

# **Profiting from collaborative innovation practices: Identifying organizational success factors along the process**

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**Abstract:** Research on innovation management has pointed out that the capitalization of collaborative innovation practices is influenced by firms' internal context. This paper aims to answer the following question: which organizational factors help to overcome the challenges that firms face in the different phases of the collaborative innovation process? For this purpose, previous literature is revised and three case studies are analyzed by means of applying a framework that structures the collaborative innovation process in three areas of relevance (i.e., development, integration and commercialization of the innovation). The results of the analysis inform the proposal of a theoretical framework that identifies the organizational context factors that determine the success or failure of collaborative innovation practices in each of the stages of the process.

**Keywords:** Collaborative innovation; case studies; innovation process; internal context; organizational context

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## 1. INTRODUCTION

Previous research has shown that the outcomes of collaborative innovation practices are positive, such as growth and higher innovation performance, but also that they lead to negative effects, such as the risk of the partner's opportunist behavior, technology leakages or appropriability problems (e.g., Kang and Kang, 2009). By warning that the openness of firms to external agents when pursuing innovation projects cannot be applied as a universal solution; researchers invoke the logics of the contingency approach (i.e., see Huizingh, 2011), stating that the effectiveness of these practices is context dependent. In this sense, firms' internal context has been recognized as crucial for explaining the effects of collaborative innovation activities on performance, and several authors have addressed the need to adopt a contingency approach in order to provide a deeper understanding of how organizational contextual factors might play as determining success factors when profiting from these practices (e.g., Huizingh, 2011; West and Bogers, 2014).

It is worth noting that organizational context differs from other contingency variables, in the sense that, unlike the environment or internal demographic factors, organizational context may be configured and transformed by practitioners, in turn becoming an invaluable factor to affect the performance of innovation practices (Chenhall, 2003). In other words, in order to better profit from collaborative innovation practices, managers need to design an organizational context such that the focal firm overcomes the challenges arising in each of the stages of the process.

While there is an ever growing body of studies dealing with the role of internal context in the capitalization of collaborative innovation practices, current research still fails to provide a refined theory on the organizational conditions under which the performance of these practices may be leveraged (Burcharth et al., 2013). Also, studies on collaborative innovation usually position their approach either from a factor perspective –focusing on explaining how the context plays a crucial role in determining innovation outcomes– or from a process perspective, but rarely adopt a systematic perspective that includes both approaches (Pichlak, 2016).

In order to address this gap, the current work intends to bring together the factor and the process approach and provide insight to answer the following question: which organizational factors

help to overcome the challenges that firms face in the different phases of the collaborative innovation process?

In addressing this question and performing the analysis leading to its response, the objective pursued is the concretion of a theoretical framework that adopts a comprehensive view of the whole collaborative innovation process and unveils the critical organizational factors influencing the capitalization of collaborative innovation practices in each of the stages of the process. The conceptual construct follows closely West and Bogers' proposal (2014) and covers the following stages of the collaborative innovation process: development, integration and commercialization of the innovation.

The research objective is met drawing both on previous literature and on qualitative methodology. Accordingly, previous literature is reviewed in order to put forward theoretical propositions regarding the main challenges that firms face in the course of the evolution of their collaborative innovation processes and that are susceptible to be overcome thanks to the appropriate configuration of the organizational context. Subsequently, a multiple case study analysis is conducted; in this sense, the qualitative case study approach is adopted in order to identify the specific organizational context factors influencing the resolution of said challenges. This particular research methodology is appropriate to advance the understanding of complex phenomena and to conduct research of inductive nature (Eisenhardt, 1989; Yin, 2003). The exploratory nature of the analysis performed allows for integrating the evidence derived from the case studies with the theoretical implications extracted from the revision of previous research with purposes of proposing a systematic theoretical framework on the role of organizational context on leveraging the outcomes of the stages of the collaborative innovation process.

This paper contributes to the literature and managerial practice, first, by making a theoretical contribution to innovation management research by considering organizational contextual factors as potential moderators on the success or failure of collaborative innovation practices (Huizingh, 2011; West and Bogers, 2014). In fact, the contextual factors susceptible of being defined and modified

are of particular interest for managers, who need to be aware of which intra-organizational aspects facilitate the success of collaborative innovation activities. Secondly, it adopts comprehensive view of the whole collaborative innovation process when examining the capitalization of said practices (West and Bogers, 2014), thus providing an integrated factor and process approach.

The rest of the paper is structured as follows: the next section addresses the antecedents in literature regarding the role of organizational context on the capitalization of collaborative innovation practices and establishes three propositions on the importance of said context to overcome the main challenges of each stage of the process. Later, the methodology is explained. The next section is devoted to the analysis of the case studies, followed by the discussion of the evidence and the proposal of the theoretical framework for the identification of the critical organizational factors determining the success of the collaborative innovation practices in each of the stages of the process. Finally, a last section for the general conclusions is presented.

## **2. ANTECEDENTS AND PROPOSITIONS**

### ***2.1. The role of organizational context in the capitalization of collaborative innovation practices***

The systemic nature of innovation processes has been highlighted by various researchers (e.g., Dyer and Singh, 1998; Bayona et al., 2001), who note that companies typically innovate in collaboration and interdependence with various agents (other businesses, customers, suppliers, governments, universities, etc.).

In this sense, several studies have focused on the effect of R&D inter-organizational collaborations on firm performance (e.g., Faems et al., 2010; García-Martínez et al., 2016). Positive effects derived from the implementation of this kind of practices include growth, increased knowledge bases, customer satisfaction, revenues and profitability, higher innovation performance and the sharing of financial and organizational risk with collaboration partners (Kang and Kang, 2009; Dahlander and Gann, 2010; Tomlinson, 2010; Huizingh, 2011). However, the findings of positive effects on financial and innovation outcomes derived from R&D collaborative practices have been counterbalanced by studies showing that they also introduce certain disadvantages

leading to negative effects on performance that might not be compensated by the potential benefits (Dahlander and Gann, 2010; Faems et al., 2010), such as the risk of the partner's opportunist behavior, technology leakages or appropriability problems (Kang and Kang, 2009; Mazzola et al., 2012). Also, a study by Belderbos et al. (2010) presents evidence of the existence of limits to the benefits that might derive from the use of external sources of innovation, thus positioning their findings in the line of those obtained by Laursen and Salter (2006), who had already found a curvilinear relationship (in the form of an inverted U) between the use of said sources of innovation and the improvement of firm performance.

Regarding these findings, West and Bogers (2014) pointed to limits and potential moderators in the process of profiting from externally sourced innovations that are yet to be addressed and analysed, and Huizingh (2011) highlighted the need to provide further evidence on how firms may take full profit of these practices, taking into account the role of contextual aspects, which might play as determining success or failure factors. Previous literature has offered various categorizations of organizational context aspects affecting the innovation process behaviour. For instance, Vega-Jurado et al. (2008) posit among the basic firm characteristics acting as determinants of innovation organizational competences related to administrative styles, the formalization of internal communication systems, and the interdependence of work teams. Galende and de la Fuente (2003) consider organizational resources as an internal intangible factor determining innovative behaviour; among these aspects, they include inter-functional synergies, intra-firm communication capabilities, knowledge management through teamwork and organizational excellence. In a similar vein, Foss et al. (2011) links internal organization with structure, communication channels and reward systems. Also, Urgal et al. (2011) state that a firms' internal context prone to innovation is defined by the high management commitment and the participation of the members of the firm, and Lazzarotti et al. (2016) define the internal context as capabilities facilitating an internal climate which favors knowledge sharing.

The concept of organizational context has thus been addressed from a multitude of approaches, both in the field of research on innovation practices and also in the wider field of management and strategy literature, to the point that there is no current consensus on the set of

components or dimensions that comprise said construct (Porter and McLaughlin, 2006). Despite this blurriness around the definition of organizational context, the term is usually invoked to refer to the set of factors within an organizational setting that derive from strategic configurations. Indeed, when addressing the internal context, Huizingh (2011) categorizes them as demographic (including aspects such as size and age) and strategic, which imply purposeful acts that shape the characteristics of firms. In this sense, organizational context differs from other contingency variables (Chenhall, 2003). While also representing a prominent aspect determining the firm performance, as well as the environment or internal demographic factors, organizational context may be configured and transformed by practitioners, in turn becoming a mean to influence such performance. Focusing on the field of innovation management, Segarra-Ciprés et al. (2014) state the role of managers is to design an organizational context favourable to innovation, by leading efforts towards the design of an internal climate such that the employees are both willing and able to innovate. It is worth noting that the notion of organizational context has often been related to the concepts of climate or culture (Huizingh, 2011; Ghoshal and Bartlett, 1994), understood as a construct to conceptualize the shared values and perceptions about the behaviors and practices that are encouraged and that characterize an organizational setting; which recent literature has highlighted as a prominent contextual variable moderating relationships between other constructs (Schneider et al., 2013).

Positing that the set of organizational context factors characterises and affects the effectiveness of collaborative innovation practices implies the adoption of a contingency perspective (Huizingh, 2011) and is also aligned with the logics of the resource-based view, which emphasises the role of internal attributes and resources in configuring the business strategy and ultimately in determining the effectiveness of performance (Vega-Jurado et al., 2008). In this sense, innovation is a valuable and scarce resource which forms an important source of competitive advantage, and any other internal resources, including organizational factors, must be included in the analysis of the appropriate configuration of such competitive advantage, in order to take into account the idiosyncrasy of any given firm (Galende and de la Fuente, 2003).

In line with these ideas, the organizational context of the firm has been recognized as crucial for the consolidation of innovation capabilities and for explaining their effect on innovative performance (Vega-Jurado et al., 2008; Urgal et al., 2011). Also, when focusing specifically in collaborative innovation practices, both scholars and practitioners are showing an ever growing interest in the role of organizational context (Lazzarotti and Manzini, 2009). Accordingly, several studies have addressed the importance of organizational context when it comes to profiting from such practices. For instance, Foss et al. (2011) argue that firms attempting to leverage collaborative innovation practices with customers must provide the appropriate organizational context, working with factors such fluid intra-firm communication channels, rewarding systems to foster knowledge transfer among employees and high levels of delegation. Burcharth et al. (2013) found that organizational mechanisms related the empowerment, autonomy and freedom of employees foster the combination of inside-out and outside-in knowledge flows and thus leverage the performance derived from collaborative innovation practices. This same authors issued later a study (2014) which advanced theoretical understanding on the potential managerial moderators of innovation practices carried out with the involvement of external agents; and posited that organizational procedures such as employee training programs may reduce the negative effect of the so called Not Invented Here and Not Shared Here Syndromes (Chesbrough, 2003).

Despite the recognition of its importance, the role of organizational context in the capitalization of collaborative innovation practices stands to date as a fairly under researched aspect. Lau (2011) addresses the need of conducting studies to identify the internal contextual factors affecting the performance of these practices, in order to avoid the dissipation of rare resources when engaging in innovative relationships with external actors, which might result in ineffective collaborations. In the same vein, Burcharth et al. (2013) highlight the importance for scholars and practitioners of understanding the role of intra-organizational factors in enabling or hampering collaborative innovation practices, stating that contemporary research still fails to provide a refined theory on the conditions under which the performance of these practices may be leveraged.

This is precisely the gap that this work aims to address, adopting a systematic and a comprehensive approach on the role of organizational context on the collaborative innovation process. It is worth noting that studies focused on the development of innovation practices at the organizational level usually position their approach either from a factor perspective or from a process perspective (Pichlak, 2016); i.e., while research adopting the factor approach assumes that context plays a crucial role in determining innovation behaviour and outcomes in firms, studies taking the process approach take into consideration a broad class of events and milestones that arise in the course of the different phases of the innovation process. In this sense, this work intends to bring together the factor and the process approach, with the purpose of advancing an understanding of which specific organizational aspects might act as critical success factors influencing the outcomes of each of the stages of the collaborative innovation process.

## ***2.2. Propositions***

The development of the theoretical framework of this work relies on the logic of the innovation process carried out in collaboration with external agents. Several studies have focused on analysing how firms profit from collaborative innovation practices through the application of theoretical models (e.g., Zahra and George, 2002; Dewangan and Godse, 2014; West and Bogers, 2014) following the traditional models of development, processing and commercialization of technology (Freeman, 1982; Teece, 1986). Following closely West and Bogers' proposal (2014), this work establishes a theoretical framework covering three stages: (1) development of the innovation with the collaborator, (2) integration and (3) commercialization of the innovation.

### ***2.2.1. Development of the innovation in collaboration with the external agent***

This stage covers the activities aimed at finding partners and formalizing the relationship with them, and all aspects related to the interaction mechanisms involving the collaborators, including the payment and knowledge flows.



It has been frequently stated that selecting the right partner when intending to develop collaborative innovation activities might be the key to the success of the project. According to Gassmann and Enkel (2004), such success depends on the company being able to find a partner who provides the necessary skills and knowledge to complement the firm's own resources and thus gain a competitive advantage.

In this sense, the diversity of the backgrounds of the partners has been considered a source of creativity and a success factor for innovation projects (Nooteboom, 2003). However, this diversity might also be a source of communication difficulties leading to conflicts and project failures (Tidd et al., 2001). The analysis of this controversy has benefited from the proximity approach, which seeks to shed light on the relative position of economic agents with respect to each other (Boschma, 2005) and how these relatedness (or distance) influences the outcomes of collaborative innovation ventures. The 'proximity paradox', as coined by Boschma and Frenken (2010), offers a neat explanation behind the aforementioned controversy, addressing how innovation requires both renewal based on heterogeneity and the integration of knowledge guaranteed by proximity (Mattes, 2012). It is also worth noting that the concept of proximity exceeds mere spatial considerations; besides the geographical dimension, consensus distinguishes organizational proximity to address similarities related to being part of the same organization or to the sharing of codes and norms, an aspect still subject to much discussion and refinement, that needs to be taken into account in order to fully account for the effects of proximity on innovativeness (Boschma, 2005; Mattes, 2012).

The degree and nature of the relatedness with innovation partners, thus, is a critical aspect to be taking into account when anticipating the kinds of complementarities and, on the other hand, the potential conflicts that might arise during the development of the joint project. When there is a strategic fit between the partners, that is, if there is correspondence of goals among all concerned, alliances tend to give better results (Mora-Valentín et al., 2004). Likewise, alliances conformed by distant partners pose difficulties for advancing all collaborators' strategic goals, and therefore conflict is likely to arise because of the clash of interests and consequent opportunism and lack of trust (Brouthers et al., 1995).

Consequently, a prominent challenge in the first phase of the collaborative innovation process is to overcome the difficulties arising from the diversity of the collaborators' background, which is at the same time required if the firm intends to obtain complementary knowledge from the partner. Gassmann and Enkel (2004) highlight the relational capacity of the focal firms as paramount to resolve the conflicts derived from collaborative relationships. In this sense, the configuration of the proper organizational context factors to foster this relational capacity becomes a critical aspect for the success of this stage of the process.

In the light of the discussion above, the first proposition states as follows:

Proposition 1: An organizational context that favours the relational capacity of the focal firm leverages the benefits of collaborating with sufficiently distant innovation partners and represents a prominent success factor for the outcomes of the development stage.

### *2.2.2. Integration of the innovation*

This section focuses on the assimilation by the focal firm of the jointly developed innovation and covers the factors that may enable or hinder such integration.

In order to profit from collaborative innovation activities, firms need to assimilate the knowledge developed in the course of these collaborations so that it can be transformed into marketable technological innovations. The absorptive capacity theory, coined by Cohen and Levinthal (1990), has generated a considerable body of studies dedicated to analysing this issue. For collaborative innovation practices to result in technological innovations, the firm must have a sufficiently developed technological base (Cohen and Levinthal, 1990; Kim, 1997, 2001), which in turn depends on the efforts made by the focal firm in internal R&D (Schoenmakers and Duysters, 2006). Therefore, internal R&D intensity or expense is normally considered a proxy for a firm's absorption capacity (West and Bogers, 2014).

In general, studies confirm the postulates of Cohen and Levinthal (1990), as they show that firms with higher absorptive capacity are more likely to transform the knowledge and expertise of external partners into technological innovations, either because it accelerates the assimilation of

knowledge (Fabrizio, 2009), or because it enhances the benefits derived from the external source in terms of innovative capacity and financial results (Rothaermel and Alexandre, 2009).

However, empirical evidence is more contradictory with regard to the relationship between internal R&D intensity and the propensity to engage in collaborative innovation activities. Indeed, Barge-Gil (2010) suggests that firms with a solid base of internal R&D are less interested in using external sources of innovation. This points to the existence of a substitution effect, which could be supported by the resources and capabilities theory: it seems logical that firms with a sufficient technological base do not need to reach for outside sources for the development of research projects. This reasoning may explain why managers might be reluctant to invest in both types of innovation sources, as they could perceive that to be a zero-sum game (Witzeman et al., 2006). Also, one of the most ubiquitous aspects in the literature on cultural impediments to the use and exploitation of external knowledge is the Not Invented Here Syndrome, referring to the negative attitude of the employees of the focal firm towards external ideas (Katz and Allen, 1982; Chesbrough, 2003), a mental construct especially prominent in the case of firms that have a successful tradition of internal innovations (Dodgson et al., 2006; Schiele, 2010).

Firms in this stage of the process thus face the challenge of needing a strong knowledge base derived from solid internal R&D efforts in order to be able to process and integrate external knowledge, while at the same time avoiding attitudes preventing the consideration of external sources, in the first place, and its later acceptance.

The existence of this controversy has led some authors (e.g., Bosch et al., 2009; West and Bogers, 2014) to suggest the existence of moderator effects that explain when turning to external sources of innovation acts as a substitute element for internal R&D or, conversely, when both innovation sources complement each other. West and Bogers (2014) suggest that a potential moderator can be the focal firm's organizational culture. In the same sense, Segarra-Ciprés et al. (2014) state that firms need develop internal capacities that enable external knowledge to be assimilated, shared and incorporated into their innovation processes.

Taking all this into account, the following proposition is established:

Proposition 2: In order to succeed in the integration of external knowledge, the organizational context needs to be appropriately configured so that firms can profit from the advantages of a strong internal R&D base while at the same time avoiding the drawbacks of potential substitution effects between external and internal sources of innovation.

### *2.2.3. Commercialization of the innovation*

The value created by the development and integration of technological innovation materializes through its delivery to customers. This notion reflects some of the magnitudes used by studies on measuring the performance of innovative practices, such as the percentage of sales due to innovative products (Laursen and Salter, 2006; Grimpe and Sofka, 2009). This idea has been addressed by renowned scholars from the innovation management field. In the words of Chesbrough and Rosenbloom (2002), the inherent value of a technology remains latent until it is commercialized, the extent to which its value is realized being contingent upon the manner in which that commercialization takes place. On this point, Teece (2010) states that technological creativity that is not matched by business resourcefulness and creativity may not yield any value to the inventor at all.

In other words, to benefit fully from technological innovation resulting from the joint effort in collaboration with external agents, the focal company must transform it into a deliverable customer offering, with features such as to enable a corresponding increase in price, and thus capture some of the value generated.

The logic of the business model emphasizes the concept of value generation and capture (Amit and Zott, 2001; Chesbrough and Rosenbloom, 2002; Morris et al., 2005). Amit and Zott (2001) add that companies commercialize innovative ideas and technologies through their business models, consisting of unlocking the value potential embedded in new technologies and converting it into market outcomes. Therefore, the business model is conceived as a focusing device that mediates between technology development and economic value creation (Chesbrough and Rosenbloom, 2002).

In order to capture value from collaborative innovation activities, the firm's business model must take into account both the particularities arising from the innovation developed and the characteristics of the market in which it will be commercialized, while keeping a strong fit among all the aspects that conform the firm's logic in doing business. On occasions, this may require that the firm redesigns (to a certain extent) its business model.

Although it is true that changes in the business model may be triggered by the development of a technological innovation, the usual course of action of most firms is to engage in innovation activities under the premises of a foreplanned strategy. The critical aspect here is to make sure that this strategy is appropriately translated into a suitable business model and that the innovation initiative does indeed contribute to the objectives pursued and fits the business model.

Consequently, when engaging in collaborative innovation activities, it is necessary to keep a market focus from the inception of the idea, and to take into account all the aspects of the business model that will be affected in order to commercialize the innovation, if its value is to be realized and captured by the firm.

With this in mind, the following proposition states:

Proposition 3: In order for the commercialization stage of the collaborative innovation process to be successful, the focal firms need to provide an organizational context that allows for the business model to be aligned with the innovation obtained and integrated, so that it can capture some of the value generated in the process.

Figure 1 shows how the three propositions are related to each of the steps of the proposed framework.

[INSERT FIGURE 1 ABOUT HERE.]

### **3. METHODOLOGY**

#### ***3.1. Research approach***

Taking into account the research objective, a multiple case study methodology was adopted, in order to conduct an exploratory analysis on three different cases of firms engaged in successful collaborative innovation activities and thereby collect data on the organizational factors leveraging

the outcomes of each stage of the process. The results from the case study analysis complement the theoretical propositions established before through a review of previous literature. While the propositions highlighted the existence of prominent challenges in the different stages of the collaborative innovation process, the evidence collected through the case study methodology informs the identification of the specific organizational context factors contributing to overcome said challenges. Therefore, this study draws both on previous research and on the data gathered from the case studies to propose an inductive theoretical framework on the role of organizational context on the capitalization of the collaborative innovation process.

While it is important not to lose sight of the limitations of qualitative research based on case studies, particularly regarding the generalizing of its results, several authors have pointed out that this methodology is appropriate to address contextual conditions deemed relevant to the phenomenon being studied and to conduct research of inductive nature (Eisenhardt, 1989; Yin, 2003). In this sense, the method is considered a good way to build on existing knowledge and generate or embellish theory (Yin, 2003). In addressing the methodology used for their study of professional service firms, Smith et al. (2017) explain that the primary goal of case study analysis is to provide evidence by directly observing phenomena in a given contextual setting, and that the findings are indeed generalizable to theoretical propositions.

Also, case studies are specially appropriate to adopt an holistic perspective in order to advance the understanding of complex phenomena (Gummesson, 2000), which is precisely what is intended to do here, as this work aims to take into consideration the whole process related to collaborative innovation practices carried out by a focal firm.

As stated, three case studies were selected and analysed; the multi-case approach aids triangulation and improves the generality of findings (Yin, 2003), making the research more robust overall (Herriot and Firestone, 1983).

### ***3.2. Case studies selection***

The selection of cases relies on the concept of theoretical sampling (Eisenhardt and Graebner, 2007), so that they presented theoretically relevant differences and thus provided insight on

commonalities and differences across them (Lehmberg, 2017). As a basic criterion, all the cases should be established firms operating in the Spanish region of Navarre and engaged in collaborative innovation processes. In addition, the firms should represent different relevant industries in the territory, different sizes and different ownership structures.

The first case relates to Ingeteam, a company with over 1,500 employees and a turnover exceeding 200 million euros, part of a business group specializing in the development of electrical engineering. The second company, Fisal, is owned by its 75 employees, has an annual turnover of around 11 million euros and specializes in the design, development and production of brake systems for cars, other vehicles and wind turbines. Finally, the third firm, Bodegas Ochoa, is a winery and one of the oldest producers of wine in its region, which has an annual turnover of 2 million euros and 18 employees. Thus, with regard to size, the cases refer to a large, medium and small firm, respectively. Each of them is dedicated to a different industry (electrical systems for wind turbines, brake systems for motor vehicles and gastronomic products), and presents different ownership structures (one is a corporation, another is owned by its workers and the third is a family business,). As stated, all these three factors were selection criteria. In addition, the study of the cases revealed singularities in the type of partnership carried out by each firm in order to develop technological innovations: the first firm partnered with a university, the second engaged in an alliance with a technological centre and the third collaborated with a supplier.

Table 1 provides an outline of relevant information of each of the cases.

[INSERT TABLE 1 ABOUT HERE]

The multiple nature of these case studies and the differences in the firms' size, the industries in which they operate, their legal form, structure of ownership and the type of partners with whom they engaged, help to strengthen the validity of the research (Eisenhardt, 1989) and enhance the generality of the results (Yin, 2003).

### **3.3. Data collection**

The principle of triangulation (Jick, 1979) was respected by using multiple sources, strengthening the credibility of the information collected (Yin, 2003). Several in-depth interviews were

conducted, both with internal agents, such as CEOs and other senior staff, and with significant external agents. The information derived from these interviews was complemented with financial statements, strategic plans, company presentations, industry reports and press releases (see table 2 for a relation of the data sources).

As for the most important source of information (i.e., the interviews), an initial protocol for a semi-structured interview was designed, consisting of a questionnaire covering all aspects relevant to the case analysis. However, this protocol did not imply a rigid framework for the content of the conversations, as the interviewees and interviewers were given room to deviate from the guidelines in order to focus on the most interesting aspects for the research. All the interviews were conducted by two interviewers, in order to complement the understanding of the phenomena treated and the proposal of focuses of interest, as well as to avoid potential observer bias (Eisenhardt, 1989). In addition, as stated before, more than one informant from each firm was interviewed (Kumar et al., 1993), and even external agents were contacted, in order to mitigate risk of informant bias and to control for the subjective judgement of individuals, thus increasing the construct validity (Jick, 1979; Gibbert et al., 2008).

[INSERT TABLE 2 ABOUT HERE]

Regarding the processing of the information, all the interviews were taped and transcribed verbatim to enhance subsequent analysis. Content obtained from the interviews was refined and extended through informal follow-up based on telephone calls and e-mails. Based on the information gathered thereby and from all the other sources, individual case reports for each firm were written and within-case analysis was performed (Eisenhardt, 1989; Yin, 2003). These case reports provided an overview on how each firm carried out its own collaborative innovation process and profited from it and constituted the basis for performing the case analysis. Whenever missing data was revealed at this stage, the case material was complemented through additional data. Lastly, the firms were given access to these reports, to test their accuracy.

**[PREVIOUS SECTION 3.4. “ANALYTICAL FRAMEWORK” HAS BEEN ELIMINATED]**



## 4. CASE STUDIES

For purposes of structuring the case study analysis, each of the three cases will be examined under the framework described above, in order to take into account the challenges arising in the different stages of the collaborative innovation process, and to identify specific organizational context factors that allowed the firms to overcome them. At the end of the section, table 3 offers a summary of the analysis, highlighting the particularities of each case regarding the main challenges addressed in the propositions, as well as the organizational context factors influencing the success of the development, integration and commercialization of the collaborative technological innovations.

### *4.1. Development of the innovation*

The cases show singularities regarding the partnerships in which each of the firms engaged in order to pursue the development of innovations.

Ingeteam and the Public University of the region in which it operates joined forces in 2007 to develop the technology needed to adapt Ingeteam's offering to the technical requirements of a mature market that demanded concrete specifications for the equipment to be incorporated into wind turbines. However, this was not the first time the two organizations had engaged in a partnership; they had been already working together since 1996 and had built a solid tradition of collaboration in R&D.

As for Fisal, the firm worked intensively with a technological centre specializing in technology development for the automotive industry. The firm had decided to diversify towards the wind power sector, and thus needed to develop brake systems intended for wind turbines. In order to validate the new prototypes, Fisal turned to the technological centre to access the technical expertise required. The terms of the collaboration involved the technological centre in developing a test bench with the necessary capacity to test the new brake designs for wind turbines.

The relationship between Fisal and the technological centre predates the firm's diversification into the wind power market, as the partners had been collaborating in the context of the automotive sector.

Finally, to enter the olive oil business, Bodegas Ochoa relied on a collaboration with one of their suppliers, a tree nursery dedicated to the propagation of woodland plants. This relationship had previously developed thanks to the joint work carried out for the vineyard. It was due to this previous work and to the firm's decision to begin an olive tree plantation that the tree nursery suggested collaboration in order to test a new olive variety. In 2004, the two firms started the development of a joint project to optimize super-intensive cultivation of olive trees of the Aberquina variety.

Regarding the goal pursued by the partners, the collaboration between Ingeteam and the University benefits the partners in several aspects. Through this partnership, Ingeteam receives R&D services from the University, which in turn receives monetary incentives and the opportunity to test the results of their basic research. In addition, the joint projects developed do not only result in technology acquisition by Ingeteam; on the contrary, they involve bidirectional flows of knowledge. Participating in collaborative projects with the firm provides a great opportunity for the University to define and guide its research into areas of interest, aligning them with the real problems arising during the implementation of the advances obtained in the laboratory.

*'This helps us to determine the lines on which we must continue. In many cases, the research lines we follow have been the result of problems detected in the equipment they [Ingeteam] have.'*  
(Head of the research group from the University)

As for the second case, the collaboration between Fisal and the technological centre to develop the test bench was an important opportunity for both companies. Thanks to working on the development of the test bench for the firm, the centre was able to provide other customers of the wind power sector with the acquired knowledge and technology. Thus, the collaboration with Fisal allowed the technological centre to initiate its own diversification process.

*'The centre had a great opportunity there, because it was starting to get stuck in the automotive sector. (...) Then we thought that we could diversify. And there we started. (...) Both parties have benefited: they [Fisal] have managed to move forward within their business and the centre got new customers.'* (Technical Manager of the technological centre)

Lastly, the research project carried out by Bodegas Ochoa and the tree nursery provided an opportunity for both firms to undertake the testing and development of new business. Planting crops in the grounds of the winery allowed the tree nursery to test both a new variety of plant and an innovative cultivation technique. For its part, Bodegas Ochoa entered a new sector with these products and innovative techniques thanks to knowledge developed through collaboration because, as the R&D Manager of the winery admits, *'they taught us how to work with the trees'*.

When analyzing the conflicts that could endanger the projects and the way the firms address and manage them, Bodegas Ochoa would be expected to be the least affected by conflicts derived from collision of goals and lack of trust, taking into account that the partnership in charge of developing the olive trees was formed by the focal firm and one of its traditional providers. It's true that the partners have different backgrounds regarding their businesses and the specific markets they serve, but the complementarities between both firms are very high; in the end, both are framed within the same industry (production of wine).

On the other hand, Ingeteam and Fisal both engaged in collaborations with a public institution (a university and a technological center, respectively), and the potential for organizational and strategic differences between the partners to pose a risk for the project is therefore higher.

The partnership between Ingeteam the University could be threatened, in principle, by differences in the way of organizing the work and managing time and administrative tasks and, specially, by the potential conflicts regarding the divulgation of the results derived from their joint projects. However, the partners expressed their deep satisfaction with the work carried out together, the results of their joint research activities not only contributing to the firm's technological development but also usually ending up being published in scientific journals.

*'They have always understood that we are a university, (...) and that we have certain needs, including publishing. They have always been open to this. We have published many of the projects (...) carried out with them, which have been profusely referenced.'* (Head of the research group at the University)

These partners have a long tradition of intensive cooperation in many fields maintained over the years. Ingeteam participates in activities with the University that go beyond the development of joint R&D projects, such as conferences, training courses and mentoring students' projects. Furthermore, it is important that the University is a source of human resources for Ingeteam (the firms' engineers working in joint projects with the University staff are usually ex-alumni) and that the partners share the same facilities (usually, at the University) in the course of the development of R&D projects.

For its part, and given the nature of the firm's collaborator, Fisal had to face the possibility that a competitor would hire the services of the technological centre for the validation of its own prototypes for the wind sector. In other words, part of the knowledge generated in collaboration would necessarily be disseminated to other companies, including competitors. Fisal clearly understood the conditions of the collaboration and thus committed to the project, the partnership between the firm and the technological centre being a close and long-lived one strengthened over the years that promotes the communication and understanding between the workers of both organizations.

Both Ingeteam and Fisal made a point to state their team perspective. Ingeteam began its trajectory in the wind power sector developing extensive technological projects for its three clients, and prioritized the building of cohesive teams of members of both its organization and its clients' over protecting their know-how against them. As the Manager of the Wind Power Division explained: *'we set the standards [to run the electric system], and if they want a basic programming, we give it to them (...); we give them our know-how'*. Also, Ingeteam participates in a wide range of activities with the University, such as conferences, training courses and mentoring students' projects, in several occasions jointly with other firms, which also serves to illustrate the firm's willingness and capacity to coordinate team work. As for Fisal, it is worth noting that the propriety of the firm belongs to its workforce, which is highly committed to the organization and very used to coordinate their efforts towards common goals.

*'When an initiative is to be fostered, a single group of four or five people can't pull the forces towards the change, even if they hold high directive positions; the changes and the decisions*

*are driven by a team of fifteen, followed by thirty or so of the workers that have a very clear idea of the firm's strategy.'* (CEO at Fisal)

Summing up, an internal climate prone to intra-firm collectivism and teamwork was found to be very valuable in both cases to leverage the benefits of working with partners of different backgrounds and at the same time mitigating the disadvantages of doing so.

#### ***4.2. Integration of the innovation***

Ingeteam's continuous effort to develop its own technology is a key factor for its success. At the corporation level, R&D expenditure in 2013 was 27 million euros, and nearly 400 workers out of 2,800 were R&D staff. The Manager of the Wind Power Division of the company emphasizes the importance of the firm's commitment to R&D even in times of recession: *'There is a high commitment to R&D (...). Since 2007 (...) the crisis has hit us, and yet, despite this, the R&D staff has been increasing.'* The consolidation of its own technological base has significantly contributed to the firm's ability to integrate effectively the results of the research carried out with the University.

As for the second case, the design, development and validation activities guarantee Fisal's capability to conduct the whole process from taking the client's order to the delivery of a product specifically tailored to the customer's needs. Fisal points out to this capability as one of the key factors in the success of its business. In this regard, efforts devoted to the development of knowledge and technology are particularly relevant. The firm has an internal team for product development, which employs about 15 designers, allocates 10% of its turnover to R&D and over the last 15 years has taken part in several State-funded R&D projects, many in collaboration with other entities. Fisal has established an organizational culture based on the innovative spirit, which encompasses both technical and organizational aspects. The joint design of a suitable test bench with the technological centre and the subsequent success of the project were possible thanks to the firm's technological capability and the knowledge acquired and consolidated along its trajectory of commitment to R&D.

Bodegas Ochoa's commitment to innovation is accomplished through ongoing research activities (1% of the budget is allocated for this purpose). This innovative spirit is manifested in many R&D projects undertaken by the firm. In this regard, it is noteworthy that it was the first Spanish winery to undertake a CDTI (Spanish public institution) project in 1994. Since then, it has continued to carry out projects funded by this institution, some in collaboration with other agents. *'We always have R&D projects in progress (...) and the change is constant'*, said the R&D Manager. The absorption of the knowledge resulting from the joint research project with the tree nursery is guaranteed thanks to the involvement of the firm in the entire process and its technological capacity.

Also, the three firms proved to have a very permeable attitude towards their environment and the external agents with whom they might engage in order to obtain mutual benefits.

Ingeteam maintains an open attitude towards knowledge sharing with different partners. From the beginning of its activities in the wind power sector, the firm has driven its business relying on joint work with the manufacturers of wind turbines, so that the electrical equipment was designed in close collaboration between supplier and customer. Universities and technology centres have also been regular partners in order to develop the technology used by Ingeteam.

Joint participation in the design of products with customers, suppliers, competitors and other agents is common practice for Fisal. The collaborative philosophy is not limited to the development of materials and technology but also extends to commercial alliances: the company has embarked on a variety of initiatives (such as joint ventures and consortia) to enter new sectors and geographical markets. *'It's always good to share experiences with other firms that have undertaken similar challenges'*, the Responsible of the Off-Highway Business Line of the firm said.

Collaboration with external agents is also an essential aspect for Bodegas Ochoa. *'In virtually all R&D projects we undertake, we have a collaboration with the University for the vineyard. (...) We can always learn more about our vineyard'*, the Production, R&D and Quality Manager of the firm stated.

In this sense, the relationship between the internally and externally sourced innovations carried out by these three firms can be stated to be complementary, the culture of openness towards

external agents cultivated by these firms contributing to their propensity to engage in both types of innovations and to their taking profit from them.

#### **4.3. Commercialization of the innovation**

In 2007, Ingeteam considered diversifying its customer portfolio because of the mature state of the wind power industry: turbine manufacturers had become key players and the sector had accumulated the experience needed to determine the technical specifications for wind turbine components and thus demand standardized products from their suppliers. Until then, the business Ingeteam had developed was based on the design and manufacture of highly customized electrical equipment for a small group of customers. Changing the rules of the market led to the need to develop new products that could meet the customers' requirements, for whose sake Ingeteam worked in close cooperation with the University.

*'Somehow, especially when it's a time of crisis, we realize that we had passed from a situation in 2008, when we still had just three customers (...), to see that there are many manufacturers of wind turbines. Commercially, we must make a major effort, and we need to address that.'* (Manager of the Wind Power Division of Ingeteam)

Also, Ingeteam states finding it of utmost importance that the clients consider them as more than a mere provider and trust them as if they were partners. That's where the firm focuses its added value, in offering their clients the assistance of high skilled technicians to solve their problems and thus differentiate themselves from their competitors, who are mostly big sized firms unable to provide those kind of human resources as a regular contact for their clients.

*'When we attend fairs and visit clients, a technical specialist is always working hand in hand with the marketing representatives, and thus we are able to offer a comprehensive description of our services and to solve any doubts the potential clients might pose.'* (Manager of the Wind Power Division of Ingeteam)

When Fisal approached the technology centre with the proposal for the test bench development, it had already decided to diversify its offer to the wind power market. This decision bore fruit following the participation of the company, in 2008, in a program to promote intersectoral

cooperation for regional innovation, which gave them the opportunity to make their first contacts in the sector. Also, in 2009, the firm implemented an organizational restructuring, the Business Lines, according the different market segments addressed by the firm, in order to guarantee the development of all said markets, consolidating the traditional business while fostering the new ventures. This new organizational structure emphasizes the commercial approach, prioritizing the customers' capture and fidelization activities of each of the Lines.

*'We took this decision because we saw the need to go to the market. The purpose was to foster the commercial part, but with people who clearly understood the history of Fisal, our values, our product.'* (CEO at Fisal)

As for the third case, the winery has a clear commitment towards the continuous development of new products that meet the demands of the market. Thus, the main idea behind the decision of Bodegas Ochoa to produce olive oil was to include a gastronomic element in its offer in order to give greater value to their direct customers (distributors) and have more resources to reach final consumers. After the first olive harvest in 2006, the company began commercializing its new product: extra virgin olive oil, which since then has complemented and strengthened its product range.

*'Our customers value that we offer a complementary product of the Mediterranean diet, without being forced to buy in bulk. If you have a very wide range, in which case, you include the oil, you have more chances with potential customers.'* (Marketing Manager at Bodegas Ochoa)

Bodegas Ochoa also stresses the importance of maintaining a direct relationship with all the agents that take part in the distribution of their products, as each of them may be *'ambassadors of the Bodegas Ochoa brand'*, as the Marketing Manger states. Also, the firm takes into high consideration the opinions and recommendations offered by their clients, distributors and final consumers when developing their products. In the words of the R&D and Quality Manager, *'a good products is the result of a tight collaboration between the provider and the consumers'*.

It is clear, thus, that all three firms had a much focused view of the market potentialities of the innovations they intended to develop, and that this view played a major part in capturing the value of the innovations in each case.



## 5. DISCUSSION AND THEORETICAL MODEL

The discussion of the results derived from the analysis of the cases studies is structured, as the previous section, following the stages of the collaborative innovation process. At the end of this section, the theoretical framework materializing the results of the research are presented.

### 5.1. *Development of the innovation*

Literature has extensively settled that the organizational proximity to the partner with whom a focal firm collaborates in order to develop an innovation has a crucial importance regarding the complementarities and competitive advantages that said partner might bring into the project, but also may pose a serious risk of conflict if the partners' backgrounds are very diverse (Boschma and Frenken, 2010; Mattes, 2012).

The analysis of the cases showed that the collaboration between Bodegas Ochoa and the tree nursery, one of the winery's suppliers, proved to be driven conflict-free, in line with extant literature stating that relationships with customers and suppliers are characterized by high levels of trust between partners (Langfield-Smith and Greenwood, 1998).

On the other hand, Ingeteam and Fisal engaged in innovation projects with public institutions whose objectives and management practices didn't specifically align with their partners', a circumstance that is also consistent with the traditional set of recurring conflicts between private companies and universities or technological centres pointed out by the literature (i.e, Bayona et al., 2004; Montoro-Sánchez and Mora-Valentín, 2006).

Therefore, the relational capacity (Gassmann and Enkel, 2004) to handle the potential conflicts that could arise from the diversity of the partners' backgrounds became paramount for the success of the collaborations held by Ingeteam and Fisal.

Overcoming the potential difficulties with their partners required both Ingeteam and Fisal to be willing to share the benefits derived from the joint projects to an extent that could pose certain threats to them, which implied a predisposition towards collectivism. Also, the ability to coordinate complex tasks with a partner that presents substantial differences in the way to organize work and that serves in a different industry is necessary. Thus, the organizational context factor that

contributed to the success of the joint development of the innovation with the external partner was intra-firm collectivism and teamwork.

Indeed, an organizational context that fosters collectivism among the members of the firm contributes to build the relational capacity needed to unlock the conflictive situations derived from the existence divergent objectives with external partners. This finding is in line with the conclusions of previous studies. For instance, Gold et al. (2001) suggested that organizations that encourage their employees to share knowledge and ideas among them tend to be more innovative. More specifically related to collaborative innovation practices, the work by Kirschbaum (2005) described the case of a multinational company that designed an organizational culture built on teamwork in order to open its innovation process to external parties. Similarly, Segarra-Ciprés et al. (2014) argue that interaction, coordination and internal knowledge transfer within the boundaries of the firm configure the necessary context to enable inter-organizational knowledge flows.

## ***5.2. Integration of the innovation***

In all three cases, the consolidation of their own technological base has significantly contributed to the firms' ability to integrate effectively the results of the research carried out with their partners, in line with the absorptive capacity theory (Cohen and Levinthal, 1990).

However, a perspective based on the resources and capabilities theory could suggest the existence of a substitution effect between internally and externally sourced innovations, as in explaining that those firms with a high internal R&D resources are less interested in using external sources of innovation (Barge-Gil, 2010). The fact remains, thus, that investing in internal R&D resources seems to be indispensable to profit from collaborative innovation practices while it also might hinder the propensity to engage in such practices, in the first place, and generate attitudes of self-involvement within the members of the focal firm likely to pose impediments to the proper assessment and integration of the external knowledge

The three cases show that all the firms studied, which have a successful tradition of internal innovation, have nevertheless overcome constructs distinctive of 'closed' innovators, such as the

‘not invented here’ syndrome (Katz and Allen, 1982). Indeed, all of them have developed an organizational culture that relies on openness towards their environment and external agents.

Thus, openness and permeability is identified as the organizational factor that explains the propensity to collaborate with external parties for R&D purposes and the willingness to accept and integrate external knowledge, even though the firms have a strong internal technological base, thus pointing to the existence of a complementary rather than a substitution effect between internally and externally sourced innovation practices.

Precisely, the open innovation paradigm, coined by Chesbrough (2003), stresses the importance of the permeability of firms’ borders when engaging in innovation activities. Current understanding of the innovation phenomenon agrees on considering that the opportunities for learning and innovation take place in the environment of the firm, and thus it should build relationships with external actors. Profiting from said relationships with innovation purposes requires efforts to accept the beneficial aspects of opening up to external parties, and thus firms need to cultivate the permeability of their frontiers by establishing fluid and meaningful interactions with their environment (Leonard, 1995; Nagano et al., 2014).

### ***5.3. Commercialization of the innovation***

The case analysis shows that all three firms decided to resort to their respective collaborations motivated by the desire to enter new markets (in the case of Ingeteam and Fisal) or to enlarge their product range to better serve their customers (in the case of Bodegas Ochoa). That is, in all three cases the decision to develop a technological innovation jointly with an external agent obeyed to a strategic direction taken beforehand in alignment with the particular needs and evolution detected in their respective markets.

As stated in literature, to fully benefit from technological innovations resulting from the joint effort in collaboration with external agents, the focal company must transform them into a deliverable customer offering (Chesbrough and Rosenbloom, 2002), with features such as to enable a corresponding increase in price, and thus capture some of the value generated.

Accordingly, the three firms had taken into account both the particularities arising from the technological innovation and the characteristics of the market in which it would be commercialized. Also, all of the firms emphasized the importance of focusing on their clients and devoting their resources to promoting their loyalty.

Therefore, a customer or market orientation is the organizational factor positively affecting the relationship between the obtaining of a technological innovation and the realization of its value. Foss et al. (2011) addressed marketing literature to explain that success in the financial performance of product innovations is linked to market orientation and it may depend on internal organizational factors. In this same vein, Nystrom et al. (2002) stated that firms cultivating a customer orientation climate are more aware of the market's needs and are thus better equipped to identify the particular technological advances needed to satisfy those needs. The authors also suggest, referencing a previous work by Johne and Snelson (1988) that these type of firms usually make a more effective use of outside knowledge sources.

The case study analysis provided evidence to identify the specific organizational factors leveraging the outcomes of the stages of the joint development of the innovation, its integration and its commercialization. The resulting framework on the role of organizational context in the capitalization of the collaborative innovation process integrates these results and the theoretical propositions established above, and is shown below in Figure 2:

[INSERT FIGURE 2 ABOUT HERE]

## **6. CONCLUSIONS**

When studying the performance of collaborative innovation, literature has addressed the existence of certain disadvantages that might not be compensated by the potential benefits (Dahlander and Gann, 2010; Faems et al., 2010). In this sense, some authors have stated the need to provide further evidence on the potential influence of moderating contextual factors in the process of profiting from externally sourced innovations (West and Bogers, 2014; Huizingh, 2011).

Therefore, the ultimate purpose of this work was to determine which organizational context factors influence the capitalization of collaborative innovation practices in each of the stages of the process, and to materialize the findings in the proposal of a theoretical framework.

The framework integrates both the theoretical propositions on the prominent challenges firms face along the process, derived from the literature review, and the evidence on the specific organizational factors contributing to overcome said challenges, gathered through the analysis of the case studies. The insight offered by this theoretical framework on the role of organizational context on the capitalization of collaborative innovation practices can be summarized as follows.

In the phase for the joint development of the innovation, the organizational factor influencing the success of the stage is collectivism and teamwork. This contextual factor fosters the relational capacity of the focal firm and thus enable it to solve the potential conflicts arising when the partners have significantly diverse backgrounds and thereby benefit from the complementary knowledge brought in by distant partners.

As for the integration stage, the efforts made by the focal firm in consolidating a strong internal knowledge base make the assimilation of the external knowledge possible, while the configuration of an organizational context prone to openness guarantees that said assimilation is desired. In other words, whenever the firm's organizational context fosters the porosity of its borders, the fact of having a solid internal innovation capacity will not be perceived as a substitute for external sources of innovation.

Finally, in the commercialization phase, a market approach favours the alignment of the business model with the innovation obtained in collaboration with external partners and integrated in the firm, so that the firm can capture part of the value generated through the development of said innovation. .

The relevance of this study lies in the attention paid to the problems that the literature has identified as worthy of investigation, such as the study of organizational contextual factors as potential moderators on the capitalization of collaborative innovation practices and adopting a comprehensive view of the whole process (West and Bogers, 2014).

Moreover, the results can be useful for business practice, because they contribute to a better understanding of the impact of innovative activities, and the thick descriptions of the cases illustrate a set of best practices that can serve as models, inspiration and reflection for the agents in charge of innovation management in firms. In this sense, managers need to take into close consideration the organizational factors of their firms, in order to provide the appropriate context to capitalize their collaborative innovation practices. In particular, intra-organizational collectivism and teamwork among the members of the firm should be encouraged, because it fosters the relational capacity needed to overcome challenging situations when developing technological innovations with distant partners. Also, firms need to ground solid bases for the consolidation of an internal innovation culture, so they can detect technical and resource gaps and thereby be able to identify external knowledge opportunities and integrate this knowledge. But the need to combine this internal innovation culture with a context prone to openness, so that reaching for external sources of innovation is perceived as a complementary activity. Lastly, managers need to be very aware of the idiosyncrasy of their target, to assess the needs of their customers and therefore plan their innovation strategy accordingly, so it is aligned with the commercialization strategy and the firm's business model.

Regarding the limitations of this research, the generalization of the theoretical implications is challenging due to the methodology used, for they have been derived from the analysis of three case studies. However, as explained above, measures to guarantee the validity of the qualitative analysis have been taken. In any case, it would be convenient to test the theoretical framework proposed here by means of quantitative methods such as the estimation of direct and moderating causal effects of the aspects identified on performance measures for each of the stages of the collaborative innovation process, which constitutes an interesting opportunity for further research.

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## TABLES

Table 1 - Cases outline

	<b>CASE 1</b>	<b>CASE 2</b>	<b>CASE 3</b>
<b>Firm</b>	Ingeteam Power Technology, SA (Ingeteam)	Frenos Iruña SAL (Fisal)	Bodegas Ochoa
<b>Base</b>	Zamudio, Vizcay, Spain	Pamplona, Navarre, Spain	Olite, Navarre, Spain
<b>Origins</b>	A merger dating back to 1990	Founded in 1956	Dates back more than six centuries
<b>Ownership</b>	Part of a corporation	Acquired by its employees in 1980	A family business
<b>Size</b>	The corporation in 2016 employed 3,800 workers and achieved a turnover of 483 million € (of which 1,570 workers and 211 million € correspond to the company studied).	In 2016, the firm's sales reached 11 million € and it employed 75 workers.	In 2016, the firm's sales were around 2 million €, and it employed 18 people.
<b>Industry</b>	Design, development and manufacture of electrical and electronic systems for wind turbines (within the energy division of the corporation).	Design, development and manufacture of brake systems for cars, industrial vehicles and wind turbines.	Manufacture of wine and gastronomic products.
<b>Collaborative innovation practice</b>	Collaboration between Ingeteam and a university for the purpose of developing new products with the technical characteristics necessary to expand the firm's customer portfolio.	Collaboration between Fisal and of a technology center to undertake the necessary adaptation of its product for the diversification into the wind sector.	Collaboration between the winery and a tree nursery with the purpose of developing the necessary knowledge to begin olive tree cultivation and thus expand its product offering.

Table 2 - Data sources

	<b>CASE 1</b>	<b>CASE 2</b>	<b>CASE 3</b>
<b># of interviews</b>	5	4	2
<b>Interviewees</b>	Manager of the Wind Power Division (2) Responsible of New Clients Area of the Wind Power Division (1) Head of the research group from the University (1) Researcher from the University (1)	CEO (2) Responsible of the Off-Highway Business Line (1) Technical Manager of the technological center (1)	Production, R&D and Quality Manager (1) Marketing Manager (1)
<b>Other data sources</b>	- Annual reports - Website - Company brochures - Press coverage - Industry reports	- Annual reports - Website - Company brochures - Press coverage - Industry reports	- Annual reports - Website - Press coverage

Table 3 - Summary of the analysis

	Development	Integration	Commercialization
<b>CASE STUDIES ANALYSIS OUTLINE</b>			
<b>Ingeteam</b>	<b>Purpose of cooperation:</b> Adapting the supply of electrical systems for wind turbines to the specifications of a mature market.		
	<p><b>Partner:</b> University. The relationship dates back a long time. Has covered different fields (R&amp;D, teaching, knowledge dissemination). Strong ties among the staff of both organizations.</p> <p>Partner's backgrounds: Diverse</p> <p><b>Strategic fit:</b> Firm gets staff and technology; university gets validation of research results, guidelines to focus its research, and publication opportunities.</p> <p><b>Conflict management:</b> Potential conflicts (secrecy vs publication interests) overcome thanks to fluid communication and mutual understanding of the partner's needs.</p>	<p><b>Internal R&amp;D base:</b> Great effort in internally sourced R&amp;D and development of own design, even in times of economic recession. Strong technology base ensures proper assimilation of the knowledge developed with the University and its transformation into the new product offering technology.</p> <p><b>Complementarities of internally and externally sourced knowledge:</b> Permeable attitude towards knowledge exchange (intensive joint work with traditional customers to develop their electrical systems; traditional collaboration with several universities and research centers for the development of research projects).</p>	<p><b>Approach to the delivery to clients:</b> Innovation framed within diversification strategy (from joint development of electrical systems with few clients to providing standardized products to a wider market).</p> <p>Firms focuses its added value in providing their customers with high skilled technicians as a permanent contact.</p>
<b>Fisal</b>	<b>Purpose of cooperation:</b> Developing a test bench for validation of new brake prototypes for wind power sector.		
	<p><b>Partner:</b> Technological center. The relationship dates back a long time. Has covered R&amp;D collaborations for automotive sector. Strong ties among the staff of both organizations.</p> <p>Partner's backgrounds: Diverse</p> <p><b>Strategic fit:</b> Alignment of strategic objectives (diversification into the wind power industry). Firm gets prototype validation to launch new products onto a new market. Technological center gets opportunity to start its own diversification process.</p> <p><b>Conflict management:</b> Potential conflicts (spread of the jointly generated knowledge to firm's competitors) overcome thanks to fluid communication and mutual understanding of the partner's needs.</p>	<p><b>Internal R&amp;D base:</b> Strong commitment to internal R&amp;D and design. Innovative culture also extends to organizational aspects. Strong R&amp;D base allows the detection of a technology gap to develop the new initiative and ensures that the firm is able to provide knowledge for the development of the test bench, and thus exploit the results of the collaboration.</p> <p><b>Complementarities of internally and externally sourced knowledge:</b> Permeable attitude towards knowledge exchange (firm has spent years consolidating a culture of collaboration, both for technological and commercial purposes).</p>	<p><b>Approach to the delivery to clients:</b> Innovation framed within diversification strategy (from automotive industry to wind power sector).</p> <p>Firm restructured its organizational model according to the different Business Lines (market segments) addressed.</p>
<b>Bod</b>	<b>Purpose of cooperation:</b> Developing olive cultivation with certain technical characteristics in order to embark on the production of olive oil.		

<p><b>Partner:</b> Tree nursery; supplier. Relationship dates back a long time. Has covered collaborations for the vineyard.</p> <p>Partner's backgrounds: Proximate.</p> <p><b>Strategic fit:</b> Alignment of strategic objectives. Testing of an olive tree variety and an innovative cultivation technique, involving great business opportunities for both partners.</p> <p><b>Conflict management:</b> No important potential conflicts detected. Client-supplier type partnership.</p>	<p><b>Internal R&amp;D base:</b> Strong commitment to internal R&amp;D (numerous R&amp;D projects; first winery to be funded to develop an R&amp;D project). Firm's R&amp;D and knowledge base allowed it to assimilate the expertise developed in collaboration with the tree nursery.</p> <p><b>Complementarities of internally and externally sourced knowledge:</b> Permeable attitude towards knowledge exchange (many of the R&amp;D projects are carried out in collaboration with external agents).</p>	<p><b>Approach to the delivery to clients:</b> Innovation framed within product range expansion strategy (complementing wine with olive oil).</p> <p>Firm stresses the importance of maintaining a direct relationship clients, distributors and final consumers and taking into consideration their recommendations when developing their products.</p>
<p><b>MAIN ORGANIZATIONAL CONTEXT FACTORS IN PLAY</b></p>		
<p><b>Collectivism and teamwork</b></p>	<p><b>Openness and permeability</b></p>	<p><b>Customer orientation</b></p>

**FIGURES**

Figure 1 – Summary of the theoretical propositions and the research framework

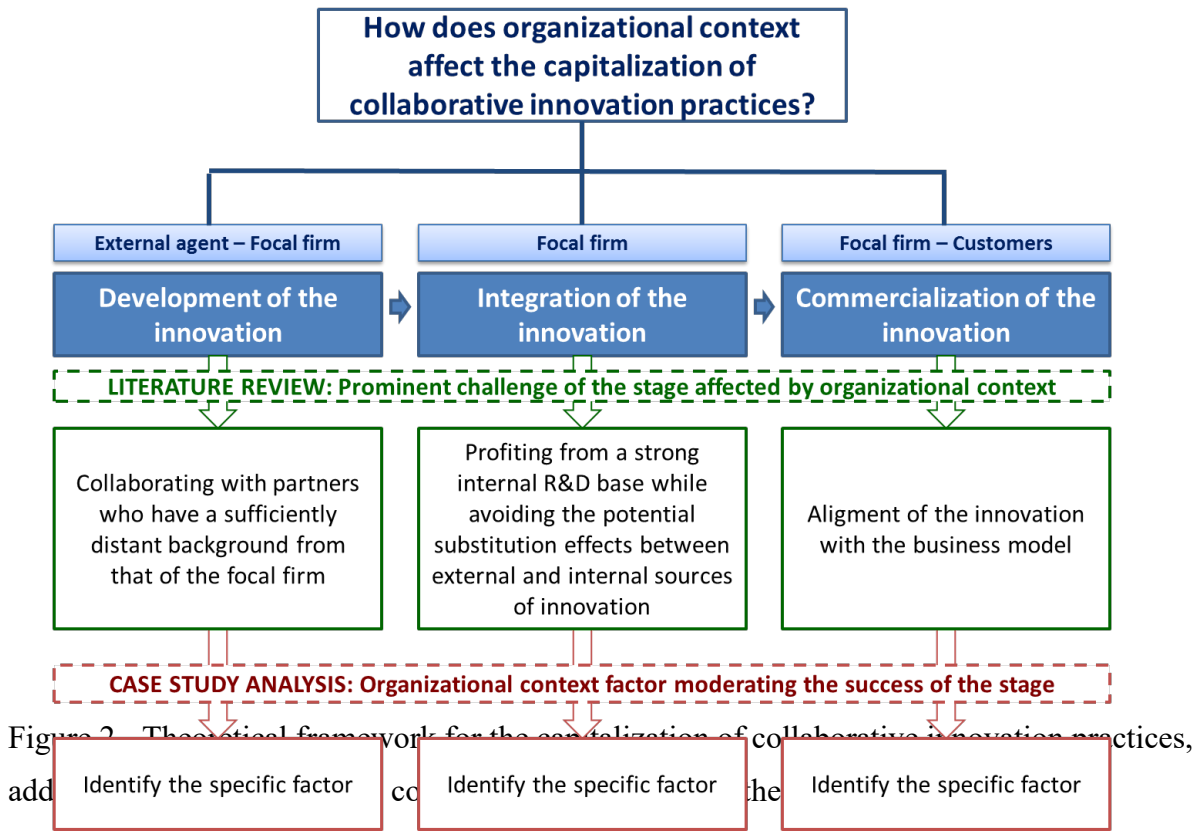


Figure 2 – Theoretical framework for the capitalization of collaborative innovation practices, add

