts of the value chain (food industry, cosmetics, etc.). In this respect, future research could implement a multiple case study design, as it has been used in previous coopetition research. However, such research would require a sample of firms with similar attributes to ensure a rigorous comparison.

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