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Selecting the governance mode when offshoring knowledge-intensive activities

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ABSTRACT

The offshoring phenomenon has evolved in recent years, and can be understood from a threefold perspective: first, the evolution in the type of activity being offshored; second, the learning curve involving both the companies implementing offshoring and service providers; and third, the reasons for offshoring. This study proposes an empirical framework that will allow us to explore the interaction between the type of activity (specifically knowledge-intensive) and the drivers of the decision to select the most appropriate governance mode. Specifically, our results show that market-seeking drivers become the primary determinants prompting firms to offshore knowledge-intensive activities through a captive center. In contrast, the motivation to reduce costs moderates the decision to offshore knowledge-intensive activities by nurturing a preference for offshore outsourcing. The empirical evidence is supported by multi-country data from the Offshoring Research Network.

1. Introduction

Offshoring service activities has evolved significantly over the past twenty years. This practice was initiated with the clear objective of reducing costs and involved those activities considered administrative or very repetitive, albeit also of increasing importance in large corporations. It involves transferring these activities to countries with lower labor costs. However, over the years both those companies implementing offshoring and service providers have been learning, changing and evolving (Lewin and Volberda, 2011). One aspect of this evolution involves the type of activities being delocalized, passing from simple and repetitive administrative activities to more knowledge-intensive ones (Gerbl et al., 2015; Lewin and Peeters, 2006; Linares-Navarro et al., 2014; Manning et al., 2008; Musteen, 2016; Zhao and Calantone, 2003). The growing tendency is for companies to offshore more value-adding and more complex activities, requiring access to a larger number of qualified and skilled workers (Jensen et al., 2013; Lewin and Peters, 2006; Linares-Navarro et al., 2014).

This evolution has changed the criteria used to select the most appropriate governance mode for each activity. Offshoring has evolved toward activities that are more knowledge-intensive, and therefore more complex, strategic and even confidential, with the increasing use

of captive offshoring versus offshore outsourcing governance modes. Previous literature suggests that the offshoring of those knowledge-intensive activities that are essential for the firm's competitive advantage should be closely monitored (Hutzschenreuter et al., 2011; Lewin et al., 2009b; Zhao and Calantone, 2003).

At the same time, the evolution of these processes and the experience and learning companies have acquired have led to a change in their reasons for offshoring (Contractor et al., 2010). Companies have therefore changed from being cost-centric to other types of motivation that are more strategic in two main ways: on the one hand, the absence of talent in the country of origin or the excessive cost of that talent has made companies look for new talent abroad. Demand and cost are clearly interrelated, although there is a trend toward a motivation associated more with the lack of resources than with pure cost (Lewin and Peeters, 2006; Manning et al., 2008). In the specific case of knowledge-intensive activities, for example, there is another interesting and growing trend for outsourcing these types of functions (Amendolagine et al., 2014; Contractor et al., 2010) with the aim of increasing flexibility and gaining access to specialized resources, even though such activities are usually considered of strategic importance and represent core capabilities. On the other hand, the development of emergent countries and the increasing importance of these markets inform other even more strategic reasons associated with deployment in those countries: first, devel-

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oping products and services adapted to those countries' circumstances, and second, developing markets that are not only potentially interesting in themselves but also because of the organizational learning acquired through competing more efficiently in challenging markets. Therefore, apart from costs (Brouthers, 2002; Brouthers and Brouthers, 2003; Brouthers et al., 2003), there are other reasons associated with the hunt for resources (Bertrand, 2011; Bunyaratavej et al., 2011; Contractor et al., 2010; Lewin et al., 2009b) and the development of new markets (Contractor et al., 2010; Lewin and Peeters, 2006).

Considering this evolution from different perspectives (evolution in the type of activities, in the learning of offshoring companies and in service providers, as well as in the reasons for offshoring) that occur simultaneously or, coevolve, it seems appropriate that a decision of such importance as selecting the governance mode needs to be based on the joint interaction of the type of activities and their drivers. Specifically, one of the most challenging decisions facing international companies involves selecting the most appropriate offshoring governance mode depending on the type of activity being offshored (Choi and Contractor, 2016; Hutzschenreuter et al., 2011; Linares-Navarro et al., 2014; Luo et al., 2013) as well as responding to their desire to access distinctive resources (e.g., qualified and skilled personnel, and new technologies), reduce competitive pressure, or obtain cost savings, among other motivations (Lewin and Peeters, 2006; Mudambi and Venzin, 2010). Nevertheless, previous research reveals that the effects the type of activity and the reasons for offshoring have on the choice of governance mode still remain unclear from a joint perspective. Hence, in this paper we analyze the moderating effect drivers have on the governance mode decision when offshoring knowledge-intensive activities. In particular, we suggest that the drivers of offshoring may be a key factor for determining how the nature of the activity being offshored influences the choice of governance mode.

From an empirical point of view, we use data from the Offshoring Research Network (ORN), an international research initiative launched at Duke University's Center for International Business and Research (CIBER), which involves partner universities in Europe and Asia. All the data from the ORN have been gathered during the period from 2005 to 2011 and cover offshored service activities.

The main contributions our study makes to existing literature can be summarized as follows. To begin with, our study follows the main lines suggested by the literature (Bunyaratavej et al., 2011; Caniato et al., 2015; Elia et al., 2014; Gooris and Peeters, 2014; Hutzschenreuter et al., 2011; Kedia and Mukherjee, 2009; Lewin et al., 2009b; Linares-Navarro et al., 2014; Luo et al., 2013; Rilla and Squicciarini, 2011; Roza et al., 2011), and extends the state-of-the-art by providing new insights on the relationship between the type of activity being offshored and the choice of governance mode. Accordingly, we analyze how the impact the type of activity offshored has on the governance mode may be shaped by the reasons (or drivers) for offshoring. In our analysis, we posit that the relationship between knowledge-intensive activities and an internalized offshoring mode will be stronger in the case of market-seeking reasons. In contrast, we also propose that resource and cost drivers weaken the positive association between the offshoring of knowledge-intensive activities and a captive governance mode. Our study therefore develops and empirically tests a relationship in the offshoring phenomenon that combines the nature of offshoring activities with governance modes and drivers. This is an important issue for international business, as it constitutes a fruitful research stream. To the best of our knowledge, this is a significant gap in the literature that our research seeks to fill.

The paper is organized as follows: Section 2 sets out the theoretical framework used to test our hypotheses and explains our contribution. Section 3 describes the data, the variables, and the empirical method used. Section 4 describes the main results. Finally, Section 5 discusses

the main findings and describes the study's contributions and implications, its limitations, and topics for future research.

2. Theoretical background and hypotheses

Prior studies have traditionally sought to understand why firms offshore (e.g., Caniato et al., 2015; Lahiri and Kedia, 2011; Lewin et al., 2009a; Lewin et al., 2009b; Roza et al., 2011), and the most appropriate governance mode based on different criteria (e.g., Gooris and Peeters, 2014; Hutzschenreuter et al., 2011; Luo et al., 2013). Several questions have thus been explored, such as the influence of specific factors (e.g., location-specific factors, firm size, transaction costs, and cultural determinants) on the offshoring governance mode selected for each implementation (e.g., Contractor et al., 2010; Hutzschenreuter et al., 2011; Roza et al., 2011), or the performance implications of the choice made (captive offshoring versus offshore outsourcing) (e.g., Elia et al., 2014; Larsen, 2016; Leiblein et al., 2002; Rodriguez and Nieto, 2016).

In particular, while exploring the offshoring phenomenon, different relationships may be proposed between the type of activity and the preferred governance mode (Hutzschenreuter et al., 2011; Linares-Navarro et al., 2014; Luo et al., 2013). As previous literature has stressed, the type of activity offshored has an impact on the governance mode involved (Hutzschenreuter et al., 2011). This work states that firms decide on the governance mode based on the specific settings of a particular implementation, thereby suggesting that the type of activity will influence the governance mode selected. Linares-Navarro et al. (2014) contribute to this topic by stating that the governance mode selected depends on the type of activity, differentiating between core and non-core activities. Other authors (Luo et al., 2013) report that the choice of governance mode is affected by and aligned with transactional attributes and process integration requirements.

In addressing this topic, and based on prior literature, we consider two implementation models: an internal one, which is also referred to as in-house or captive offshoring, and an external one, referred to as offshore outsourcing (Contractor et al., 2010; Elia et al., 2014; Hätonen, 2009; Kedia and Mukherjee, 2009; Lewin and Peeters, 2006; Lewin and Volberda, 2011). As Kuntz and Roberts (2014: 253) have stated, "in internal offshoring, organizations establish captive centers (i.e., overseas subsidiaries fully owned by the organization and comprising a group of skilled professionals on location), while in external offshoring (offshore outsourcing) the organization hands control of specific business functions to foreign providers".

Considering the type of activity, when information security is high for a specific offshored activity, the company will be more uncertain as regards the behavior of the offshore vendor, being particularly wary of opportunistic behavior (Luo et al., 2013). This is the case of knowledge-intensive activities, which usually call for more process integration between the service provider and its customer, implying that a captive mode would be more appropriate. The evidence indicates that as information security increases or becomes more relevant and the integration between the vendor and the client is important, companies tend to select a captive mode (Luo et al., 2013). Hutzschenreuter et al. (2011) suggest that some governance modes are more suitable than others depending on the functions being offshored. Choosing an inappropriate governance mode may threaten the outcome of the offshoring effort, and especially so in critical or core activities (Linares-Navarro et al., 2014) such as knowledge-intensive ones, as they usually include intellectual property and represent critical competencies. As knowledge-intensive activities are likely to be highly strategic for the firm, involve confidential information and embody core capabilities, firms will then be reluctant to outsource them (Hutzschenreuter et al., 2011). In view of this, we posit that a captive governance mode will be more likely

than an outsourcing governance mode when delocalizing such activities.

Additionally, the reasons and governance choices involved in offshoring have long been considered a key research topic in this matter (Lewin et al., 2009a), so focusing on these issues is pertinent. With reference to drivers in offshoring, the prevailing convention has been that the main driver for offshoring business processes is to achieve cost savings through labor arbitrage. However, Lewin and Peeters (2006) and Contractor et al. (2010) report a remarkable evolution in more strategic drivers such as firm growth, improving services, and gaining access to more qualified personnel, as increasingly important objectives inducing companies to undertake offshoring activities. Accordingly, we consider the reasons involving market-seeking (i.e., part of a larger global strategy and access to new markets), resources (i.e., gaining access to qualified personnel offshore and improving service levels) and cost (i.e., labor costs and other cost savings) related to the likelihood of implementing offshoring, as these are the main drivers usually discussed in the literature (e.g., Lewin et al., 2009b; Roza et al., 2011). The work by Hutzschenreuter et al. (2011) analyzes the effect that cost, market-seeking and growth drivers have on the choice of governance mode, although it does not consider resource drivers. We therefore contribute to previous research by examining how offshoring drivers moderate the relationship between the nature of the activity being offshored (in particular knowledge-intensive activities) and the corresponding governance modes.

2.1. Drivers underlying the offshoring of knowledge-intensive activities

Specifically, and based on previous literature (e.g., Contractor et al., 2010; Hutzschenreuter et al., 2011; Lewin et al., 2011; Linares-Navarro et al., 2014; Manning et al., 2011), we have divided offshored service activities into two groups: knowledge-intensive and administrative. The former, such as R&D and product development and design (among others), involve symbolic analytic work and are typically more complex and require more highly skilled personnel than administrative activities, which are often referred to as back-office operations and are usually considered peripheral to core competencies (Lewin et al., 2011). Offshoring implementations initially focused on administrative service activities, but they have gradually been including more value-added service activities, such as knowledge-intensive ones (Jensen et al., 2013; Lewin and Peters, 2006; Linares-Navarro et al., 2014).

Some of the main studies on the relationship between offshoring drivers and the choice of governance mode are described in Table 1, with all of them analyzing these issues from different perspectives than in our study.

As previously propounded, offshoring companies may be doing so for different reasons, which are grouped into three types and can be understood according to three different theories. Based on transaction cost economics (Musteen, 2016; Williamson, 1993; Zhao and Calantone, 2003), when firms offshore one or more of their activities, perhaps looking for lower labor costs in the host country, they need to decide whether they should outsource (market) or keep the activity internalized as a way of minimizing transaction costs. Overall, the main benefit of offshoring involves cost advantages (by adding operating and transaction-based costs) due to more economical talent and facilities. Nevertheless, although cost savings have traditionally been proposed as the main driver for explaining offshoring decisions and international mode choice decisions (Brouthers, 2002; Brouthers and Brouthers, 2003; Brouthers et al., 2003), recent discussions highlight additional motivations, including access to highly skilled human resources or new technologies (Bunyaratavej et al., 2011; Contractor et al., 2010; Lewin et al., 2009b).

From the perspective of the resource-based view of the firm (Barney, 1991; Gilley et al., 2004; Prahalad and Hamel, 1990; Zhao

Table 1
Literature review on drivers and the governance mode of offshoring.

Author, Year	Topic	Methodology	Contribution and main findings
Bunyaratavej et al. (2007)	Location drivers	Empirical	Firms locate offshoring facilities in destinations that are closer in wages to the home country and in those with higher education levels and cultural similarity.
Caniato et al. (2015)	Location drivers	Empirical	Operational and strategic performance of the offshoring firm is affected positively by low cost and resource availability, while a local network has a positive impact on strategic performance and a negative one on operational performance.
Elia et al. (2014)	Choice of governance mode	Empirical	The alignment of the governance choice with an extended transaction cost economics approach leads to a better performance.
Gooris and Peeters (2014)	Choice of governance mode	Empirical	The home-host country distance has an effect on the choice of governance mode in service offshoring.
Hutzschenreuter et al. (2011)	Choice of governance mode	Empirical	Firms make their governance mode decision based on the institutional environment, the surrounding population of similar firms, firm-specific characteristics, and the individual settings of a particular implementation.
Kedia and Mukherjee (2009)	Offshoring drivers	Conceptual	Firms embark on offshoring when they perceive three sets of interrelated advantages: disintegration, location of specific resources, and outsourcing advantages.
Lewin et al. (2009b)	Offshoring drivers	Empirical	The need to access qualified personnel is a strong driver for offshoring innovation activities.
Linares-Navarro et al. (2014)	Choice of governance mode	Empirical	Governance choice depends on the type of activity (essential and non-core activities)
Luo et al. (2013)	Choice of governance mode	Empirical	The choice of governance mode choice is affected by and aligned with transactional attributes and process integration requirements.
Roza et al. (2011)	Offshoring drivers	Empirical	Firm size affects the activity that is offshored, the offshoring location, and not the governance mode selected.

and Calantone, 2003) a company's capabilities depend on its resources. The emphasis is on the resources the company requires to improve or maintain its competitive position, focusing on efficiency-seeking and knowledge-seeking motives (Roza et al., 2011). This theory highlights the importance of resources while leading firm action. Furthermore, managing a firm's portfolio of resources and capabilities is the main concern of a firm's strategy (Jacobides and Winter, 2005). From this perspective, offshoring is informed by the accessibility to, for example, qualified personnel or capabilities for redesigning the business process in offshore locations (Lewin and Peeters, 2006). This means that reduc-

ing labor costs and accessing global talent pools are two different approaches driving companies to initiate offshoring. Looking for talent is usually linked to companies involved in innovation and product-development activities, while saving on labor costs is related to companies seeking to replace high-cost workers (generally low skilled) with lower-cost workers.

Likewise, another theory largely applicable to offshoring is the market-based view (Jahns et al., 2006; Priem and Butler, 2001), whose reasoning has sometimes been identified with entrepreneurial theory (Roza et al., 2011). The main argument now is that offshore locations may also become important customer markets in the future, so offshoring will also be driven by market-seeking purposes. From this perspective, companies might see offshoring as a market-related strategic necessity, allowing them to access new markets, increase their speed to market, and even provide differentiation advantages over competitors (Jahns et al., 2006).

The offshoring phenomenon has become an increasing trend in international business as a means to expand firms' operations abroad (Bertrand and Mol, 2013; Brouthers and Hennart, 2007; Kedia and Mukherjee, 2009; Lee and Lieberman, 2010). Within this trend, a research stream attracting the interest of scholars focuses on how offshoring can be used as a strategy to create value (Lewin and Peeters, 2006; Mukherjee et al., 2013). Choosing the appropriate offshoring governance mode is an important decision, mainly in firm-critical functions such as knowledge-intensive ones. As previously described, knowledge-intensive activities are of strategic importance for firms and are considered high value-added activities involving confidential information and representing core capabilities (Luo et al., 2013). Thus, offshoring activities are no longer seen as an operational tool for saving costs but instead have become activities with strategic importance. This new trend therefore influences the way companies design their global activity network (Contractor et al., 2010). Therefore, our baseline is that firms offshoring knowledge-based activities will do so preferably through a captive governance mode. However, the motivation to offshore will moderate this relationship. The following sections explore the drivers in offshoring as factors that may moderate the relationship between the nature of the activity being offshored and the preferred governance mode.

2.2. Knowledge-intensive activities and choosing the governance mode: the role of cost drivers

Offshoring traditionally involves companies seeking lower operating costs, which become even lower when companies outsource the activity (Hutzschenreuter et al., 2011; Roza et al., 2011; Bertrand and Mol, 2013) although that implies higher transaction costs depending on the nature of the activity being offshored, the service provider's reputation, etc. Companies aim to reduce the sum of both transaction and operating costs as far as possible. In the case of simple and non-strategic activities, operating costs prevail as transaction costs tend to be minimal. As activities become more sophisticated, transaction costs increase, so even if operating costs are lower, captive offshoring may be the preferred governance mode and better control the increase in transaction costs. In line with this, previous literature shows that more knowledge-intensive activities are usually kept under tight control and performed internally through captive centers (Linares-Navarro et al., 2014).

The basic driver of offshoring, namely, cost advantage due to cheaper labor and facilities outside the home country, is a key reason for implementing an external governance mode. Offshoring operations driven by a cost reduction motive generally include relatively simple, routine and standardized tasks (Jensen and Pedersen, 2011). These are often governed in outsourcing mode with an arm's length relationship between companies, and thus with low inter-firm integration (Jensen

et al., 2013). This logic pushes those companies seeking to reduce costs to outsource the function to an external provider, with the sole purpose of becoming more cost effective. They tend to offshore outsource to minimize costs due to the supplier's specialization, the achievement of economies of scale and economies of learning, or the smaller investment required in comparison to a fully owned subsidiary in a foreign country (Caniato et al., 2015). Offshore outsourcing provides a possible pathway to price reduction and greater flexibility, permitting companies to transform fixed costs into variable ones (Ellram et al., 2008).

As previously described, efficiency-seeking reasons for offshoring are associated with the possibility of saving on wages and operating costs, and so a captive governance mode may not be the most suitable option for relocating activities abroad. We thus propose that the relationship between the offshoring of knowledge-intensive activities and the use of a captive governance mode may vary if offshoring is driven by reasons of cost reduction. When firms decide to offshore knowledge-intensive activities with the aim of reducing costs, they may not have the ability to exploit these high value-added activities themselves, and so need to obtain specialized knowledge, such as the managerial and technological experience of external partners. In contrast to the risk of losing a knowledge advantage through the need to share assets and skills with a host partner, the relocation abroad of knowledge-intensive activities driven by a cost reduction may allow obtaining the advantages of independent foreign suppliers through scale economies, for example (Amendolagine et al., 2014; Caniato et al., 2015). In the last decade, alliances and agreements with external providers have proliferated, to some extent because sources of technological knowledge are broadening beyond the internal capability of even large corporations, and the rise in R&D costs prompts sharing the expenditures and risks of R&D activities (Choi and Contractor, 2016). This implies that the positive relationship between offshoring knowledge-intensive activities and a captive governance mode will be reduced in the case of cost-reduction offshoring drivers. Considering the previous arguments, we formulate the following hypothesis:

Hypothesis 1. Offshoring knowledge-intensive activities is less positively related to the likelihood of choosing a captive governance mode when driven by cost motives.

2.3. Knowledge-intensive activities and choosing the governance mode: the role of resource drivers

Our second scenario involves companies delocalizing their activities that are driven by factors related to seeking resources abroad. Gaining access to highly skilled workers is one of the reasons for an offshoring strategy in the case of value-added activities (Bunyaratavej et al., 2011). From this perspective, offshoring is informed by the accessibility of qualified personnel or capabilities for redesigning the business process (Lewin and Peeters, 2006). In this front, we can identify two forces of contrary signs.

On the one hand, offshoring implementations driven by the search for resources and knowledge involve high asset-specificity, and present challenges to tacit knowledge and its exchange, with a risk of knowledge leakage (R. Mudambi and Tallman, 2010; S.M. Mudambi and Tallman, 2010; Petersen et al., 2010). Therefore, offshoring as a resource strategy involving knowledge-intensive activities suggests that a captive mode is preferred to relocate activities in international markets. Given the nature of knowledge-intensive activities (tacit and complex) and the risks associated with offshore outsourcing (e.g., dissipation of knowledge), firms may decide to relocate domestic human resources in their own subsidiaries, and thus safeguard valuable know-how and avoid the uncertainty due to the supplier's potentially opportunistic behavior (Luo et al., 2013), or other transaction costs. Under these circumstances, they will be more careful when outsourcing the task to an external provider, especially if the supplier is not known to

the company. Companies in this situation will be more willing to retain ownership of the activity abroad, thus creating a captive center (Manning et al., 2008).

On the other hand, we need to consider two recent research streams. First, we have learned about the evolution of service providers, which initially focused on serving global clients from low-cost countries have been investing in locations closer to their clients to cover both nearshore and offshore services. With the increasing availability of competent external service providers that have gained specialized experience, firms may be more and more attracted by the possibilities that offshore outsourcing offers in terms of reliance on external capabilities (Ellram et al., 2008; Manning et al., 2011), which are key resources in foreign markets. This notion has already been propounded by Abraham and Taylor (1996), who suggest that companies might decide to outsource specialized services if the work is complex and the contractor has more resources and experience in performing that activity. This means that companies conducting offshoring driven by resources may be willing to rely on outsourcing not only because knowledge is more and more complex and specific, and service providers are more and more specialized, but also because outsourcing is less expensive and less risky than captive, due to high internal organization costs (Brouthers and Brouthers, 2003; Manning et al., 2011) and because companies can protect themselves from knowledge leakages risks, through the adoption of complex and extended contracts, by building long-term partnerships, by relying on reputation effects, by sharing non-core knowledge or by sharing core-knowledge and using the "mutual hostage" effect (Madhok, 1997). Consequently, there is support for concluding that greater experience with sophisticated and demanding external suppliers provides offshoring companies with more possibilities to advance the value chain into higher-end roles (Youngdahl and Ramaswamy, 2008; Youngdahl et al., 2010).

Second, there are other authors who in turn suggest that the offshore outsourcing of R&D activities leads to more positive innovation outcomes (Bertrand and Mol, 2013) and also has a positive impact on organizational learning (Calantone and Stanko, 2007). Additionally, several studies have described the importance of outsourcing the R&D function for exploiting firm-specific capabilities abroad (Lewin et al., 2009b), arguing that local R&D capabilities are used to adapt existing products to local needs.

Accordingly, regarding the previous arguments about the more appropriate governance modes when being driven by resource motives, there is evidence to show that knowledge-based activities such as R&D, engineering, and product design (Lewin et al., 2009b) will be increasingly offshored via an external governance mode (Amendolagine et al., 2014; Contractor et al., 2010).

Therefore, when offshoring knowledge-based activities driven by the search of resources and capabilities we have two alternative arguments. As tacit knowledge may be involved, captive should be preferred, but at the same time outsourcing can be supported by the evolution of service providers both in their reach to valuable knowledge and in their increasingly effective coordination and integration mechanisms, as well as by the introduction of diversity and differential knowledge to the new relationship. We believe that the second set of arguments should dominate in the moderation effect. Considering these arguments, we propose the following hypothesis:

Hypothesis 2. Offshoring knowledge-intensive activities is less positively related to the likelihood of choosing a captive governance mode when driven by resource motives.

2.4. Knowledge-intensive activities and choosing the governance mode: the role of market-seeking drivers

Our third scenario involves moderating the decision on the governance mode, for the specific case of offshoring knowledge-intensive ac-

tivities, involving market-seeking factors. A company may consider that delocalizing the activity will help in terms of implementing its market strategy. Potential offshore locations are not only supplier markets, but can also be considered customer markets in the future. We consider the following arguments in order to support a positive moderator effect when considering market-seeking motives.

Firstly, market-seeking as a motive to offshore is related to accessing new markets. Access to the market requires the development of new capabilities and expertise that can only be developed by being close to the customers, understanding their idiosyncratic characteristics, and responding to their specific needs. As direct contact may be very relevant to drive this learning, firms will tend to lead more towards captive offshoring.

Secondly, but of course related to the first argument, the company may want to increase their speed to market, while sustaining a differentiation advantage over competitors. In this context, the offshore outsourcing governance mode is still less appealing for avoiding the risks of transferring important firm-specific knowledge to service providers, and thus maintaining a firm's knowledge advantage (Caniato et al., 2015; Hutzschenreuter et al., 2011) while the direct contact facilitates faster learning and capability development.

As a result, when a company decides to offshore a knowledge-based activity in order to access new markets the company may prefer an internal governance mode. Within this context, a captive governance mode allows firms to minimize their dependence on external providers, get closer to the customers, and retain greater control over the core competencies that enable them to achieve their market goals.

We therefore argue that while the offshoring preference for an internal (captive) governance mode for knowledge-intensive activities has been well established, this effect is amplified when offshoring for market-seeking reasons. We thus propose the following hypothesis:

Hypothesis 3. Offshoring knowledge-intensive activities is more positively related to the likelihood of choosing a captive governance mode when driven by market-seeking motives.

Fig. 1 summarizes the research framework for the main variables used here.

3. Research method

3.1. Data and sample

The ORN is an international research initiative launched at Duke University's CIBER that involves partner universities in Europe and Asia. Since 2004, it has been studying major offshoring drivers, risks, location choices, delivery model choices, performance indicators, and future plans, based on annual client and service provider surveys. The ORN database includes 1990 US and European client firms and more than 700 service providers. ORN's overall objective is to track, both annually and over several years, the offshoring of administrative and technical functions, from pioneering early adopters to majority adopters (Lewin and Peeters, 2006). The survey has helped the ORN to create the first firm-level database with information on when each company started offshoring a particular business function, where it was offshored, the service delivery model used, and why. Survey items are answered for each offshore implementation – that is, every function offshored in one particular location – and not for the company as a whole. This provides much more precise insight.

Our sample is taken from the ORN Corporate Client Surveys conducted in the US and Europe from 2005 to 2011. Service functions are classified into admin services, call centers, product design, engineering services, finance and accounting, human resources, legal services, marketing and sales, procurement, R&D, and software development. Our sample does not include offshore manufacturing (i.e., offshoring the

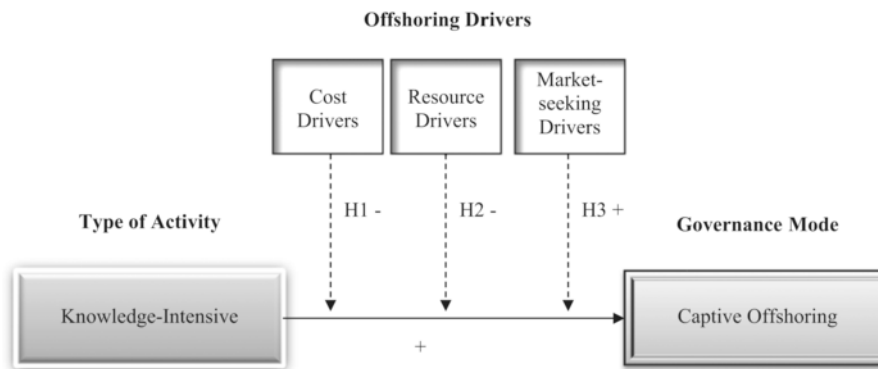


Fig. 1. Research framework for the main variables. Note: Solid arrows represent a direct relationship. Dashed arrows represent a moderated relationship.

value chain's primary functions) because it does not share the same drivers as services offshoring, and is thus different in terms of incentive structures, as outputs are easier to measure, and offshore centers can be organized as profit centers. The final sample consists of 664 offshore implementations during the observation period. All the companies included in the sample were conducting offshoring at the time the survey was administered (Larsen et al., 2013; Manning et al., 2011; Roza et al., 2011). We did not include companies considering offshoring, as their answers may have been influenced by their lack of experience in offshoring.

3.2. Measurement of variables

3.2.1. Dependent variable: captive governance mode

Despite the growing importance of offshoring decisions in prior research, the concepts “offshoring” and “outsourcing” are still often used synonymously in the literature, and there seems to be consensus on the need to differentiate them (Bunyaratavej et al., 2011; Kuntz and Roberts, 2014; Lewin et al., 2009b; Lewin and Volberda, 2011). In this sense, and for our purpose here, we will follow the work by Lewin et al. (2009b), Contractor et al. (2010) and Schmeisser (2013), defining *offshoring* as the process of sourcing and coordinating functions across national borders, whereas *outsourcing* denotes the delivery of products or services by an external provider. Outsourcing can be undertaken at home or abroad, and entails an organizational restructuring of some activities. When a company in another country is involved, the correct term is “offshore outsourcing” (Kedia and Mukherjee, 2009).

Our dependent variable is dichotomous, taking the value 1 if the offshoring implementation is governed internally (i.e., captive offshoring) and zero if it is governed externally (i.e., offshore outsourcing) (see, e.g., Manning et al., 2008). Firms may offshore outsource to a domestic partner, an international party, and/or a local one if they apply more than one of these, or if they only report outsourcing. In turn, captive offshoring firms retain full control over overseas operations (see, e.g., Roza et al., 2011).¹ Given the dummy nature of the dependent variable, the empirical models developed to test our hypotheses are estimated using a binary logit estimator (this model is the most widely used discrete limited dependent variable model in management literature; Hoetker, 2007)

3.2.2. Independent variable: type of offshored activity

The different activities were divided into knowledge-intensive ones (engineering services, R&D, and product design) and the rest (admin

services, call centers, finance and accounting, human resources, information technology support services, knowledge services, legal services, marketing and sales, procurement, and software development). Our classification is based on the work by Lewin et al. (2009b) and Manning et al. (2011), who identify knowledge-intensive activities and refer to them as product development or innovation activities.

3.2.3. Moderator variables: the offshoring drivers of cost, resource and market-seeking motives

We now consider the following reasons for offshoring activities, which are called drivers in the ORN survey. The importance of the nine different drivers used in the survey was investigated using a five-point Likert scale. The nine items were subjected to principal components analysis (PCA). Prior to performing PCA, the suitability of the data for factor analysis was assessed. The Kaiser-Meyer-Olin value was 0.759, exceeding the recommended value of 0.6 (Kaiser, 1970, 1974), and Bartlett's Test of Sphericity (Bartlett, 1954) reached statistical significance, supporting the factorability of the correlation matrix. PCA revealed the presence of three components with eigenvalues exceeding 1, explaining 11.83%, 17.02% and 34.68% of the variance, respectively. An inspection of the scree plot revealed a clear break after the third component. Using the Cattell (1966) scree test, the decision was made to retain three components for further investigation. The three-component solution explained a total of 63.53% of the variance. Varimax rotation was performed to help interpret these three components. Table 2 displays the rotated solution, indicating the loading within components. The main loadings on component 1 are *Other cost savings* and *Labor cost savings*. The main items on component 2 are *Business process redesign*, *Improved service levels*, and *Access to qualified personnel*. Finally, the main items on component 3 are the following four items: *Increasing speed to market*, *Access to new markets*, *Part of a larger global strategy*, and *Differentiation strategy*. Thus, Table 2 supports three categories of offshoring drivers (cost, resource, and market-seeking, respectively) and is consistent with previous research (e.g., Roza et al., 2011). This analysis provides a clear picture of each driver's significance in the three components. Items with primary loadings above 0.40 and cross-loadings below 0.40 were retained (all the items in this case).

3.2.4. Control variables

As regards the control variables, we first control for experience in offshoring (Bunyaratavej et al., 2011; Musteen, 2016). The comparative costs of hierarchical and contractual governance modes may change as firms accumulate this experience. We therefore include a variable that reports the number of a firm's past offshoring implementations (Gooris and Peeters, 2014; Jensen, 2009). Second, we also control for cultural distance (Ambos and Håkanson, 2014; Hutzschenreuter et al., 2011, 2016). A major risk perceived by companies with offshoring experience involves managing the cultural fit. Captive off-

¹ This definition of the dependent variable refers only to wholly owned subsidiaries (e.g., Kuntz and Roberts, 2014), and therefore does not consider joint ventures as a captive governance mode.

Table 2
Principal component analysis three-factor solution for offshoring drivers.
Source: ORN dataset

	Component I (Cost drivers)	Component II (Resource drivers)	Component III (Market-seeking drivers)
% variance accounted for:	11.83	17.02	34.68
Other cost savings	0.8479	0.0362	0.1897
Labor cost savings	0.8224	-0.0707	-0.2453
Business process redesign	0.2796	0.5013	0.3126
Improved service levels	-0.0218	0.7709	0.2873
Access to qualified personnel	-0.0605	0.8071	0.0364
Increasing speed to market	-0.0192	0.1988	0.7232
Access to new markets	-0.1777	0.0527	0.7949
Part of a larger global strategy	0.1241	0.1671	0.7401
Differentiation strategy	0.0688	0.2201	0.7657

shoring may help to solve the conflicts arising from the integration of two different cultures. This control variable was measured using a five-point Likert scale with the question: “how important are cultural differences with employees in offshore locations in the decision to offshore this function?” Third, firm size is used as a control variable in line with previous works showing that size influences offshoring activities (Boehe, 2010; Hutzschenreuter et al., 2011; Roza et al., 2011). We measure this variable as the logarithm of the number of employees working for the firm in the home country. Fourth, the time (in years) between the launch of the first offshoring project and the initiation of the focal implementation allows controlling for the age of the offshoring implementation (Larsen et al., 2013; Lewin et al., 2009b).

Table 3
Summary statistics, correlation matrix, and descriptive analysis.

Panel A: Summary statistics					Panel C: Descriptive analysis by type of activities					
Variable	Mean	Std. Dev.	Min.	Max.	No Knowledge-intensive	Knowledge-intensive	t-statistic			
1. Knowledge-intensive	0.300	0.458	0	1	(1)	(2)	(1)-(2)			
2. Captive governance mode (1 = yes)	0.453	0.498	0	1	0.398	0.583	-4.447***			
3. Cost driver	0.064	1.028	-3.177	1.088	0.188	-0.227	4.85***			
4. Resource driver	-0.002	1.039	-2.664	1.792	0.013	-0.038	0.592			
5. Market-seeking driver	-0.114	0.986	-1.938	1.795	-0.276	0.267	-6.721***			
6. Size	7.331	3.114	0	12.737	7.822	6.184	6.394***			
7. Cultural distance	2.873	1.101	1	5	2.858	2.909	-0.552***			
8. Experience in offshoring	7.241	5.468	1	22	6.935	7.955	-2.207**			
9. Age of implementation	6.211	8.081	1	41	6.146	6.362	-0.315			
Panel B: Correlation matrix										
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	
1. Captive model (1 = yes)	(1)	1.000								
2. Knowledge-intensive	(2)	0.170***	1.000							
3. Cost driver	(3)	-0.185***	-0.104***	1.000						
4. Resource driver	(4)	-0.023	0.046	0.043	1.000					
5. Market-seeking driver	(5)	0.253***	0.238***	-0.028	0.352***	1.000				
6. Size	(6)	-0.241***	-0.047	-0.059	0.248***	0.170***	1.000			
7. Cultural distance	(7)	0.021	-0.005	0.033	0.137***	0.031	0.179***	1.000		
8. Experience in offshoring	(8)	0.086**	0.199***	0.257***	0.212***	-0.092**	0.174***	0.065*	1.000	
9. Age of implementation	(9)	0.012	0.226***	0.173***	0.097**	-0.230***	-0.134***	0.086**	0.567***	1.000

Notes: (i) Source: ORN dataset; (ii) ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively; (iii) to save space, the descriptive statistics on industry and location dummies are not reported.

Fifth, the location of the offshore implementation is used as a control variable because this decision affects offshoring activities (Lewin et al., 2009b; Luo et al., 2013; Roza et al., 2011). Importantly, property rights systems and other legal frameworks in a host country appear to be increasingly relevant to the choice of offshoring governance mode. Without sufficient legal protection, a firm's property rights such as trademarks, brand names, expertise, patents and copyrights will be exposed to possible infringements and unlawful use by local firms. In such circumstances, the firm may have to use a captive mode. We use the following dummy variables as a control: Africa, Asia, Australia, Canada, China, Eastern Europe, India, Latin America, Middle East, Philippines, Russia, United States, and Western Europe. Sixth, since the home country affects entry-mode decisions (e.g., Gooris and Peeters, 2014; Hennart and Larimo, 1998; Henisz and Delios, 2001; Mayrhofer, 2004), we control for the firm's home country through a series of binary variables (the United States, Belgium, the Netherlands, Scandinavia, Spain and the United Kingdom). To control for industry effects, we created dummy variables for the following industries: finance and insurance, government, manufacturing, media, professional services, retail, software, technical services, and transportation. The governance mode chosen may vary depending on the type of industry (Lewin et al., 2009b; Luo et al., 2013). The Appendix A provides the definitions of the variables used.

4. Results

Panels A and B in Table 3 provide the summary statistics of the variables used in the analyses and their correlations between each other, respectively. Panel C presents several differences of means tests that enable us to check whether knowledge-intensive and non-knowledge-intensive activities differ from each other in terms of the characteristics considered in the regression analysis. The correlation data suggest, for example, that the choice of the captive governance mode is positively associated with the offshoring of knowledge-intensive activities and the market-seeking drivers for offshoring. In contrast, a captive governance mode is negatively correlated with the cost driver. In addition, knowledge-intensive activities are offshored particularly by firms with more experience in past offshoring implementations. To assess

any multicollinearity problems, we have computed the variance inflation factor (VIF) in each one of the estimated models. The VIFs are consistently below the cut-off value of 10.0, which indicates that multicollinearity is not a major problem in our analysis (Hair et al., 2010).

Table 4 presents the results of the regression analysis for testing our hypotheses. Model 1 is a base model that reports the results solely for the control variables; Model 2 includes the direct effects that both knowledge-intensive activities and offshoring drivers have on the governance mode; in Models 3, 4 and 5 interactions between the knowledge-intensive activities and each offshoring driver are introduced one by one; finally, Model 6 includes all the interactions (moderator variables) between knowledge-intensive activities and the offshoring drivers (cost, resource, and market-seeking drivers). Given that a single firm might be involved in more than one offshoring implementation, standard errors are adjusted for clustering at firm level.

We now discuss the control model and the model with the direct effects before turning to each one of the hypotheses concerning the moderator effects. In Model 1 (Table 4), the coefficient for size is significant and positively related to a captive mode ($\beta = 0.211$, $p < 0.01$), in line with previous studies (Boehe, 2010; Roza et al., 2011). The coefficients for professional services, software industry and technical services are also significant and positively associated with an internal governance mode.

Model 2 in Table 4 reports the results for the direct effect of knowledge-intensive activities on the governance mode in offshoring, as well as the effects of the offshoring drivers. Thus, a knowledge-intensive dummy variable was added for testing our baseline argument. The baseline argument postulated that the impact of knowledge-intensive activities on a captive mode for offshoring practices is positive. In this sense, the estimated coefficient of this dummy variable is statistically significant ($\beta = 0.649$, $p < 0.01$), and so we are in line with previous studies (Hutzschenreuter et al., 2011; Linares-Navarro et al., 2014). Because knowledge is an intangible asset that is tacit in nature, when an activity is knowledge-intensive there is a higher threat of imitation and a greater need for protecting the intellectual property involved. These are fundamental determinants of a firm's decision to engage in captive offshoring.

Models 3, 4 and 5 in Table 4 report the results for the moderator effects of offshoring drivers (cost, resource, and market-seeking drivers) on the relationship between knowledge-intensive activities and the governance mode. In each model, one interaction between knowledge-intensive activities and the corresponding offshoring driver has been introduced.

Model 3 (Table 4) includes the interaction between knowledge-intensive activities and the cost driver variable to determine whether cost-saving drivers affect the positive association between knowledge-intensive activities and the likelihood of choosing a captive governance mode. The estimated coefficient is negative and significant, thus offering support for H1 ($\beta = -0.611$, $p < 0.01$). This result suggests that in the specific case of cost savings, the offshoring driver is a key factor for determining how the nature of the activity being offshored influences the choice of governance mode. This is relevant to the extent that even for knowledge-intensive activities, which have traditionally been kept under tight control (Lewin et al., 2009b), companies may decide to outsource this type of function with the aim of reducing costs.

In addition, H2 proposes that resource drivers weaken the positive relationship between offshoring knowledge-intensive activities and an internal governance mode. In model 4 (Table 4), the estimated coefficient of the interaction effect between the variable Knowledge-intensive and the variable Resource driver is not statistically significant. Therefore, no support for H2 is found.

The interaction between knowledge-intensive activities and the market-seeking driver has a positive impact on the likelihood of choosing a captive governance mode (Model 5). Our results are statistically

significant, and we therefore find support for H3 ($\beta = 0.811$, $p < 0.01$). The empirical evidence therefore suggests that market-seeking drivers become primary determinants prompting firms to offshore knowledge-intensive activities through a captive center; that is, the positive influence knowledge-intensive activities have on the choice of captive governance mode is strengthened when the driver-guiding service offshoring activities is related to market-seeking issues. By settling a critical function in a relevant foreign market, the firm enhances its reputation with local customers (Contractor et al., 2010). In line with this, activities involving company secrets should be kept in-house, and this is the case of knowledge-intensive activities.

Finally, Model 6 in Table 4 includes all the interaction terms between the knowledge-intensive activities and the three offshoring drivers. As can be observed, the estimated coefficient of the interaction between knowledge-intensive activities and cost-seeking driver is negative and significant, the interaction between the variable "Knowledge-intensive" and the variable "Resource driver" is nonsignificant, and the interaction between knowledge-intensive activities and the market-seeking driver has a significant positive impact on the likelihood of choosing a captive governance mode. Therefore, those results in Model 6 are qualitatively similar to those in models 3, 4 and 5, which include each interaction one by one.

To better interpret these results, we have plotted the fitted slope to depict the interaction effect the cost driver has on the relationship between knowledge-intensive activities and the probability of choosing a captive governance mode. In turn, Fig. 2 shows a negative relationship between knowledge-intensive activities and the likelihood of a captive governance mode when the importance of cost drivers is high.

We have further plotted the fitted slope to depict the interaction effect the market-seeking driver has on the relationship between knowledge-intensive activities and the probability of choosing a captive governance mode (keeping the remaining variables constant at mean levels). In Fig. 3, the interaction term between the market-seeking driver and the type of activity (knowledge-intensive versus non-knowledge-intensive) implies that the curve for knowledge-intensive activities is steeper for high values of the market-seeking driver. Fig. 3 therefore shows a positive relationship between knowledge-intensive activities and the likelihood of a captive governance mode when the importance of market-seeking drivers is high.

4.1. Robustness tests

Separate models have been estimated (see Table 5) to test whether the offshoring drivers impact differently upon the governance mode selected (captive offshoring versus offshore outsourcing) for knowledge-intensive activities versus administrative activities. This enables us to check whether the effect the offshoring drivers have on the choice of governance mode differs between the two types of activities. The new regression results are presented in Table 5. Our empirical evidence shows that only in the case of cost and market-seeking drivers there is a difference in the estimated coefficients between both subgroups of activities. We thus find that an internal governance mode is negatively associated with cost drivers when offshoring knowledge-intensive activities. These findings are in line with H1. In addition, the likelihood of adopting a captive governance mode when the type of activity offshored is knowledge-intensive is strengthened when the driver is market-seeking. The estimated coefficient shows a positive sign, and thus provides support for H3.

Finally, when interpreting interaction effects in terms of marginal effects in models with limited dependent variables (e.g., our logit model), an important stream of research has stressed that the common practice of testing a moderating hypothesis on the basis of the sign and significance of the coefficient in the interaction variable is incorrect, as this coefficient does not equal the analytically correct moderating ef-

Table 4
Results of the logistic regression model for firms currently offshoring.

	Model 1			Model 2			Model 3			Model 4			Model 5			Model 6		
	Coeff.	S.E.	Sig.	Coeff.	S.E.	Sig.	Coeff.	S.E.	Sig.	Coeff.	S.E.	Sig.	Coeff.	S.E.	Sig.	Coeff.	S.E.	Sig.
Constant	-2.704	0.914	***	-3.149	0.928	***	-3.173	0.910	***	-3.218	0.932	***	-3.157	0.931	***	-3.181	0.915	***
Knowledge-intensive	-	-		0.649	0.289	**	0.636	0.286	**	0.648	0.286	**	0.550	0.300	*	0.578	0.299	*
Cost driver	-	-		-0.007	0.132		0.181	0.146		-0.006	0.130		0.025	0.132		0.207	0.146	
Knowledge-intensive x Cost driver	-	-		-	-		-0.611	0.218	***	-	-		-	-		-0.666	0.240	***
Resource driver	-	-		-0.080	0.148		-0.054	0.150		-0.147	0.176		-0.057	0.153		-0.030	0.172	
Knowledge-intensive x Resource driver	-	-		-	-		-	-		0.201	0.218		-	-		-0.002	0.232	
Market-seeking driver	-	-		0.291	0.190		0.270	0.184		0.298	0.186		0.114	0.195		0.103	0.199	
Knowledge-intensive x Market-seeking driver	-	-		-	-		-	-		-	-		0.811	0.301	***	0.856	0.339	**
Size	0.211	0.075	***	0.236	0.079	***	0.226	0.079	***	0.237	0.079	***	0.238	0.081	***	0.227	0.081	***
Cultural distance	-0.177	0.137		-0.178	0.132		-0.163	0.135		-0.178	0.133		-0.209	0.131		-0.191	0.133	
Experience in offshoring	0.038	0.039		0.021	0.040		0.016	0.040		0.022	0.039		0.023	0.038		0.019	0.039	
Age of offshoring implementation	0.044	0.030		0.052	0.031	*	0.053	0.032	*	0.054	0.031	*	0.050	0.029	*	0.053	0.031	*
Industry:																		
Finance	-0.462	0.693		-0.421	0.691		-0.486	0.689		-0.371	0.697		-0.398	0.681		-0.442	0.680	
Manufacturing	0.335	0.562		0.380	0.572		0.359	0.565		0.415	0.574		0.358	0.564		0.334	0.558	
Professional services	1.558	0.701	**	1.434	0.668	**	1.413	0.680	**	1.446	0.671	**	1.322	0.659	**	1.338	0.669	**
Retailing	-0.305	0.837		-0.126	0.858		-0.180	0.859		-0.078	0.865		-0.027	0.889		-0.071	0.861	
Software	1.965	0.682	***	1.939	0.737	***	1.998	0.733	***	1.998	0.731	***	2.084	0.728	***	2.129	0.717	***
Technical services	1.433	0.581	**	1.499	0.557	***	1.409	0.563	**	1.539	0.559	***	1.456	0.540	***	1.361	0.541	**
Government, media, transportation, other	-	-		-	-		-	-		-	-		-	-		-	-	
Location:																		
Africa	0.018	0.893		0.388	0.769		0.553	0.792		0.379	0.772		0.370	0.750		0.523	0.777	
Asia	0.582	0.599		0.707	0.589		0.702	0.610		0.694	0.598		0.731	0.603		0.738	0.633	
Australia	-1.696	1.121		-1.319	1.124		-1.285	1.121		-1.282	1.122		-1.289	1.122		-1.244	1.124	
Canada	-0.514	0.947		-0.369	0.925		-0.219	0.964		-0.386	0.937		-0.276	0.914		-0.110	0.956	
China	0.274	0.511		0.305	0.512		0.459	0.514		0.304	0.514		0.328	0.515		0.491	0.522	
Eastern Europe	0.106	0.429		0.265	0.418		0.388	0.418		0.269	0.419		0.218	0.417		0.345	0.415	
India	-0.539	0.407		-0.333	0.402		-0.226	0.410		-0.332	0.406		-0.340	0.404		-0.233	0.413	
Latin America	-0.300	0.574		-0.033	0.567		0.070	0.578		-0.020	0.571		0.045	0.582		0.146	0.582	
Middle East	0.511	1.009		0.437	0.971		0.546	0.975		0.439	0.957		0.587	1.015		0.694	0.988	
Philippines	-0.545	0.578		-0.290	0.587		-0.188	0.581		-0.267	0.584		-0.270	0.582		-0.162	0.571	
Russia	-0.231	0.950		-0.166	0.874		-0.065	0.817		-0.212	0.843		-0.202	0.866		-0.129	0.816	
United States	-0.132	0.705		-0.077	0.684		-0.014	0.670		-0.064	0.695		0.078	0.707		0.159	0.700	
Western Europe	-	-		-	-		-	-		-	-		-	-		-	-	
Home country																		
United Kingdom	0.328	1.256		0.419	1.263		0.377	1.314		0.392	1.264		0.538	1.262		0.497	1.312	
Spain	1.317	1.134		1.555	1.057		1.457	1.087		1.584	1.064		1.656	1.110		1.526	1.133	
Scandinavia	1.534	0.794	*	1.705	0.800	**	1.691	0.852	**	1.749	0.794	**	1.975	0.767	***	1.919	0.803	**
Netherlands	1.290	0.628	**	1.275	0.660	*	1.124	0.649	*	1.280	0.661	*	1.337	0.641	**	1.192	0.629	*
Belgium	2.175	0.612	***	2.053	0.571	***	2.030	0.584	***	2.042	0.576	***	1.995	0.580	***	1.962	0.590	***
United States	-	-		-	-		-	-		-	-		-	-		-	-	
Log-likelihood	-363.544			-353.594			-349.405			-353.053			-348.437			-344.315		
Likelihood ratio (χ^2 test)	79.93***			94.41***			98.96***			96.79***			97.23***			99.51***		
No. of observations	664			664			664			664			664			664		

Notes: (i) Source: ORN dataset; ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively; (ii) "S.E." = Standard error.

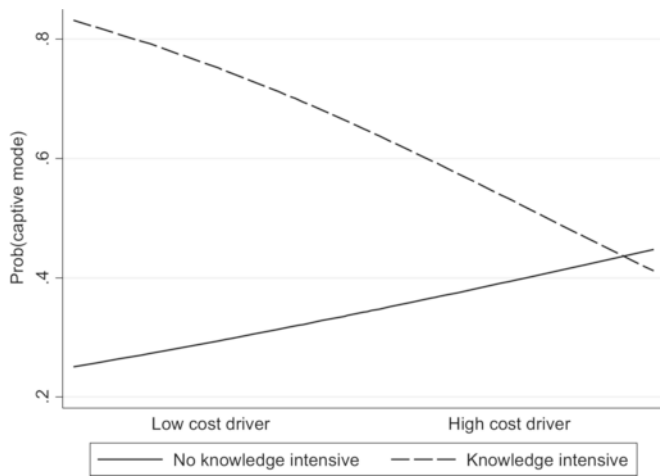


Fig. 2. Moderating effect of importance of cost driver. Source: ORN dataset.

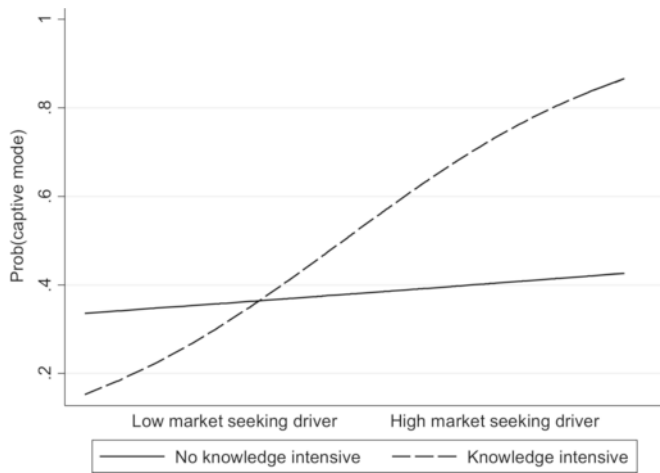


Fig. 3. Moderating effect of importance of market-seeking driver. Source: ORN dataset.

fect in such models (Ai and Norton, 2003; Norton et al., 2004; Cornelißen & Sonderhof, 2009; Hoetker, 2007; Wiersema and Bowen, 2009; Zelner, 2009). Since our focus is on the difference in the driver's marginal effect on the conditional probability that the captive mode equals 1 between knowledge-intensive and non-knowledge-intensive activities, we have resolved this issue by rerunning the logit model and calculating the cross-partial derivative effect as this derivative's average over all the observations in the dataset; that is, for each observation we have calculated the change in the conditional probability that the captive mode is 1 for a change in the corresponding driver (cost, resource, or market-seeking driver) as the dummy variable collecting knowledge-intensive activities changes from zero to one. The results obtained are indicated in Table 6. The mean interaction effect is negative (positive) and statistically significant for the cost (market-seeking) driver, confirming H1 and H3, respectively. For instance, the average change in the predicted conditional probability that the captive mode equals 1 for a one-unit increase in the cost driver variable differs between knowledge-intensive and non-knowledge-intensive activities by -11.2% points, with knowledge-intensive activities on average having lower marginal effects on the likelihood of choosing a captive governance mode in step with a higher cost driver. In contrast, the mean marginal effect of the interaction term between knowledge-intensive activities and the resource driver is non-significant. Finally, the average change in the predicted conditional probability that the captive mode equals 1 for a one-unit increase in the market-seeking driver variable differs between knowledge-intensive and non-knowledge-intensive ac-

Table 5 Results of the logistic regression model by subsamples (knowledge-intensive activities versus non knowledge-intensive activities). Full sample.

Panel A: Non knowledge-intensive activities			
	Coeff.	S.E.	Sig.
Constant	-3.132	1.058	***
Cost driver	0.229	0.156	
Resource driver	-0.051	0.175	
Market-seeking driver	0.119	0.202	
Size	0.274	0.087	**
Cultural distance	-0.169	0.149	
Experience in offshoring	0.014	0.043	
Age of implementation	0.055	0.033	*
Panel B: Knowledge-intensive activities			
Constant	-4.417	2.049	**
Cost driver	-0.784	0.412	*
Resource driver	0.164	0.262	
Market seeking driver	0.720	0.304	**
Size	0.217	0.116	*
Cultural distance	-0.263	0.230	
Experience in offshoring	-0.018	0.075	
Age of implementation			
Chi2-tests of equality of estimated coefficients:			
Cost Driver Panel A = Cost Driver Panel B			
Chi2 statistic (Prob > Chi2)	7.69	(0.0055)	***
Resource Driver Panel A = Resource Driver Panel B			
Chi2 statistic (Prob > Chi2)	0.00	(0.9923)	
Market-seeking Driver Panel A = Market-seeking Driver Panel B			
Chi2 statistic (Prob > Chi2)	6.39	(0.0115)	***

Notes: (i) Source: ORN dataset; ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively; (ii) "S.E." = Standard error; (iii) The model include industry and offshoring location dummies as control variables; (iv) to save space, the estimated coefficients on the control variables and the results of the tests of joint significance are not reported.

Table 6 Cross-partial derivatives in logit model with interaction terms.

	Mean	Std. Dev.	Min.	Max
Mean cross-partial derivative effect for cost driver	-0.112	0.036	-0.155	-0.013
z-statistic of interaction effect	-2.149	0.593	-3.822	-0.730
Mean cross-partial derivative effect for resource driver	0.036	0.011	0.004	0.049
z-statistic of interaction effect	0.847	0.100	0.530	0.991
Mean cross-partial derivative effect for market seeking driver	0.132	0.063	0.005	0.220
z-statistic of interaction effect	1.843	0.701	0.249	3.433

tivities by 13.2% points, with knowledge-intensive activities on average having higher marginal effects with the market-seeking driver. This new empirical evidence confirms the results shown in the previous empirical analyses.

5. Discussion and conclusions

The literature suggests there has been a progression in offshoring, which is increasingly moving into value-added activities. Nowadays, firms offshore not only manufacturing operations and standardized services (labor-intensive activities) but also knowledge-intensive activities (Jensen et al., 2013; Lewin and Peters, 2006; Linares-Navarro et al., 2014). As activities become more knowledge-intensive, the preference for captive offshoring increases. We confirm this in our study, and it is also in line with previous research (Hutzschenreuter et al., 2011). We also explore the role of drivers in this decision.

Consistent with internationalization research, offshoring is a strategic practice that may help companies to add value, as it is an attractive way to improve process efficiency, access qualified personnel abroad,

and enter new markets. The literature posits that the reasons for offshoring have evolved from simply reducing costs to seeking growth opportunities or innovation capabilities (Bunyaratavej et al., 2011; Lewin and Peters, 2006; Roza et al., 2011). For example, based on the resource-based view of the firm, organizational knowledge and processes that cannot be observed nor imitated are sources of competitive advantage and make a major contribution to firm performance (Lewin et al., 2009b). Based on the market-based view, speed to market is also a key reason to offshore. In addition to the considerable interest in drivers, the choice of a suitable governance mode is another key issue regarding the offshoring phenomenon (Hutzschenreuter et al., 2011; Luo et al., 2013) by typically distinguishing between captive offshoring, which represents an internal governance mode, and offshore outsourcing, which describes an external governance mode (Contractor et al., 2010; Kuntz and Roberts, 2014). Our study analyzes how drivers moderate the relationship between offshoring knowledge-intensive activities and the preference for a captive governance mode.

As previously discussed, and based on previous literature, costs are always important in the offshoring decision. In particular, our results show that when offshoring knowledge-intensive activities with the aim of reducing costs, the cost driver clearly prompts companies to offshore outsource. Nevertheless, when other drivers, such as market-seeking reasons, dominate the decision to offshore knowledge intensive activities, it confirms that this type of driver encourages firms to implement captive offshoring. Our results therefore suggest that market-seeking drivers are important moderators with a positive influence on the choice of a captive offshoring mode when a company offshores knowledge-intensive activities, whereas choosing this internal governance mode is not such a clear decision for offshoring when companies are driven by cost reduction.

Taking into account the previous considerations, the following issues should be highlighted. Firstly, offshoring knowledge-intensive activities will better meet the company's market-seeking objective when it is implemented through an internal governance mode rather than through an external one. The captive offshoring mode will enable a company to be close to the customers to gain access to new markets, while at the same time safeguarding and exploiting internal know-how without having to rely on external providers (Hutzschenreuter et al., 2011; Luo et al., 2013).

Secondly, companies might search for resources via an offshore outsourcing mode, and thereby use their external suppliers to find the necessary resources (Dickson et al., 2006). Offshore outsourcing helps companies to gain flexibility, allowing them to easily switch between countries and suppliers, and making them less committed to specific technologies. Offshore outsourcing is source of talent but also of diverse ideas needed in the innovation process. However, although quality and trust may influence firms' ability to seek outside help and outsource knowledge-intensive functions, the moderating effect of resource drivers on the relationship between knowledge-intensive activities and the use of a captive governance mode is not significant. As we discussed before, there is also a force in the opposed direction: Firms can be afraid to loose distinctive tacit knowledge by using external provider talent. We claim that current co-evolution of offshoring practices and service providers may support the validity of the former arguments, but our data is already not so recent and perhaps we are just seeing a transition from one to the other direction in the moderating factor. We conjecture that newer data may support our hypothesis as established in this paper.

Furthermore, we have found that cost drivers weaken the positive impact of offshoring knowledge-intensive activities on the choice of a captive mode, which demonstrates the idiosyncratic nature of offshoring knowledge-intensive activities driven by costs. In particular, firms may be sensitive insofar as the captive solution might introduce higher costs than the outsourcing one, as well as because of the invest-

ments required to acquire or establish a foreign subsidiary (Hutzschenreuter et al., 2011). As a result, we contribute to an understanding of the decision-making process in companies offshoring knowledge-intensive activities depending on their motivations. If a company decides to offshore knowledge-intensive activities in order to reduce costs over other drivers, the company should offshore outsource the activity. If, however, the company's aim is to develop new markets, it should implement a captive offshoring strategy.

Consistent with all these premises, the aim of this paper has been to provide an integrative framework by examining how the different drivers that impel firms to offshore services may impact on the relationship between the nature of the activity being offshored, specifically knowledge-intensive activities, and the use of a particular governance mode. Taking the company perspective into consideration and the reasons behind implementing an offshoring strategy, this relationship may be stronger or weaker. We have thus examined the effect that cost reduction together with more strategic drivers, such as the need to access new markets and resources, has on the relocation of operations by distinguishing between captive offshoring and offshore outsourcing.

This paper has several implications for international business literature by contributing to the field in several ways.

First, we develop a multiple theoretical perspective when explaining the choice of the offshoring governance mode, as has been suggested in the offshoring literature (Brouthers, 2002; Elia et al., 2018; Madhok, 1997), by developing a framework to understand the moderating effect drivers have on the choice of governance mode when offshoring knowledge-intensive activities, based on both theoretical arguments and empirical results. Given that sourcing activities from outside the home country is a challenging, risky, and complex decision for firms (Mukherjee et al., 2013), our study has provided new theoretical and empirical evidence on certain specific factors that are crucial for choosing an appropriate governance mode. Our work stresses that firms should choose different governance modes ("how") for the activities they offshore depending on the nature of the activity ("what"), with this relationship being influenced by their primary motivations ("why"). On the one hand, when a company offshores its knowledge-intensive activities it seems it should choose a captive governance mode. This is consistent with conventional wisdom and existing literature (Lewin et al., 2009b), as these types of activities are at the core of competitive advantage and should be kept under tight control. On the other hand, if the company is driven by market-seeking reasons, our empirical analysis shows that the relationship is stronger. When the search for cost savings is a pivotal reason for offshoring knowledge-intensive activities, the company should choose an external governance mode (offshore outsourcing) (Caniato et al., 2015; Hutzschenreuter et al., 2011). In line with this, our study shows that not only do companies continue to be motivated by traditional cost drivers when deciding to offshore knowledge-intensive activities, but they also offshore in response to market-seeking drivers, and in this latter case they prefer a captive governance mode.

Second, this work contributes to the offshoring practice from a managerial and practitioner perspective, by proposing that it is not only function-specific characteristics per se, such as the distinction between administrative activities and knowledge-intensive activities that should influence the decision on the choice of governance mode. Thus, we extend the state-of-the-art by showing that offshoring drivers may influence the relationship between the nature of the activity and the choice of governance mode. We report that offshoring knowledge-intensive activities, which implies transactions related to more specialized intangible assets such as qualified human resources or know-how (Luo et al., 2013), prompts firms to adopt a captive mode when market-seeking drivers are the key motivators. Furthermore, the role of cost drivers as a primary determinant for offshoring is also vital for understanding the decision to offshore knowledge-intensive activities. The

positive relationship between knowledge-intensive activities and a captive governance mode is weaker when firms decide to offshore for cost reasons. This finding has important practical implications for managers because they have to choose the governance mode considering not only the type of activity being offshored but also the type of driver or motivator to ensure their companies' objectives are more successfully achieved. Therefore, before implementing services, offshoring firms should learn to identify the criteria for selecting the more appropriate governance mode based on these unique aspects (Hutzschenreuter et al., 2011).

As a result, from a practical perspective, managers should be aware that their company's reasons for offshoring moderate the choice of governance mode. Specifically, depending on the type of activity and what they are looking for with each implementation, companies should select an internal or an external governance mode.

Third, we provide a better understanding of the offshoring of services. While offshoring research in the manufacturing context has prevailed over the years, a growing body of literature highlights the need to identify different offshored activities, and more specifically the decision to offshore services has increasingly attracted scholarly attention in recent years (e.g., Caniato et al., 2015; Elia et al., 2014; Jensen and Petersen, 2013; Lewin and Volberda, 2011). As Pisani and Ricart (2016, p. 386, 418) have recently pointed out: "offshoring of services (OS) represents a remarkable economic and social phenomenon in the international business (IB) scenario" and "much work remains for those IB scholars interested in this multifaceted phenomenon, which is expected to affect firms' cross-border activities to an even greater extent in upcoming years". Service activities have traditionally been characterized as possessing a high proportion of intangible components that are difficult to express, making the specification complicated. The question is, therefore, how to offshore a service that is difficult to define. Some services require customer involvement, so facilitating it in real time and across distances is an immediate challenge for offshoring. Service quality is also an important concern, so when services are complex and vaguely defined, their processes cannot be standardized, as they require complicated judgements involving implicit knowledge, with steps in the process being reciprocal, making offshoring more challenging (Gleich et al., 2017; Stringfellow et al., 2008).

Our study therefore provides a guide for scholars and managers designed to stimulate the success of their offshoring implementations by understanding the phenomenon from a co-evolutionary perspective.

6. Limitations and future research

While our study's findings have important implications for the theory and practice of international management, as with all studies it has a number of limitations.

First, studies on offshoring have identified certain trends. As described in our study, the phenomenon started with the offshoring of highly operative and transaction-oriented activities, but has since been moving rapidly into heavily knowledge-based activities. Driven by cost efficiencies, many companies have been gaining more experience in offshoring, while at the same time encountering coordination and governance problems (Sidhu and Volberda, 2011), often exacerbated by the lack of a clear corporate strategy. The consequence has been what is called the efficiency trap (Lewin et al., 2011; Paz-Aparicio and Ricart, 2013), as companies driven by the search for efficiencies become entangled in increasingly complex situations, giving rise to major inefficiencies. From this perspective, mention should be made of the

costs of managing and coordinating interdependent activities in different time, language and cultural zones (Asmussen et al., 2016; Sidhu and Volberda, 2011), referred to as "hidden" or "invisible" costs (Andersson and Pedersen, 2010; Larsen et al., 2013; Manning et al., 2011). For theoretical and managerial purposes, it would be interesting to measure this effect and analyze how this type of costs could also affect the relationship between the nature of the activity being offshored and the choice of governance mode.

Second, and in line with this last research stream, companies gain experience in offshoring, and eventually learn how to avoid the efficiency trap. In addition, service providers are also learning and growing closer to companies with additional onshore resources. The outcome of these two processes is an increase in trust and an improvement in information technology and governance capabilities, all of which lead to greater outsourcing and offshoring in a twin search for lower costs and better talent. This means that offshoring decisions evolve based on the experience and evolution of both the company and the service providers. It would be interesting to empirically test how this trend affects the choice of governance mode.

Finally, as previously commented, property rights systems and other legal frameworks in a host country appear to be increasingly relevant to the choice of offshoring governance mode. Despite this, due to the lack of data in our dataset, the best we could do was to include dummies that control for the countries of destination.

The following points also address certain lines of future research. Our study has sought to improve our understanding of the evolution of the offshoring phenomenon and the relationship between offshoring knowledge-intensive activities and the choice of governance mode by considering the moderating role of drivers. An important piece that is still missing refers to "when" companies decide to offshore value activities. Some companies initiate offshoring earlier than others, and it would be interesting to understand why. Moreover, an additional line of research could involve the joint analysis of the impact that drivers and perceived risks have on offshoring. The reasons for offshoring are key topics in prior research (Lewin et al., 2009b), but to our knowledge there are few studies examining the risks of offshoring decisions (e.g., Manning, 2014; R. Mudambi and Tallman, 2010; S.M. Mudambi and Tallman, 2010). Likewise, another line of research could be to consider the effect of external factors, such as the legal system, on the offshoring phenomenon. It may provide a fruitful avenue for advancing our knowledge in this field. Future research might therefore complement our analysis and extend our knowledge on offshoring as a major economic and social phenomenon.

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Declarations of interest

None.

Appendix A. Variables and definitions

Variables	Definition
Captive governance mode	Dummy variable equal to 1 if the offshoring implementation is governed internally.
Knowledge-intensive	Dummy variable equal to 1 if the function offshored involves engineering services, R&D, or product design.
Cost driver	Category of offshoring motivations featuring cost drivers (Other cost savings, labor cost savings)
Resource driver	Category of offshoring motivations featuring resource drivers (Business process redesign, improved service levels, access to qualified personnel)
Market-seeking driver	Category of offshoring motivations featuring market-seeking drivers (Increasing speed to market, access to new markets, part of a larger global strategy, and differentiation strategy)
Size	Log of the firm's headcount in the home country.
Cultural distance	Home-host cultural distance (5-point Likert scale based on the question: "How important are cultural differences with employees in offshore locations in the decision to offshore this function?")
Experience in offshoring	Number of a firm's past offshoring implementations
Age of implementation	Years from the launch of the firm's first offshoring project to the focal implementation
Industry	Industry dummies (finance and insurance, government, manufacturing, media, professional services, retail, software, technical services, and transportation)
Location	Offshoring location dummies (Africa, Asia, Australia, Canada, China, Eastern Europe, India, Latin America, Middle East, Philippines, Russia, United States, and Western Europe)
Home location	Home country location dummies (United States, Belgium, Netherlands, Scandinavia, Spain, United Kingdom)

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