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Managing Open-Innovation between Competitors: A Project-Level Approach

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Abstract

Past research on Business-to-Business (B2B) Open innovation is mainly on firm decisions to open their boundaries to allow knowledge to flow in and out at the firm level. An emerging group of studies seeks to switch the unit of analysis from the firm level to the project level, stressing a deeper understanding of how knowledge is purposely managed. This paper contributes to this latter group by investigating how knowledge is purposely managed in one of the most “high-risk” B2B open-innovation projects: Open Innovation between competitors. Our analysis reveals that (1) knowledge flow is a dynamic process that can gradually involve additional stakeholders; (2) knowledge flow is not purposely managed only outside and inside external boundaries to create value through a project; it must also continue to be managed outside and inside internal boundaries to capture value from the project; and (3) there are two types of knowledge flow that enable middle managers to ensure that their business units capture value from Open Innovation projects (i.e., a shopping list that brings the new innovation from the project to the business unit and a wish list that influences the direction of the innovation toward a firm’s business unit needs).

Keywords

Open innovation; Knowledge flows; Coopetition; Managing Open Innovation; Middle Manager.

1. Introduction

In the quest to generate relevant product and/or service innovation, firms recognize the value of allowing knowledge, insights, and ideas to flow into and out of firm boundaries (Bogers et al., 2018; Chesbrough, 2003). That is why firms increasingly embrace open-innovation initiatives (Bogers et al., 2017). Although most of the research on Open-Innovation recognizes several types of external stakeholders, including competitors (Kohtamäki & Rajala, 2016; Obal & Lancioni, 2013), most studies have relatively neglected this specific stakeholder, which has been considered to be the least preferred source due to the risk of losing competitive advantage by interacting with competitors (Brunswick & Chesbrough, 2018). However, Nalebuff and Brandenburger (1996), Teece (1992) and the exponentially growing literature on “coopetition” (Bengtsson & Kock, 2014; Fernandez et al., 2018; Ritala et al., 2016) have presented calls for a rethinking of competitors as relevant stakeholders for innovation. Competitors have critical complementary assets that can improve the focal firm’s innovation processes and thereby achieve success in the marketplace (Gnyawali & Park, 2011; Teece, 1992). In other words, inside the Business-to-Business (B2B) OI literature, there is a sub-category of Open Innovation related to the relationship between competitors, which Le Roy and Chesbrough, 2018, called “Open-Coopetition.” “Open-Coopetition” hereafter refers to a distributed innovation process based on purposively managed knowledge flows between competitors.

Despite recognizing all the promises of open-coopetition, several other authors have emphasized concerns about the reality of knowledge flows between competitors. The concerns take different forms from the fear of collusion with regard to the policy or consumer perspective to the fear of the competitors’ opportunistic behavior from the firm perspective (Gnyawali & Charleton, 2017; Hoffmann et al., 2018). In its most extreme case, some even consider open-coopetition to be a fallacy because the fear hinders any flow of knowledge and thus jeopardizes innovation success (Park & Russo, 1996). Accordingly, studies exploring the associations between open-coopetition and innovation performance measures have presented mixed results, suggesting positive and curvilinearity as well as negative outcomes (Bouncken et al., 2017; Mitchell et al. 2002; Park & Russo, 1996; Quintana-García & Benavides-Velasco, 2004; Ritala & Hurmelinna-Laukkanen, 2009). These heterogeneous empirical

findings, combined with the assumption that the negative outcomes of open-coopetition are related to malfunctioning knowledge flows between competitors, indicate a need to analyze the management of the flow of knowledge in open-coopetition. This question is particularly salient in the open-innovation literature because the whole research stream of Open-Innovation takes a stand that runs opposite to the question of a malfunctioning knowledge flow by arguing that knowledge can be purposely managed (Chesbrough & Bogers, 2014).

Given the limited theory and empirical evidence on the question of “how knowledge flows and openness are purposely managed in B2B relationship between competitors for open-innovation,” we have conducted an in-depth case study of an innovative project carried out in collaboration between competitors. The innovation project is “89C3”, a 3-year project conducted in collaboration between two competing bank brand networks (i.e., Caisse d’Epargne and Banque Populaire) with the aim of developing digital innovations that the local banks of both competing networks can use to improve their market success. By shifting the unit of analysis from the firm level, which has been used in the large majority of studies on open innovation, to the project level where the tensions arising from the knowledge flowing in and out of firm boundaries occur, we are able to obtain a deeper understanding of how firms purposively manage knowledge flows in and out to achieve innovation. This need to shift the unit of analysis is also supported by an emerging group arguing that more research on Open-innovation is needed at the project level as innovation activities in firms are typically conducted via R&D projects (Cassiman, et al. 2010; Sydow et al., 2004) and organizations increasingly adopt project-based forms of innovation (Hobday, 2000; Du et al., 2014). By shifting the unit of analysis, our contribution to the open innovation literature is twofold. First, we contribute a process and dynamic perspective on the management of knowledge flows. Emerging project challenges can require a broadening of the B2B relationship to stakeholders beyond the initial one. Second, we contribute the idea of a two-level knowledge flow. In addition to the external knowledge flows that focus on value creation, Open Innovation relies on purposely managed internal knowledge that flows toward value capture. Our case reveals that middle managers hold a key role in obtaining Open Innovation results (i.e., through a shop and wish list, they can affect how much value a business unit captures from open Innovation).

2. Theoretical approach to open innovation and knowledge dynamics

2.1. Open innovation and knowledge flows at the firm level

Open innovation is rooted in the idea that, in contradiction to unspecified and unmanageable spillovers, knowledge can be purposely managed across firm boundaries (Chesbrough & Bogers, 2014). At the firm level, specific mechanisms that allow knowledge to flow in and out can be designed to reduce innovation costs and risks (Belderbos et al., 2004; Hagedoorn, 1993; Leten et al., 2013), allowing a better adaption to dynamic environments (Dittrich & Duysters, 2007) and generating higher revenues from innovation (Faems et al., 2005). Two types of specific knowledge flows are designed to improve firms' ability to profit from their innovation process: outside-in and inside-out – also, respectively, referred to as inbound and outbound open innovation¹. The first, “outside-in,” seeks and transfers external knowledge into firm innovation activities. This research has mainly been pursued by researchers interested in “external knowledge search” (Laursen & Salter, 2014; Lopez-Vega et al., 2016; Markovic & Bagherzadeh, 2018; West & Bogers, 2014). The second, the “inside-out mechanism,” creates channels to move unutilized internal knowledge from inside the firm out to other organizations. This aspect has been relatively less studied (Chesbrough & Bogers, 2014; Chesbrough & Chen, 2015) but is gaining interest with the emerging research on selective revealing (Henkel, 2006; Henkel, Schöberl, & Alexy, 2014).

Both knowledge mechanisms, inflows and outflows, entail managerial challenges in terms of the selection of the external stakeholders with which to engage in those flows of knowledge. External stakeholders include suppliers (Li & Vanhaverbeke, 2009), customers (Gassmann, Sandmeier, & Wecht, 2006), competitors (Lim, Chesbrough, & Ruan, 2010), universities (Cassiman et al., 2010), and startups (Lim et al., 2010). Some of the past research has claimed that the breadth of open-innovation (the number and types of stakeholders) positively affects firm performance (Ind, Iglesias, & Markovic, 2017). Others have claimed that selection is based more on trial and error (Laursen & Salter, 2006) or internal factors such as missing complementary assets (Ceccagnoli et al., 2010; Teirlinck et al., 2010). In addition, some

¹ A third type exists called “coupled open-innovation.” It describes a form of cocreation that includes both inbound and outbound open or another form of innovation. However, as it does not contribute to our theoretical reflection, we decided to not develop it.

have demonstrated that although outbound and inbound knowledge flows with multi-stakeholders may be beneficial (Jeppesen & Lakhani, 2010), there may be concern with regard to the effectiveness of these flows (Markovic & Bagherzadeh, 2018; West & Bogers, 2014). Such concerns are based on several factors that contribute to the hidden cost of knowledge coordination (Stuermer et al., 2009), employee resistance to open-innovation (Lifshitz-Assaf, 2017), and the absence of internal knowledge-sharing mechanisms and formal knowledge protection mechanisms (Estrada et al., 2016; Markovic & Bagherzadeh, 2018). In response, a sub-stream of the open-innovation research has raised awareness that the success of open-innovation depends on managerial mechanisms to be enable and facilitate the flow of knowledge in and out (Jeppesen & Lakhani, 2010; West & Bogers, 2014). Such mechanisms require different approaches such as the provision of effective incentives, whether monetary (extrinsic motivation) (Terwiesch & Xu, 2008) or nonmonetary (intrinsic motivation) (West & Gallagher, 2006), or the provision of a sharing platform that serves as a knowledge broker and limits the fear of sharing (Piller & Walcher, 2006).

Thus, the literature is shifting from the question of “where to seek or reveal knowledge to profit from innovation?” to one that places greater emphasis on that of “how to seek or reveal knowledge to profit from innovation?” In other words, the research question has developed into one of “how can firms engage in purposive managed knowledge flows and openness in and out to achieve innovation?”

2.2. Open innovation, and knowledge dynamic at the project level

Recently, scholars have begun to address the lack of understanding of open innovation at the project level (Bahemia et al., 2017; Bahemia & Squire, 2010; Du et al., 2014; Salge et al., 2013). Shifting the unit of analysis have allowed several contributions to the open-innovation literature. For instance, it has raised questions about the idea that openness is fixed in time to the start of a project (Bahemia et al., 2018), and it has revealed new aspects of partner selection with regard to project characteristics and project requirements in terms of market and scientific knowledge (Du et al., 2014).

Although these studies have contributed to a better theoretical and empirical understanding of the specific project factors and strategies that influence the decision to shift from a closed to an open model

at the project level, there remains a lack of understanding about *how knowledge is purposely managed at the project level*. If the open-innovation literature has remained relatively silent on this topic, this question in relation to the management of knowledge in an innovation project as it is done in a B2B context is central to the coopetition literature. It should be noted that the most extreme type of Open-innovation is Open innovation between competitors (Laursen & Salter, 2014). Open innovation between competitors presents a real research opportunity because a deeper consideration of the purposely managed knowledge flows of an extreme and paradoxical situation allows for the discovery of new pure phenomena.

2.3. Extending open innovation at the project level with insight from the coopetition literature

The coopetition literature argues that a competitor is a promising partner for innovation on the condition that the relationship is managed at the project level (Le Roy & Czakon, 2016). Thus, a whole sub-stream of coopetition focuses on the project level to identify the tensions of simultaneously cooperation and competition as well as obtaining an understanding of the managerial principles necessary to cope with such tensions (Ansari et al., 2017; Fernandez et al., 2014; Raza-Ullah et al., 2014). One tension that is considered to be critical in a cooperative project that is conducted for the purpose of innovation is the sharing-protecting knowledge tension (Chiambaretto et al., 2019; Fernandez & Chiambaretto, 2016; Ritala et al., 2015). Indeed, any knowledge shared for the purpose of project success can hurt the focal firm's competitive advantage. By shifting from the firm level to the project level and focusing on this sharing-protecting tension, the past research on coopetition has demonstrated the discretionary power of the operational relative to knowledge flows. Indeed, in the satellite industry, some engineers from two competing companies refused to share their knowledge although agreement had been reached at the firm level, which almost jeopardized the satellite project (Fernandez et al., 2014).

In response, the coopetition literature has identified a critical managerial principle²: the principle of separation. The separation principle takes its origin in the idea that individuals are not able to internalize

² Other principles have been identified as the principle of intergration, comanagement or coarbitration; however, this question is beyond the scope of this paper as it is not directly related to the flow of knowledge (Chen, 2008; Gnyawali & Park, 2011; Luo et al., 2006; Raza-Ullah et al., 2014; Le Roy and Fernandez, 2015; Fernandez et al.,

paradox. Thus, the solution is to split individuals inside an organization between those who will collaborate with a competitor and those who will compete with that competitor (Bengtsson & Kock, 2000; Le Roy & Fernandez, 2015). The management of cooperation and the management of competition should be split to manage cooperative tensions. By splitting, individuals oversee only one dimension (cooperation or competition). Thus, they should not experience strain or conflict due to the need to deal with the intermeshing of both. This approach should reduce and hinder the destructive effect of engaging in both approaches simultaneously.

Combining the cooperation literature with the open innovation literature, the current study responds to Le Roy and Chesbrough's (2018) call for more research on open-cooperation and allows us to generate two new insights into the open-innovation literature: (1) open-innovation projects conducted in collaboration with competitors should be performed in a separated project and (2) the competitor's knowledge should flow into the project. However, these insights make the assumption that an OI project between competitors will adopt a closed project model in relation to other external partners as well as internally. To illustrate this closeness, we quote Fernandez et al. (2014) to highlight that a project team composed of employees from two competing teams were put in separate buildings, and the separation was materialized by barbed wire, which made it impossible to cross to the headquarters building.

The cooperation literature fills one Open Innovation gap by providing a first proposition on how knowledge can be purposely managed in an open-innovation project conducted in a B2B context between competitors. However, such management could paradoxically be considered to be a “closed model” if we adopt the project as a unit of analysis as no knowledge flows in or out from it, which allows us to presume that other management types might be possible, which thus provides a research opportunity.

2017; Pellegrin-Boucher et al. 2018). Moreover, all of these additional principles rely on the implementation of the principle of separation.

3. Setting of the case study and method

We conducted an inductive case study of “89C3”, an innovation project implemented by two competitors to generate relevant product and/or service innovation to explore our research question: “how firms do purposively manage knowledge flows and openness in and out to achieve innovation at the project level?”

Inductive methods excel in the explication of processes and related “how” research questions (Langley, 1999; Eisenhardt et al., 2016). The past researchers have demonstrated the relevance of such methods to both uncover traces and explain the processual unfolding of closed and open models of innovation during a project (Bahemia et al., 2018) and to understand the complexity and paradox of collaborating with competitors.

3.1. Context

Banque Populaire (BE) and Caisse d’Epargne (CE) are two French bank brands that have been in direct competition since the financial liberalization in 1984³. Indeed, the 14 local banks of BP and the 15 local banks of CE “fight for the same pie”: 67% of their products are in direct competition⁴. One similar characteristic of BP and CE is that they are both highly decentralized banks. For instance, most of the IT budget is under the direct control of local banks of BP or CE.

After the financial crises and the high losses of their common subsidiary, Natixis, BP and CE were constrained by the French government to merge in 2009. They became one group, BPCE, the second largest banking group in France with 30 million customers, 8,000 local banks and 110,000 employees (i.e., at a worldwide level, BCPE is a systemic bank). BPCE defines the strategy of the entire group, ensures the financial solidarity of regional banks, manages liquidity and risk, and guides the system’s human resources policies.

³ Before the financial liberalization in 1984, BP’s and CE’s local banks had the same geographical areas but targeted different customers. BP targeted small medium enterprises, and CE only targeted individuals. However, since 1984, they reciprocally began targeting each other’s clients by offering substitutable products.

⁴ From BPCE’s annual report (2018)

Paradoxically, this merger increased the competition between the local banks of BP and CE. Indeed, the two BP and CE networks remained separate, with their own commercial policies and IT budget, like the Peugeot and Citroën brands at PSA-Peugeot-Citroën. Remaining separate but with a common strategy set forth by BPCE allowed for a direct comparison of the performance of the local bank with a competitor in the same geographical area. This comparison led to the shutdown and/or merger of six local banks.

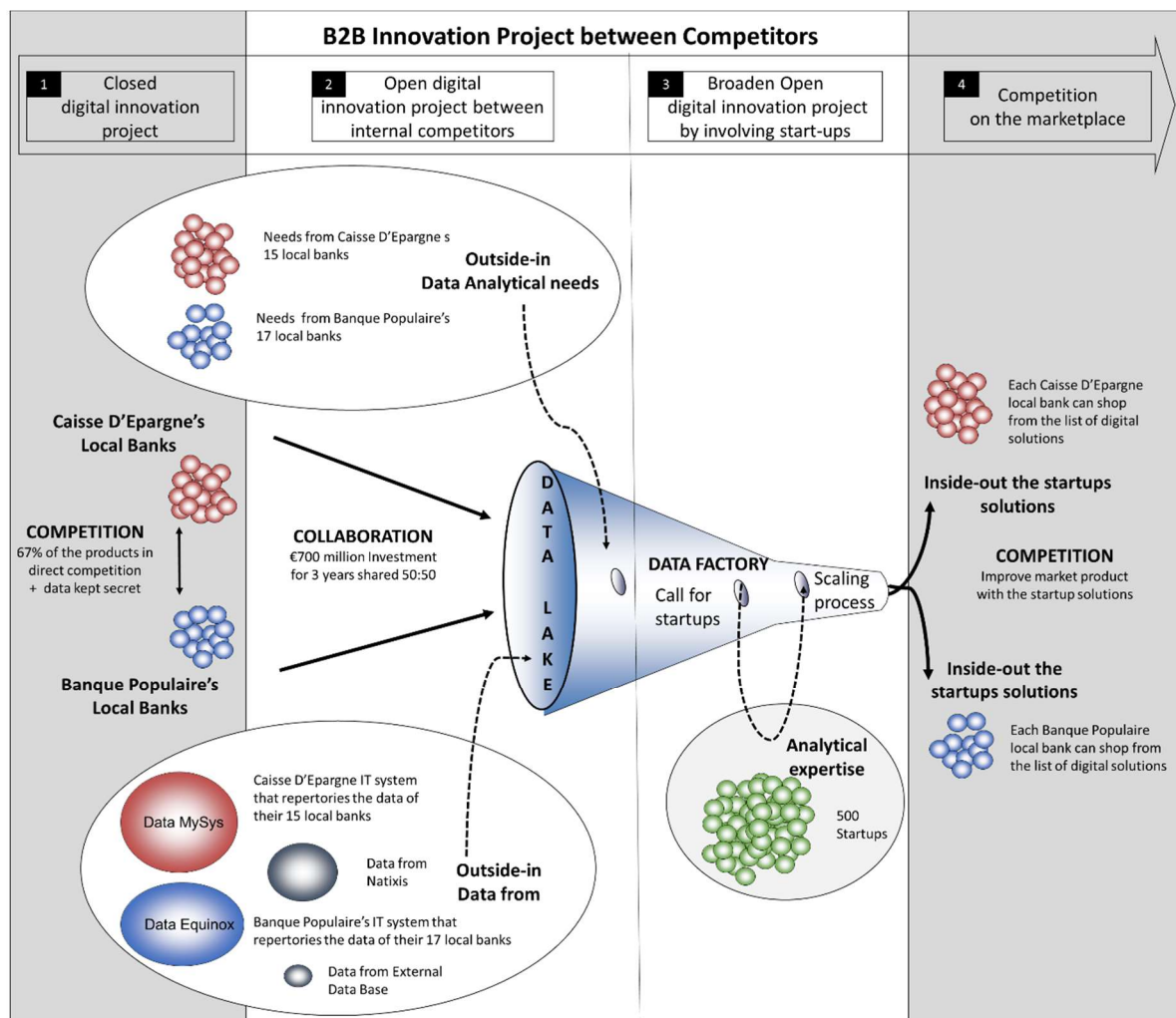


Figure 1. BP&CE B2B innovation project

Despite this competition on the market, which can also be understood in terms of internal competition, the local banks, through their competing networks BP and CE, decided to collaborate on a joint innovation project called 89C3 (cf. fig 1). This joint innovation project is our unit of analysis. 89C3 is a 3-year project with the aim of using the data of the competitive banking networks of BP and CE to generate new digital products and/or services for the competing local banks. Concretely, the data of the

local banks combined with the right technology can increase the local banks success in the marketplace by customizing the offers, speeding up the processes and reducing the cost (e.g., customized credit scoring, improved detection of fraud, acceleration of the evaluation of the risk of attrition, product back-office automation, document-management digitization, automation of credit decisions, 24/7 availability via interactive voice response) and more broadly preparing the ground for the BP and CE local banks to make the transition to using artificial intelligence.

3.2. Data collection and analysis

Both primary and secondary data were collected to enable the use of triangulation techniques (Eisenhardt, 1989). The main source of data collection involved 32 semi-structured retrospective and face-to-face interviews (60–90 minutes) using an open-ended interview protocol over a period of 10 years (September 2009 - February 2019). The interviews occurred on site at the BPCE offices in France - Paris, Aix en Provence, Montpellier and Toulouse. We relied on purposeful sampling and the snowballing technique (Kumar, Stern, & Anderson, 1993; Lincoln & Guba, 1985) to identify the appropriate informants. The interviews were undertaken with managers in the strategy and central procurement units responsible for developing the 89C3 project and with managers at the operational level in a selected BPCE geographical area that was responsible for developing, implementing and implanting the solutions (chief digital officer, middle manager involved in 89C3 referred to as the “champion,” IT manager). The snowball method was also used to develop additional contacts with internal engineers and external partners engaged in the project. The informants were asked questions about their role and responsibilities in the BPCE, focusing on the activities involved in creating, developing, and implementing the new project. Interviews addressed the skills, experience, organizational structures and identified the sequence of events, activities, and decisions to improve performance. We encouraged the informants to illustrate their statements with examples from various situations and specific events. We updated our interview protocol regularly so that it was firmly anchored in our emergent findings and included more specific details about the ongoing process. Our data collection was brought to a close when we experienced conceptual saturation.

The secondary data to triangulate the primary data were obtained using video recordings of five of the 89C3 meet-ups and eight workshops referred to as “keynotes” where project leaders and managers presented their projects. The duration of the video is variable (15 minutes to 1 h 30 min). The transcriptions of all videos are retranscribed in 154 pages for analysis.

In line with the principle of inductive research, the data collection and analysis were performed concurrently (Strauss & Corbin, 1998) to obtain a coherent narrative. The narrative aimed to trace and explain the knowledge flowing in and out of the 89C3 project. In the explanation, we particularly focused on how the knowledge dynamics across the project boundaries allowed for the translation of raw ideas and data into marketable service propositions and, in the process, the enhancement of the competitiveness in the marketplace (i.e., focusing on the purpose behind the knowledge flow).

4. Findings

4.1. Phase 1: Closed model of digitalization before 89C3

In 2016, before the creation of the joint digital project 89C3, most local banks from the two brand name banks, Caisse d’Epargne (CE) and Banque Populaire (BE), shared the belief that they needed to engage into a “digital transformation.” They saw the opportunities offered by the digital transformation in terms of process productivity and an improved customer experience, and, they also feared being considered only as a “safe deposit box’ compared with other online banks.

To help them in their digital transformation, each local bank could rely on two IT actors (cf fig 2). The first actor was the internal IT system of the bank brand networks that collected and entered raw data into the repertories of each local bank. These systems were MySys for CE and Equinox for BP. The second actor was a joint IT team financed 50:50 by BP and CP that aimed to support both existing IT systems by sharing the costs of IT maintenance and benefiting from synergies as the issues faced by one system might also be shared by the other.

“We are going to develop interfaces common to all our brands in order to give our clientele a best-in-class customer experience.” (Chief Digital Officer 89C3)

“As part of its digital transformation, 83% of its solutions can be subscribed to electronically, with almost 80% of customers using online banking.” (F. Pérol, CEO group)

However, in this early phase of digital transformation, no data flowed across the competing bank networks of CE and BP. The secrecy of the data has been rooted in the DNA of all banks for two reasons: (1) data constitute a competitive advantage, (2) a bank must protect its customer data according to privacy and fraud regulations. For instance, local banks do not want to share data about the risk profiles of their customers because of customer privacy as well as to prevent opportunistic behavior such as other banks trying to steal their best clients.

“Everyone does not necessarily agree with the idea that these data will be used by another local bank.” (IT manager 89C3)

Thus, the idea of allowing data to flow across the networks of a competing brand bank such as those between BP and CE, even though they belonged to the same group, BPCE, seemed even more counterintuitive.

“You cannot mix red [color of Caisse d’Epargne local banks] and blue [color of Banque Populaire brand], it is totally counterintuitive.” (IT manager 89C3)

“When they announced the 89C3 project creating a data lake with BP and CE, I thought it was a joke for April Fools' Day.” (Anonymous Interviewee on a video recording)

One concrete example is that some early systems theorists believed that “data are the new oil” and developed local digital innovations for their local bank. However, one manager acknowledged that the behavior was intended to keep the analyses for internal use only and not even share it with the other local bank within their own network.

4.2. Phase 2: Open digital innovation project between internal competitors

In 2017, the president of the group BPCE had a vision of both BP and CE gaining in the marketplace by becoming two data-centric banks able to develop, design and industrialize digital products and services. In accordance, the consulting company McKinsey argued that digital innovation could increase bank

income by 20% to 30% by automating back-office processes and using sales-side analytics (McKinsey, 2014, p51)⁵. The success of digital innovations, such as digital marketing (e.g., predicting consumer satisfaction); customized offers (e.g., automation of decisions, personalized prices); financial monitoring (e.g., reporting live projections); fraud and risk reduction (e.g., detection of fraud and terrorism); relies on algorithms that can perform accurate predictions. Such accuracy directly depends on the volume of the data. However, neither BP nor CE alone enough data. Thus, the quest for digital innovation required one step further in the collaboration between BP and CE. It required the data to flow between the two competing networks. One advantage of doing this was that they had already shared an IT support team that knew that both BP and CE had interesting and, more importantly, similar, raw data about distribution, production, partners, and IoT that could be combined with relative ease.

Thus, BP and CE decided to together invest 600 million to this project called 89C3, which represented more than half of their IT system budgets and 3% of their 2017 results⁶. 89C3 hired an experimental Chief Digital Officer, Yves Tyrole, and created (1) a data lake that combined the raw data of the local bank and (2) a digital factory that would develop, design and industrialize digital innovation that could be used by the local banks of both networks (cf fig 2).

4.2.1. Data lake

The first mission of “89C3” was to create a data lake. A data lake is a storage repository that holds a vast amount of raw data in its native format until it is needed. Concretely, the process of creating the data lake consisted of collecting standardized data from all the local banks of CE and BP. Instead of convincing each local bank to share the data, 89C3 collaborated with the internal IT system of each whole brand network. Moreover, by working directly with the two IT systems, each system could transform the local raw data to create an abstraction layer, through this process ensuring that they would anonymize the raw data with respect to competitive concerns and privacy issues. However, this step has many technical barriers. The original application or business system that used the data might have had

⁵ McKinsey. (2014). “Accélérer la mutation numérique des entreprises”.

⁶ 2017 reported net income stable at €3bn for BPCE

a certain logic built into it. That is why the 89C3 team worked in tandem with the IT team of each local bank. The central goal of digital transformation is to make one's data findable and useful. Most of the previous-generation systems were built for checking-account transactions or mortgage transactions. They were not built for experience. Changing that requires combining the data related to both transactions and all the interactions with customers. With an independent data lake and platform metadata base, BPCE could make its application development much more agile.

"It's not that the data are "poor quality", but they have to be consistent across all institutions. When you have information entered by advisers without a tight control system, your data are not always optimal. Not because they perform poorly but because sometimes they do not see the value of the information and do not capture it correctly. If we take, for example, the subject of mortgage lending, which can run for 25 years, as regulations change, certain unnecessary data become available. " (Chief Digital Officer 89C3)

4.2.2. Data factory

Creating a data lake is not enough in the quest to develop, design, and industrialize digital products and services. The 89C3 digital factory first had to create new processes to identify and prioritize the main digital innovation. Then, they had to recruit key talent, (more than 50 IT experts work for the taskforce) to harness the data in new products and services. Third, a digital invention must then be industrialized – i.e., transforming the invention into an easy-to-use innovation for all the local banks through 40 champions (middle managers) and 1000 distributed IT managers. Finally, the digital factory must promote the innovation to the local banks and ensure that the local banks absorb the digital innovations.

4.3. Phase 3: Broaden Open digital innovation project by involving start-ups

Having the data lake and data factory alone was not enough. 89C3 created an Open Data 89C3 platform (cf fig 2) that would grant external startups access to their data and allow them to develop a new algorithm based on these data.

"What has changed between the 20th and the 21st centuries is that in the 20th century, big companies such as the SNCF imagined they could do everything themselves, and in the 21st

century, we need to be very open. Our need is so specific that it is impossible to do everything alone, you cannot do it because you are not performing well and it is very expensive. It is necessary to surround yourself with an ecosystem that works with other companies. We gain in agility and responsiveness. On the Internet of Things, for example, OpenDataSoft helps us open our data to the outside world. We have opened 80 data sets, with 3100 connected start-ups. All this was developed in just 6 months. " (Chief Digital Officer 89C3)

There are three drivers of this decision: speed, missing skills, right timing. First, with regard to ‘speed’, the technology was constantly changing, and 89C3 felt they had not managed to keep up with the new technological digital innovation as it was exponentially growing. Second, with regard to the ‘missing skills’, 89C3 had difficulty attracting enough IT talent to respond to all their needs. Banks are no longer the preferred career destination for much talent. Among tech-skilled candidates, large tech companies and startups are typically viewed as offering engineers more interesting and innovative problems to solve, as well as more collaborative cultures, than the command-and-control financial world. Third with regard to ‘right timing’, the European regulation⁷ asked all banks to open up in January 2018 to specific third parties access to certain types of data and even to engage certain types of actions such as initiating payments in their stead and/or offering a consolidated view of their customers’ accounts (called “account aggregation”).

The Open Data 89C3 platform attracted 500 startups. The startups were attracted because Open Data 89C3 was offering, through a very light contract,⁸ the opportunity to test on real data any digital innovation ideas and the opportunity to develop a business model if the idea was found to be a success. The only condition was that the local banks could retain ownership of their data. Moreover, if the startups

⁷ European Directive on payments (EU Directive 2015/2366 of 25 November 2015 or “DSP2”) or Payment Services Directive (hereafter “PSD2”)

⁸ The light contract consisted of simplified formalities, an electronic signature of agreement, appropriate payment schedules and reduced payment deadlines.

came up with a potentially interesting algorithm or technology, the digital factory would help them develop a large-scale version and then offer the innovation for purchase by local banks (cf. fig 3).

At the end of 2017, the Open Data 89C3 platform was considered a success because more than 100 algorithms from external startups with zero development costs for 89C3 were developed thanks to frequent initiatives such as hackathons, meetups, and startup camps.

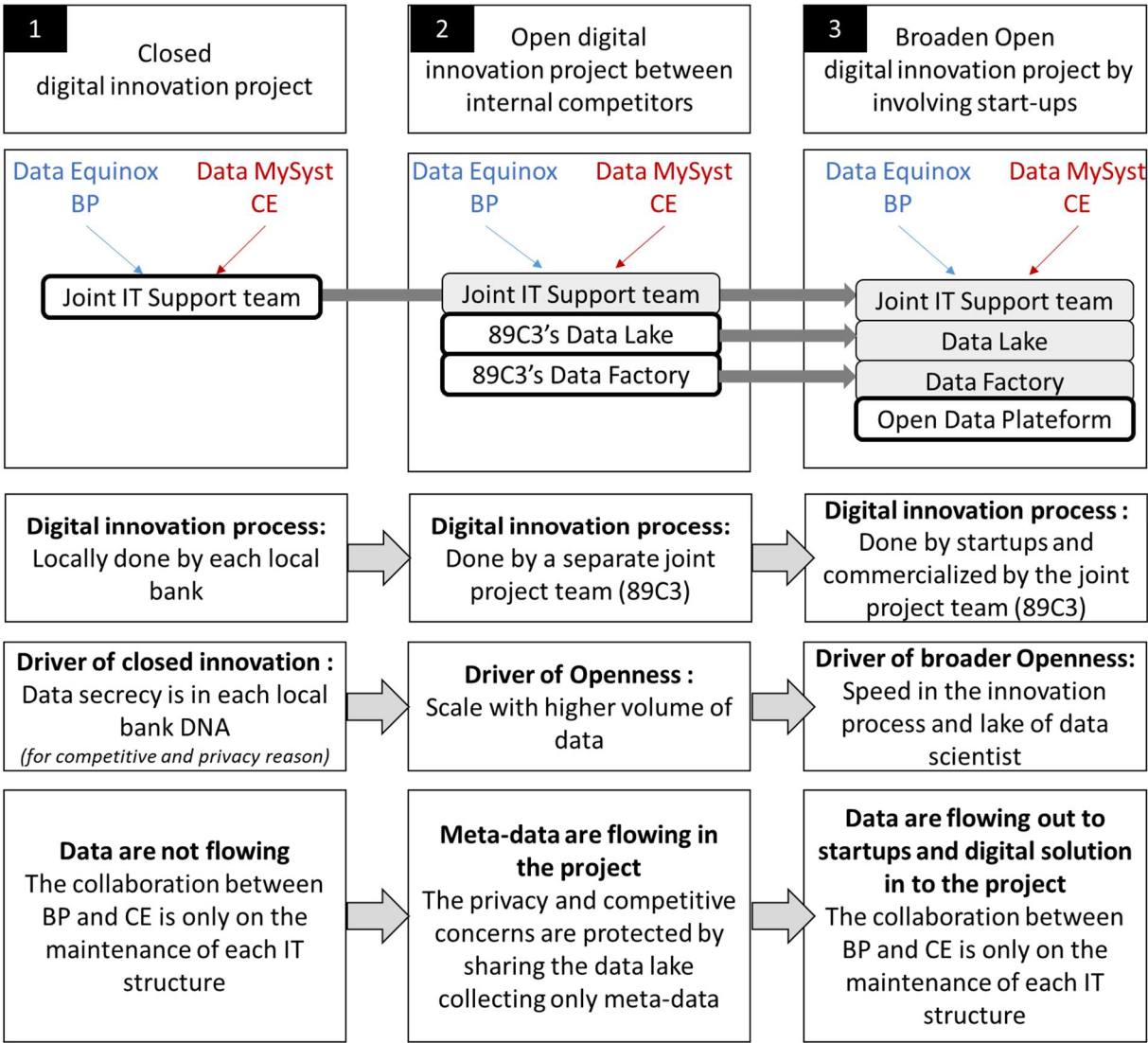


Figure 2. From close to open B2B innovation project

4.4. Internal management: wish list and shopping list

One challenging aspect of digital innovations for BP and CE's local banks was that they have to consider a huge *shopping list* and *wish list* (cf. fig 3). A BPCE decentralized bank could be more responsive to local markets; however, they had a more difficult time optimizing performance or sharing innovations across local banks. As local banks are very geographically located and specific, it requires the local banks themselves to devote both people and resources to identify the most relevant innovation and introduce one they that would serve all local banks.

To solve this challenge, 89C3 promoted one middle manager per local bank (15 for CE and 14 for BP) as a Digital Champion. Champions' profiles are diverse: they include directors and managers from the areas of HR, IT and innovation.

“We have mixed the know-how, the skills within our digital direction. For example, we brought in digital experts from my network. People like F.B., who was my DGA when I was the director of my former company and who is now my assistant. We also took people from the bank's universe, like V.S, the data boss, who was at Natixis. More than 90% of the employees we have integrated into this organization came from CE and BP [here means champions]” (Chief Digital Officer 89C3)

The new digital innovations are pushed to the Digital Champions. The digital champion will select the digital products and services on which he wants to focus (i.e., exploitation of the innovation). In selecting the startup solutions from the common shopping list, the champions are simultaneously in cooperation and competition (i.e., cooptation) (cf fig 3). They compete and thus want to offer their local bank customer the most cutting edge digital products and services. However, they are also in cooperation because the goal is to remain competitive on the market, and the quality of the digital products and services is directly related to the number of users. Indeed, the number of local banks using the digital products and services helps the startups offering the algorithm to continuously improve them. If only one local bank uses a product or service, the startup might even decide to end the digital solution.

Then, under the condition of a preapproval by the local bank and in the direction of digital innovation, the Digital Champions are responsible for communicating about these projects to all the employees of their local bank and to ensure their appropriation. Sometimes, the process implies the acculturation to digital, and the Digital Champions receive specific training to spread this digital mindset. The Digital Champions' working time is affected by the digital transformation budget of each local bank.

The middle managers referred to as champions are also empowered with a second role⁹. They must come up with a "Wish List" (cf. fig 3) that represents a ranked list of the digital needs for their local bank and then negotiate with the other champions about the final top needs to be pursued by the digital factory. The stakes are high because when a need is selected, it appears on the 89C3 platform as a "challenge to solve." When the challenge is officially identified on the website, it influences that startups toward developing solutions that prioritize obtaining solutions for those needs (although they are free to offer any innovation they wish).

"I have two hats in my CE local bank. As Director of Organization and Process, I am in charge of coordinating all the projects that are deployed within my local bank, whether it is development tools, reorganization, process redesign [...] I also assume the role of digital champion, which covers three main missions: to stimulate the dynamics of digital transformation; to use digital technology among employees; and to innovate [by finding new potential digital opportunity]. Caisse d'Epargne is a historical company, sometimes pyramidal, and we must try to bring technology and innovation into our process, tools and ways of working" (champion for one of CE local bank)

Thus, the champions affect the direction of the exploration performed by the startups. For this role, the champions compete because they want their local bank to capture the most value from the startups' digital offers.

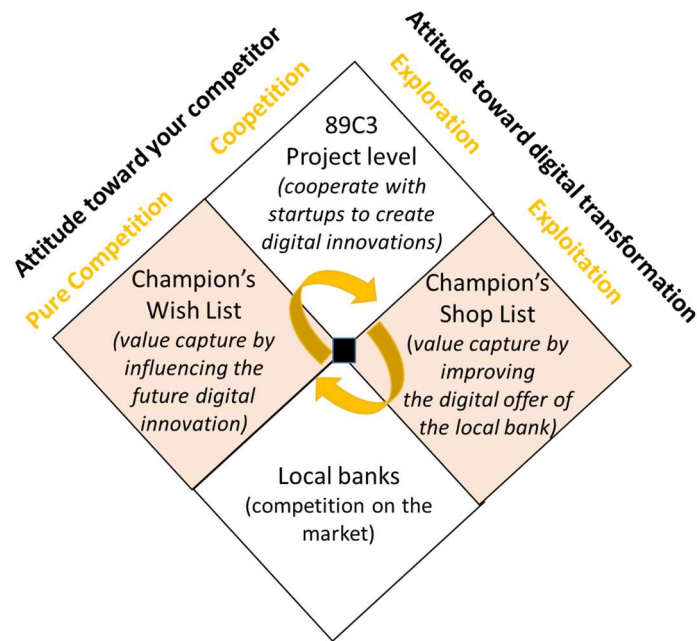


Figure 3. Diamond of knowledge flows

5. Discussion and conclusions

5.1. Openness in B2B OI: a dynamic process driven by project knowledge dependency and the ability to influence the future outcome

By shifting to the project level, our empirical findings reveal that firms purposely managed different flows of knowledge with different external actors in the same project. This result confirms the initial idea of OI, which, in contradiction to spillover theories, that the flows of knowledge that spill out and in of an organization’s boundaries can be purposely managed to profited from (Chesbrough, 2003; Chesbrough & Bogers, 2014). However, it also goes further by demonstrating that purposely managed knowledge flow across firm boundaries is “a dynamic process **(1)**, driven by external knowledge dependency **(2)** and by the ability to influence the direction of the innovation generated by the project **(3)**.”

5.1.1. Purposely managed knowledge flow: a dynamic process

The emergent literature on Open Innovation is introducing the concept of “timing” in Open Innovation by questioning the assumption that openness is fixed in time to the start of a project (Bahemia et al., 2018). We enrich the concept of timing and partner selection by empirically showing a two-stage process

of openness: first including only competitors for data preparation (cf. phase 2 of our empirical case) and then in a second stage broadening it to startups and allowing the startups engage in exploitation of the data (cf. phase 3 of our empirical case). Our first contribution is to highlight that the critical managerial question in OI B2B is not only when to shift from close to open with a specific stakeholder (Bahemia et al., 2018) but also when to broaden a B2B relationship to another stakeholder. The answer to the “when” is not based on trial and error (Laursen & Salter, 2006), but it is purposely driven by the project’s state.

5.1.2. Purposely managed knowledge flow: driven by project challenges

The past scholars have highlighted that, at the project level, knowledge flows across the firm boundaries are driven by project attributes and missing knowledge (Du et al., 2014; Felin & Zenger, 2014; Lopez-Vega et al., 2016). More precisely, Du et al. (2014) propose two types of partners at the project level: science-based partners and market-based partners. In accordance with Du et al. 2014, our empirical findings with regard to the drivers of opening-up to external stakeholders with a process and project lens confirm that partner selections for B2B Open Innovation is based on project characteristics and the specific science and market project needs. However, we go further by highlighting the need to add competitors as a relevant partner for additional project characteristics related to “scale.” Some of the past research in cooperation such as Estrada et al. (2016) or Gnyawali & Park (2011) have highlighted the competitor as a relevant partner for product innovation performance. Indeed, competitors are complementary relative to assets, information and status. What is new is the linking of competitors as relevant partners due to the increased volume of raw data. This insight allows us to predict that Open innovation between competitors will increasingly occur for a digital project that requires a large volume of data. We also go further than Du et al. (2014) by highlighting the need to consider a pool of startups as relevant science-based partners (500 in our empirical case study).

5.1.3. Purposely managed knowledge flow: influencing innovation outcomes

Whereas competitors are relevant partners with which focal firms can engage in terms of a purely managed knowledge flow for product innovation performance (Fernandez et al., 2014; Estrada et al., 2016; Le Roy & Czakon, 2016; Laursen & Salter, 2014), the success of this counterintuitive OI B2B

relationship is limited by acknowledged boundary conditions. Benefits from this type of open-innovation require considerable managerial attention and effort to protect knowledge from imitation and to ensure that the involved firms obtain the returns from their collaborative innovation activities and knowledge flow. Several mechanisms have already been identified such as applying for patents, establishing market lead time, keeping key technologies secret from competitors, and gaining access to complementary assets (Arora et al., 2016). Our empirical findings highlight that the value capture from allowing knowledge flows in and out in projects pursued between competitors refers not only to the value capture from the “shopping list” generated by the project (i.e., the outcomes in regard to innovative products or services delivered from the project and that the business unit can use), but it also relies on “the wish list” (i.e., the capacity to influence the direction of the innovation outcomes from the projects toward the needs of the business unit). This ability to influence the direction of the innovation has been an understudied driver in the allowing of knowledge flows across firm boundaries.

5.2. Management of the knowledge flow in B2B OI between competitors: a more fine-grained separation principle and the middle manager role

By exploring OI in one of the most “high-risk” B2B openness – competitor collaborations, also called cooptation (Laursen & Salter, 2014), we build a clearer view of the management of knowledge flows in B2B Open Innovation. Indeed, when the stakeholder with which a focal firm engages in open innovation is a competitor, the knowledge flow must be thought through and managed (Fernandez & Chiambaretto, 2016b; Jarvenpaa & Majchrzak, 2016). Any unintended knowledge flow can be damaging for the competitive advantage of the firm (Park & Russo, 1996; Kraus et al., 2018; Ritala et al., 2018), and even intended knowledge flow may be hindered by operational resistance to the sharing of strategic knowledge (Fernandez et al., 2014). Building on the principle of separation in the cooptation literature and on our empirical findings, we provide several contributions to the management of OI B2B.

First, in accordance with our theoretical framework, we provide empirical evidence for the separation principle in managed OI B2B projects. The explorative Corporate Open innovation project (i.e., 89C3 in figure 3) is separated from the business units with regard to their exploitation focus (i.e., a local bank in our case study). *Second*, we go further than confirming the principle of separation by highlighting that

the separation principle not only separates cooperation and competition but also exploration and exploitation. This approach generates a new dichotomy in the management of B2B OI between cooperative behavior in exploration and competitive attitude in exploitation (cf. figure 4, the closed and open boxes in grey).

Third, by shifting the unit of analysis from the firm level to the project level, our empirical findings reveal the key role of middle managers in managing OI in B2B relationships. Capturing value relies on overcoming the principle of separation by placing middle managers in charge of bridging the closed operational level and the open-innovation project (cf. fig 4). Middle managers (i.e., in our case study, the champion) in charge of ensuring internal flows of knowledge must integrate the cooperative attitude of exploration and the competitive attitude of exploitation. Thus, we reconcile the principle of separation, which argues for allowing the project to be separated from the organization, and the innovation literature, which argues that innovation performance requires knowledge sharing among internal stakeholders (i.e., employees) (Bogers et al., 2017; Foss et al., 2011; Zobel, 2017; Estrada et al., 2016; Markovic and Bagherzadeh, 2018).

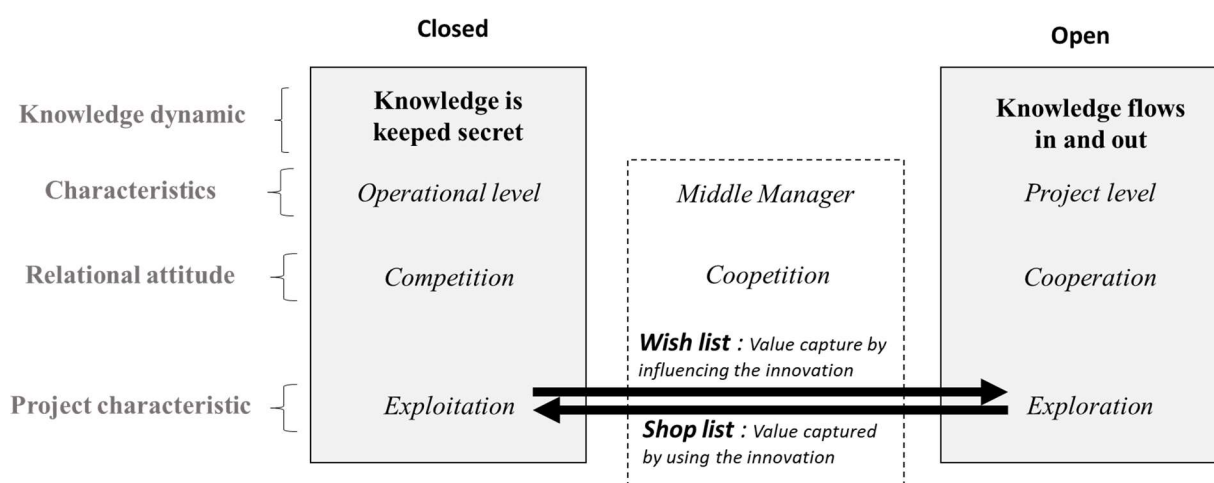


Figure 4. Beyond the principle of separation: the key role of Middle Managers

5.3. Managerial Contributions

At the project level, firms allow multiple flows of knowledge in and out with different partners: with the Competitors to scale the project; with the Startups to accelerate or complement missing capabilities. Such flows of knowledge must be managed by one **accelerator at the corporate level** (here is 89C3),

a vital project team that takes into consideration all activities to understand and direct priorities and brings together expertise from key business areas, startups and competitors.

In addition, managerial cross-level processes in Open innovation B2B are a key to success and ensure that operational units can capture the value created by the project. Indeed, Middle Managers must integrate tensions and ensure flows of assets, information and money to simultaneously remain competitive by exploiting the current digital solution and develop a future competitive advantage by negotiating the exploration of digital transformation toward local needs. Middle Managers facilitate internal knowledge flows by translating and integrating new digital methods and processes into existing ways of working and lead specialized technical skills in an organization's digital innovations.

6. Limitations and future research opportunities

While this research provides a fine-grained view of the knowledge flow dynamics in B2B open innovation at the project level, it also has some limitations that offer opportunities for future research.

First, our research provides a longitudinal case study at the project level. Therefore, the findings should be interpreted with caution and must be tested and nuanced through large scale empirical studies. For instance, in our case study, the two competing bank brands that compete on the market belong at a strategic level to the same holding, which plays the arbiter role in the project. Thus, we were unable to disentangle the impact of the presence or absence of a shared holding in enabling the B2B OI between the competitors. Future researchers could compare two different cases, one with and one without a shared holding, to identify similarities and differences. This research opportunity is in line with an emerging group of studies that seeks to apply the B2B relationship based on the type of competitors: pure external competitors or internal competitors (Chiambaretto et al., 2019; Seran et al., 2016; Tsai, 2002).

Second, while our case study focused on the knowledge flowing in an OI B2B relationship at the project level, we did not explicitly consider the effect of the knowledge flows. Indeed, a knowledge flow at the project level can be critical for project success but hurtful with regard to the long term competitive advantage of the firm (Jarvenpaa & Majchrzak, 2016). Thus, the cross-level effects of knowledge flowing across firm boundaries must be investigated in future research. For the record, this is a concrete

research opportunity for which the calls for cross-level analysis research makes sense (Bogers et al., 2017).

Third, the B2B Open Innovation literature explains the drivers and challenges behind the decision to shift from closed to open (e.g., allowing for the acquisition of more agility by accelerating the process of innovation with a reduction of "Time to Market") or from open to closed (Appleyard & Chesbrough, 2017). However, our case study revealed that the managerial challenge does not stop there. Our results help explain the benefits of broadening B2B Open Innovation to startups during an ongoing OI B2B relationship. There are several types of stakeholders with whom to engage in opening up (customers, universities, suppliers) (Du et al., 2014). Each type is a potential source of knowledge that can emerge once the B2B Open Innovation relationship has begun. We argue that the past results, such as those of Markovic and Bagherzadeh (2018) which show how breadth in terms of types of external stakeholders improves innovation performance, can be expanded by using process case studies to uncover the timing and order of the breadth process.

Finally, Teece (2007) argues that embracing open innovation is an important part of firms' dynamic capabilities—thus bringing open innovation explicitly into the domain of theories of firm strategy. Accordingly, this research aimed to generate new insights into the Open innovation literature by including the strategic management principle of "separation" from the coopetition literature and then enriching it through an empirical Open Innovation case study. However, the principle of separation is only one managerial solution to cope with a broader strategic management dilemma: how can firms simultaneously collaborate to explore new avenues and compete to exploit resources and activities? Other principles, such as the principle of integration or co-management (Le Roy & Fernandez, 2015), may prove potential new insights to enrich our understanding of Open innovation management.

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