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Using performance-based contracts to foster innovation in outsourced service delivery

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ABSTRACT

While many scholars claim that Performance-based Contracts (PBCs) foster supplier-led innovation, empirical research into their actual use and effects remains limited. We therefore explore two cases of IT outsourcing through such contracts to see whether, and if so how, PBCs foster innovation. Our findings suggest that in both cases, the low degree of term specificity in PBCs (i.e., their openness regarding how to render the contracted services) provides suppliers with autonomy in their daily service operations, which in theory allows them to innovate. However, only one of the suppliers exhibited high innovative performance. Other relevant factors aside, our findings further suggest that a lack of *granted* autonomy during contract execution is an important factor in explaining the level of supplier-led innovation. Our findings imply that outsourcers that remain too closely involved with the outsourced service delivery and do not allow their suppliers to act autonomously during contract execution limit their suppliers' innovation potential.

1. Introduction

Inter-organizational relationships (IORs), such as buyer–supplier relationships, have become important for organizations that wish to complement their internal innovation strategies with innovative solutions, ideas, and technologies from external partners (Chesbrough, 2003; Chesbrough, Vanhaverbeke, & West, 2006; Kuhne, Gellynck, & Weaver, 2013; Smets, Rijsdijk, & Langerak, 2013; Soosay, Hyland, & Ferrer, 2008). Such IORs are usually governed by legal contracts (Williamson, 1985; Yu, Liao, & Lin, 2006), which are "legally bound, institutional frameworks in which each party's rights, duties, and responsibilities are codified and the goals, policies, and strategies underlying the anticipated IOR are specified" (Luo, 2002, p. 904). Whether and how these contracts affect innovation remain unclear: whereas some authors have acknowledged the positive effects of such contracts on innovation (Johnson & Medcof, 2007; Wang, Yeung, & Zhang, 2011), others have identified types that do not incentivize suppliers to innovate (Gopal & Koka, 2010).

Despite a lack of consensus and empirical evidence, researchers have generally suggested that performance-based contracts (PBCs), in particular, positively affect innovation (Kim, Cohen, & Netessine, 2007; Martin, 2002; Ng & Nudurupati, 2010). PBCs underline the *outcome* of the transaction, rather than prescribing how it is delivered or which resources to use, and reward suppliers for the extent to which these outcomes are achieved (Kim et al., 2007). Outsourcers in both the public sector (e.g., infrastructure and healthcare) and private sector (e.g., logistics and maintenance) (Hypko, Tilebein, & Gleich, 2010; Martin, 2002) have increasingly adopted PBCs in search of continued and sustained service performance improvement: in these industries, supplier-led innovation in outsourced service processes are critical[1] for continued customer satisfaction.

Although the number of PBC studies is increasing (Guajardo, Cohen, Kim, & Netessine, 2012; Kleemann & Essig, 2013; Randall, Nowicki, & Hawkins, 2011), research into the *actual use* of PBCs and their effects remains limited (Hypko et al., 2010; Martin, 2002). Given the importance of supplier-led innovation in outsourced service delivery, appraising PBCs' potential to foster innovation, as well as understanding the conditions under which this potential can be fully exploited, is critical for buyers *and* suppliers. This resonates with calls for enhanced understanding of the nature and form of the new contract types being increasingly adopted by organizations (Mouzas & Blois, 2013; Roxenhall & Ghauri, 2004).

Our research objective is therefore to empirically investigate whether and how PBCs affect innovation. Our research question is twofold: 1) To what extent does supplier-led innovation take place when using

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[1] We focus on innovation that occurs within the daily processes that make up the outsourced service activities. Suppliers will generally be confronted with multiple performance outcomes (e.g., delivery, quality), which may or may not require innovation to take place. We are thus not talking about innovation contracts (Beneito, 2006; Gilson, Sabel, & Scott, 2009), which have innovation as the sole contracted performance outcome.

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PBCs in outsourced service delivery?; and 2) How can this effect be explained? We start by reviewing the (performance-based) contracting literature to identify two characteristics of PBCs. We then draw on transaction cost economics (TCE) and agency theory (AT) to argue how these characteristics affect innovation. Subsequently, we conduct an exploratory embedded case study involving two cases of IT outsourcing PBCs between a focal organization and two of its suppliers: one of these cases is characterized by high supplier-led innovation, while the other exhibits low innovation.

Our analysis is based on two-sided data collection through extensive interviews with representatives of the outsourcer and the suppliers, along with analyses of the actual content of the contracts and other relevant formal documents, comprising over 1500 pages of detail. Access to the actual content of the contracts, in addition to other data sources, is relatively unique in inter-organizational research (Faems, Janssens, Madhok, & Van Looy, 2008), since organizations are not usually willing to share such information. As a result, studies of IORs usually rely on interview information, which can be subjective. The opportunity here to look at actual contracts allowed us to verify interviewee statements and thereby obtain a more objective representation of reality. This greatly enhanced the quality of the analyses of an otherwise limited number of cases.

Our study contributes to the existing literature in several ways. First, it adds to the currently limited number of studies on the use and effects of PBCs (Hypko et al., 2010; Martin, 2002) and the performance implications of contracts (i.e., innovation) (Schepker, Oh, Martynov, & Poppo, 2014), which enables us to advance both the formal IOR governance and innovation literature. Moreover, our study is not limited to establishing the effects of contracts on innovation: our case-based research approach allows us to empirically study the mechanisms underlying those effects.

The remainder of this paper is organized as follows. First, we review the literature on contracting to understand how the characteristics of PBCs could affect innovation. After describing our research methodology, we present extensive within- and cross-case analyses. We conclude with a discussion of the study's scientific contributions and managerial implications, as well as its limitations, and suggest promising avenues for future research.

2. Theoretical background

2.1. Introduction to performance-based contracts

PBCs are increasingly being used for the effective, cost-efficient sourcing/outsourcing of business services and integrated product-service offerings (Datta & Rajkumar, 2011; Glas, Hofmann, & Essig, 2013; Randall et al., 2011; Stremersch, Wuyts, & Frambach, 2001). From a supplier's perspective, Kleemann and Essig (2013, p. 186) argue, PBCs are positioned as "a specific industrial marketing concept in the field of product-service systems (or 'solutions')." A well-known example is Rolls Royce's "Power by the Hour" business model, in which suppliers are compensated for the availability of the aircraft engines they maintain, rather than for the labor and spare-part costs associated with the maintenance activities (Cohen & Levinthal, 1989; Neely, 2008). Such performance-based pricing schemes are also emerging in other service sectors, such as government procurement (Behn & Kant, 1999), including as part of complex, performance-involving, public–private partnerships (Caldwell, Roehrich, & Davies, 2009; Lewis & Roehrich, 2009), and logistics (Essig & Glas, 2014; Glas et al., 2013; Randall et al., 2011), as well as in manufacturing industries (Hooper, 2008; Hypko et al., 2010; Kim, Cohen, Netessine, & Veeraraghavan, 2010), and require a complete rethink of the supplier's business model and capabilities for cooperating with the buyer (i.e., value co-creation) (Ng, Ding, & Yip, 2013).

Since PBC research generally covers a variety of sectors, individual studies tend to produce highly contextual findings (Hypko et al., 2010; Kleemann & Essig, 2013; Martin, 2002). Selviaridis and Wynstra's (2015) literature review showed that the majority of PBC literature is empirically descriptive in nature, focusing on describing the practices and challenges related to PBC design and implementation, and one third of it is conceptual in nature. Apart from Kim et al.'s (2007) paper, which identifies the optimal combination of contractual levers (including PBCs) for achieving the best possible outcome for a buyer, studies oriented at demonstrating the empirical effects of PBCs are limited in number, especially in relation to innovation.

The wide variety of contexts in which PBCs are studied results in PBC research employing an equally wide variety of definitions and approaches, which are not interconnected and too often lack a sound theoretical basis (Selviaridis & Wynstra, 2015). According to Martin (2002), sector-specific definitions of PBCs do share two common elements: 1) the level of term specificity; and 2) the degree to which rewards are linked to performance. To be more precise, we argue that – compared to other contract types – PBCs are typically characterized by relatively *low term specificity* and a high degree of partner *rewards being linked to performance* (Hypko et al., 2010; Lamonthe, 2004; Martin, 2002; Ng & Nudurupati, 2010). This characterization closely resembles more general characterizations of contracts (e.g., level of contract specification and incentive schemes; De Vries, Schepers, Van Weele, & Van der Valk, 2014).

2.2. Theoretical background on the effects of performance-based contracts on innovation

Hereafter, we seek to explain the extent to which innovation occurs by looking specifically at these two characteristics. In line with existing research (Johnson & Medcof, 2007; Wang et al., 2011), we define innovation in the context of a buyer–supplier relationship as supplier-led, proactive undertakings – with or without the outsourcer's collaboration, but in any case on their behalf – that in the *outsourcer's perception* result in new or improved ways of delivering transactions. The key point of this definition of innovation is that outsourcers tap into the suppliers' innovative knowledge and ideas (Shimizu, 2012). In the context of outsourced service activities, suppliers may innovate as part of the daily operational activities they perform for the outsourcer, with the objective of achieving performance more efficiently and/or effectively. This pertains primarily to process innovations, that is, incremental changes that result in higher quality or faster service delivery. For example, less commonly, the supplier may make more radical changes, for instance to the underlying service concept, by introducing new services or tangible aspects of a service.

In terms of the first characteristic of PBCs, term specificity, what is being specified is a desired level of performance, results, or outcomes, rather than the processes and inputs needed to achieve those outcomes. This feature of low term specificity is one of the two main characteristics of incomplete contracts[2]: *not* specifying all the partner's observable obligations and actions (Bernheim & Whinston, 1998; Luo, 2002). Term specificity is thus defined as the extent to which processes and behaviors are specified in the contract, which relates to the degree of freedom that the supplier has in designing, managing, and executing the outsourced service processes; in other words, a high level of term specificity implies little freedom, whereas a low level implies a lot of freedom.

Term specificity does not refer to the extent to which outcomes are specified: PBCs may contain detailed descriptions of relevant performance indicators and how they are measured. That is to say that even

[2] Incomplete contracts are contracts that do not take into account all the relevant contractual terms (Saussier, 2000). The second characteristic of incomplete contracts is contingency adaptability, that is, the extent to which the contract allows for adaptation to unforeseen circumstances (Bernheim & Whinston, 1998). This flexibility, along with the freedom that follows from low term specificity, determines the level of contractual completeness. The higher the flexibility and freedom in the contract, the more incomplete a contract is. In the current study, we only focus on term specificity.

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in the presence of detailed outcome specifications, contracts with few process specifications are considered to have low term specificity. Drawing on TCE, Wang et al. (2011) refer to term specificity as contractual detail and argue that, to a certain point, well-specified contracts reduce the costs and risks associated with knowledge exchange and collaborative innovation. Johnson and Medcof (2007) adopt an AT perspective and argue that the specification of the outcomes to be accomplished introduces the potential for innovation.

The autonomy caused by a low degree of specificity in contract design creates actual freedom for the supplier during the day-to-day operations of the service delivery, since it can choose which activities to engage in and which resources to use (Johnson & Medcof, 2007; Wang et al., 2011). In other words, contracts designed with a low term specificity translate immediately to autonomy for the supplier during contract execution (Al-Najjar, 1995; Bernheim & Whinston, 1998; Kim et al., 2007). The resulting autonomy enables suppliers to approach problems and performance metrics in a way that makes the most of their expertise and creative thinking (Amabile, 1998; Liao, Liu, & Loi, 2010; Woodman, Sawyer, & Griffin, 1993) and gives them the freedom to initiate innovative activities in their day-to-day service delivery operations (Abbey & Dickson, 1983; Arad, Hanson, & Schneider, 1997).

At the same time, a contract that is low in term specificity may not sufficiently address the transaction characteristics that can result in opportunistic behavior. While TCE opts for higher term specificity to counter the risk of opportunistic behavior, AT suggests the use of appropriate compensation systems to curb supplier opportunism (Devers, Cannella, Reilly, & Yoder, 2007; Eisenhardt, 1989a); that is, paying for performance rewards suppliers for the extent to which desired outcomes are achieved. Linking rewards to performance constitutes the second characteristic of PBCs (Martin, 2002) and induces innovation on the part of the supplier, since such reward schemes create incentives to engage in new activities that improve performance. The contract rewards the supplier based on outcomes that are closely related to the supplier's efforts via incentives in meeting performance goals (Argyres & Mayer, 2007). There is an incentive to innovate because any increase in net profits (e.g., through different resources or ways of delivering the service) will, for a large part, accrue to the supplier.

It should be noted that AT suggests that the optimal reward scheme depends on the supplier's degree of risk-averseness (Eisenhardt, 1989a). PBCs put the risk of delivering performance primarily on suppliers (Ng et al., 2013; Selviaridis & Norrman, 2014). Paying suppliers for their performance increases their liability because they have more responsibility and authority and bear more risk, given that their income stream is uncertain (Gates et al., 2004; Gruneberg, Hughes, & Ancell, 2007; Kim et al., 2010; Ng & Nudurupati, 2010). In line with AT, we argue that risk-averse organizations will exhibit behavior associated with maintaining status, making conservative decisions and preferring solutions with known results (Ederer & Manso, 2013). Risk-averse suppliers are thus less likely to engage in innovative activities (Bloom & Milkovich, 1998; Makri, Lane, & Gomez-Mejia, 2006).

To summarize, despite the claim that PBCs positively affect innovation, empirical research on the use and effects of PBCs is scarce, especially in relation to supplier-led innovation. We characterize PBCs in terms of two key features: 1) *low term specificity* and 2) *rewards that are strongly linked to performance*. These characteristics are suggested to respectively *enable* and *drive* suppliers to innovate in their daily service activities. In addition, we have also discussed that the supplier's degree of risk-averseness is an important variable to consider in the study of contracts and innovation, since the reward structure may not always enhance innovation. We therefore define the following four a-priori constructs (Barratt, Choi, & Li, 2011) to guide our exploratory data collection and analysis: (i) supplier-led innovation, (ii) term specificity, (iii) pay-for-performance, and (iv) partner risk-averseness. Our aim is to build and extend theory (Eisenhardt, 1989b; Yan & Gray, 1994) and better understand the use of PBCs in relation to supplier-led innovation in a real-world setting (Flynn, Sakakibara, Schroeder, Bates, & Flynn, 1990; Meredith, 1998). The a-priori constructs should be considered tentative, as they may not end up (in their a-priori form) in the resultant theory (Eisenhardt, 1989b; McCutcheon & Meredith, 1993). Alternatively, new constructs may be added if they help elucidate the relationship between the characteristics of PBCs and supplier-led innovation.

3. Methods

3.1. Research design

We connect our methodological choices and decisions to the guidelines for the inductive use of qualitative case studies, as identified by Barratt et al. (2011), and to the features of "good" case research discussed by Beverland and Lindgreen (2010). We seek to create transparency by demonstrating what we have done, as opposed to merely stating that a formalized process was followed (Ketokivi & Choi, 2014).

We adopt an exploratory, theory-building case research approach, which is justified as follows. First, because extant knowledge on the use and effects of PBCs is limited, our research is exploratory in nature, warranting the theory-building approach (Meredith, 1998; Yin, 2009). Second, studying how innovation occurs within a PBC requires detailed insights into the interactions and relationship between the two organizations in the contract; this is best obtained from qualitative data sources (Dubois & Araujo, 2007; Langley, 1999; Yin, 2009).

This set of constructs informed the selection of case companies and informants within these companies and the information to be obtained from the interviews and review of the contracts. We studied two cases of IT outsourcing PBCs involving a single outsourcer (Alpha) and two of its IT suppliers, Sigma and Kappa; these two cases were selected because the suppliers differ with regard to their innovative performance. The two contracts in question had been operational for one-and-a-half years (Sigma) and six months (Kappa), respectively; Sigma was a new supplier to Alpha, whereas a long-term prior relationship existed between Alpha and Kappa. Performance and relationship-development data is hence available for both PBCs (Yan & Gray, 1994), although it is more limited for Kappa.[3] We limited ourselves to two cases because this facilitates in-depth observation (Dyer & Wilkins, 1991; Voss, Tsikriktsis, & Frohlich, 2002), while still providing a basis for comparison, and we were granted unusual research access (i.e., access to the actual contracts) (Yin, 2009). We focused on IT outsourcing PBCs since the use of such contracts is fairly common in that industry, which is furthermore characterized by rapid change and short innovation cycles (Rai, Borah, & Ramaprasad, 1996), maximizing our chances of observing innovation. Our unit of analysis is the buyer–supplier relationship.

Alpha is a financial services firm that applies PBCs in its outsourcing relationships with two IT suppliers, Sigma and Kappa. Sigma, an IT services firm, is responsible for the IT infrastructure of Alpha's Asset Management division. Kappa, a telecommunications and IT services firm, is responsible for Alpha's telecommunications and IT infrastructure. Alpha is an important customer to both suppliers, but not the most important (as mentioned in the interviews with Sigma's sales manager and Kappa's client director). Alpha's chief procurement officer (CPO) and the manager for Sourcing & Procurement consider Sigma to be more innovative than Kappa. Table 1 presents the major characteristics of the two IORs.

3.2. Data collection

Case selection preceded the development of a research protocol (Eisenhardt, 1989b; Voss et al., 2002), thereby enhancing reliability (Gibbert, Ruigrok, & Wicki, 2008; Yin, 2009). Data was collected through interviews on both sides of the buyer–supplier relationship and studies of the two contracts. We conducted unstructured interviews with two

[3] We return to this point when discussing our findings.

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Table 1
Main characteristics of the inter-organizational relationships.

Characteristics	Contracting organization: Alpha	Supplier: Sigma	Supplier: Kappa
Organization's business	Financial services firm	IT services firm	Telecommunication and IT services firm
Turnover in 2011	Over 20 billion (€)	Over 45 million (€)	Over 13 billion (€)
Number of employees	Over 15,000	Over 150	Over 15,000
Contract initiation (year)	–	2010	2011
Contract duration (years)	–	5	5
Users of the service/customer	–	Alpha's Asset Management division	Alpha employees
Collaboration type	–	Non-equity	Non-equity
Purpose of collaboration	–	Managing IT applications	Providing telecommunication services
Importance of the focal firm (Alpha) to the partners[a]	–	Not the biggest and most important customer they have	Not the biggest and most important customer they have

[a] The importance of Alpha to the two suppliers was evaluated using Sigma and Kappa interview data.

Alpha managers to obtain preliminary information about the history and characteristics of the buyer–supplier relationships. We also accessed publicly available data to better understand the background of the buying and supplying organizations.

In parallel, we developed interview questions for our a-priori constructs, with reference to existing rating scales (Yan & Gray, 1994). Innovation was evaluated with regard to existing scales[4] (Den Hertog, 2000; Gallouj & Weinstein, 1997). For term specificity interview questions, we used indicators developed by Argyres, Bercovitz, and Mayer (2007) and Ryall and Sampson (2009). We investigated, among other things, the extent to which the tasks to be performed were stipulated in the contract. Pay-for-performance was evaluated in terms of the items developed by Jaworski, Stathakopoulos, and Krishnan (1993), which are primarily based on agency theory and management control theory. Finally, the risk-aversion questions were developed based on the indicators of Venkatraman (1989) and a focus, among other things, on whether the supplier adopts a conservative view when making major decisions.

From May to June 2012, the two unstructured interviews with Alpha managers were complemented with seven semi-structured interviews of 1.5–2 h each with different Alpha (4), Sigma (2), and Kappa (1) representatives in the interviewees' native language. Our research design implied holding interviews on both sides of the relationships with managers strategically involved with the PBC (sourcing and account management) and the operational employees who interact with one another in the daily service delivery. Unfortunately, at the time of our study, Kappa was still in the process of a major strategic reorganization, as a result of which a formal strategic representative had not yet been appointed. Hence, our study of the Alpha-Kappa relationship involved only three interviews (we return to this point at the end of this section).

Although we did not fully discard prior relationships, the interviews focused on the period between signing the contract and present day. We also conducted extensive analyses of the contracts (i.e., 41 pages plus 214 pages of appendices for Sigma; 66 pages plus 390 pages of appendices for Kappa) and other relevant formal documents (almost 800 pages of, e.g., progress reports, annual reports, and company website information). For example, contractual data provides insights into the extent to which behaviors and processes/activities have been outlined and how the supplier is rewarded. We could therefore also objectively determine whether these contracts were, indeed, PBCs: while the interviews provided us with information on the level of term specificity and the reward schemes used, studying the contracts themselves provided objective in-depth insight into these constructs.

To ensure construct validity, we asked about concrete events rather than abstract concepts. We tape-recorded and transcribed all interviews, which were subsequently returned to the interviewees for verification (Yan & Gray, 1994; Yin, 2009) and have been extensively discussed by the principal researcher and the second author of this manuscript to further enhance their validity. The use of multiple investigators usually facilitates the handling of rich contextual data and enhances confidence in research findings (Eisenhardt, 1989b). We corroborated our interview data by asking similar questions to multiple informants on both sides of the relationships (Cardinal, Sitkin, & Long, 2004; Faems et al., 2008). Moreover, we increased the reliability of our results by cross-checking our data (Frynas, Mellahi, & Pigman, 2006): Table 2 shows high levels of cross-source agreement for our key constructs in both cases. As our research design allowed us to corroborate our interview findings with observations from at least one other source (i.e., contract or other documents) for the majority of our a-priori constructs, we expect the impact of not having interviewed a strategic representative at Kappa to be rather limited.

3.3. Data analysis

The principal researcher and the second author of this paper individually analyzed the data by looking for evidence in both the interview transcripts and the contracts and associated appendices that addresses the indicators that together make up the a-priori constructs (Barratt et al., 2011). The two researchers independently evaluated these qualitative statements to make claims regarding the indicators and, ultimately, regarding the key constructs. Independent coding increases reliability (Barratt et al., 2011; Eisenhardt, 1989b). The inter-rater reliability was evaluated using Cohen's kappa (Cohen, 1960) and was sufficiently high (0.88). Differences in coding and interpretations of data were discussed and resolved until full consensus was reached between the researchers.

Appendix A shows the results for all key variables for both cases, at the level of the indicators and at the level of the constructs. Term specificity and pay-for-performance were evaluated using both contract and interview data; innovation and partner risk-averseness were evaluated using interview data only (as these variables are not found in the contract).

To illustrate, Table 3 lists the evaluations (based on interview data only) for the seven indicators of our innovation construct (Den Hertog, 2000; Gallouj & Weinstein, 1997) for the Alpha-Sigma case. For example, an interviewee explained that Sigma had adjusted several IT applications to increase the reliability of the data that Alpha receives from external partners; from this, we concluded that innovation occurred in the form of higher service quality (Y). Another Alpha interviewee explained that Sigma used to inform Alpha when there was a problem with the IT infrastructure, but has now created a tool that enables Alpha to instantly observe any problems. Since this tool changes communication about service performance, we interpreted this as Sigma finding "a new way of interacting with its client" (Y). Together, these two examples show that innovation has taken place in this relationship. In addition, when the interviewees did not mention changes

[4] Please note that we used these existing scales as a foundation for our interview questions; we did not ask our informants to rate the items on a 1-to-5 or 1-to-7 Likert scale, as would be the approach in a survey study.

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Table 2
Triangulation.

	Case 1: Sigma		Case 2: Kappa	
Construct	Data source[a]	Cross-source agreement[b]	Data source[a]	Cross-source agreement[b]
Term specificity	Interviews 1abcd, archival 2	High	Interviews 1efg, archival 2	High
Pay-for-performance	Interviews 1abcd, archival 2	High	Interviews 1efg, archival 2	High
Risk-aversion	Interviews 1abcd	High	Interviews 1eg	Moderate
Innovation	Interviews 1abcd, archival 3	High	Interviews 1efg	Moderate

[a] 1a/e = strategic manager of focal firm, 1b/f = operational manager of focal firm, 1c = strategic manager of partner firm, 1d/g = operational manager of partner firm; 2 = contract analysis; 3 = other document.
[b] High = all sources of data are in agreement; Moderate = at least two sources of data are in agreement.

Table 3
Data analysis for variable innovation (N = No; Y = Yes; NM = Not Mentioned).

	Contract[a]	Interviews					
		Alpha STR	Alpha OPE	Alpha OVE	Sigma STR	Sigma OPE	Sigma OVE
Innovation	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*	*Y*
New service within a particular market	N	N	N	N	N	N	N
New way of interacting with the client	Y	Y	Y	Y	Y	Y	Y
New/changed internal organizational arrangement to allow service workers to perform their jobs more efficiently/effectively	N	N	N	N	N	N	N
New product/technology	N	N	N	N	N	N	N
Faster service delivery	N	N	N	N	N	N	N
Cheaper service delivery	N	N	N	N	N	N	N
Higher service quality	Y	Y	Y	Y	Y	Y	Y

[a] Note that innovation was evaluated using interview data only.

that enabled faster service delivery by the partner, we concluded that "faster service delivery" did not occur in the Alpha-Sigma relationship (N).

Term specificity was analyzed using both interview data and contract data. On the one hand, our interviews contained statements regarding the level of term specificity and the underlying indicators; on the other, we studied the contract and associated appendices to uncover clauses expressing information related to the indicators listed in Appendix A. When there was a lot of evidence for these indicators, the degree of term specificity was considered high. Conversely, a lack of evidence for these indicators suggested that the contract had a low degree of term specificity.

We used the overall evaluations of our key variables to conduct within-case and cross-case analyses (Barratt et al., 2011; Diamantopoulos & Cadogan, 1996). The within-case analyses were aimed at describing the constructs and delineating their relationships (Barratt et al., 2011). Because the number of case studies is limited, we present our research outcomes in terms of a detailed narrative, supported by quotations from key informants and excerpts from contracts in Appendix B (Yin, 2009). The detailed case write-ups were subsequently used to compare and contrast emerging patterns between the cases (Barratt et al., 2011).

We documented the final analysis in a case report, which we shared with Alpha and presented to them at an in-company seminar attended by their CPO, manager for Sourcing & Procurement, and operational representative in the IOR with Sigma. The feedback received suggested that the picture we had obtained was accurate.

4. Results

4.1. The PBC between Alpha and Sigma

4.1.1. Case background

Alpha sources from Sigma the hosting of IT applications critical to the operations of its Asset Management division, the user of the service. Asset Management invests cash resources on behalf of pension funds and institutional investors and gives them access to a wide range of financial products. There is one particular critical IT application within which it conducts its financial asset management activities. If this application does not function properly, the information needed to make investment decisions may be delayed or incorrect, as a result of which, clients could lose large amounts of money. Sigma, a privately owned company with around 150 employees, hosts the critical IT application and all supporting applications. At the time of this study, the five-year contract had been in place for one-and-a-half years. Sigma hosts a total of 15 mission-critical IT applications, discloses them to 80/90 employees, and ensures 100% functional availability of the applications and associated information streams. To achieve this, Sigma works with dedicated customer account teams that design and manage the applications for each customer.

4.1.2. Contract characteristics

The contract consists of a single legal document, supported by several appendices, that specifies the performance Sigma must deliver: 100% functional availability of the applications hosted. The contract focuses on performance rather than on what Sigma should do or which resources it should use; we concluded that the *term specificity* of this contract is low.[5] Failure to meet the specified performance results in penalties. Although the contract focuses on performance, there are certain restrictions on Sigma's freedom, such as Alpha's architecture policy. Examples of these contractual characteristics are shown in Appendix B1 — Example 1.

The low term specificity has implications for the execution of the contract. Alpha does not interfere in Sigma's work, allowing Sigma to make its own decisions about the service delivery. The observations related to this freedom, as shown in Example 2 of Appendix B1, suggest that the level of term specificity enables Sigma to perform its duties in the way it thinks best. In addition to the autonomy incorporated in the contract, Sigma also actually receives this autonomy from Alpha in

[5] Note here that it is not the size of the contract (in terms of number of pages) that determines the level of term specificity, but the extent to which behaviors and inputs are specified. Findings from one of our current research projects suggest that the size of the contract (number of pages) does not significantly differ for PBCs versus, for example, fixed price and cost plus contracts.

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practice. The latter neither interferes with nor strongly controls Sigma's day-to-day service activities and associated behaviors.

Sigma's payment scheme has two components: a monthly fee and a one-time fee (non-recurring charge) for specific one-time projects. The monthly fee is based on a forecast of the activities that must be performed: all relevant service components have been priced by Sigma and are fully transparent to Alpha. If the scope needs to be expanded, the monthly fee will increase. Alpha pays the full monthly fee only if 100% functional availability is realized. Moreover, Sigma's rewards are highly linked to its performance. Although Sigma does not receive any bonuses if it overperforms or innovates, the contract specifies service credits (i.e., penalties) that Alpha may claim if the IT application is not 100% available. One such claim had been made early in the collaboration. Appendix B1 — Example 3 shows interview and contract data examples pertaining to Sigma's payment structure.

Both Sigma and Alpha acknowledge that the promise of 100% functional availability involves shifting risk to Sigma. Sigma does not consider this to be a concern, however. As evident from the interview data in Example 4 of Appendix B1, Sigma deals with risk in a very conscious manner. Risk management is considered highly important and the company has a well-developed process in place for this. The strategic manager explained that Sigma takes risks but also incorporates milestones (i.e., internal tests, tests by the customer, etc.) that precede full implementation. Sigma is thus aware of the risks but does not mind taking them, since they have a way of proactively dealing with them. We therefore conclude that Sigma is not risk-averse.

4.1.3. Innovation

According to both Alpha interviewees, Sigma has engaged in innovative activities, trying to improve its service to surprise and satisfy the client. The innovative activities were confirmed by both Sigma and Alpha. However, whereas Alpha considered the development shown in Appendix B1 — Example 5 to be an innovation, Sigma viewed it as a general service improvement. The interview statements reveal that perceptions of innovation differ between outsourcers and suppliers: Sigma does not consider its improvements to be innovations, yet Alpha does. Since we defined innovation from the perspective of the outsourcer, however, what we derive from these statements is that Sigma has engaged in innovative activities.

4.2. The PBC between Alpha and Kappa

4.2.1. Case background

Alpha sources connectivity and workstation services for all of its employees from Kappa. Connectivity relates to all of the services associated with mobile and fixed-line telephony and teleconferencing and networks (e.g., LAN & WAN); workstation services relate to employee workstations, such as setting up hardware, installing and managing software, and providing an IT helpdesk. Kappa is a private firm with over 15,000 employees that delivers telecommunication and IT services. The contract was awarded for five years, with a possible opt-out after three years: this means that if Kappa does not provide the agreed performance, Alpha can terminate the contract early. At the time of this study, the contract had been in place for about six months.

4.2.2. Contract

The contract consists of a single legal document, supported by several appendices. It states that a certain level of performance must be achieved for all services delivered, but does not state how services should be delivered or which resources should be used. Hence, the *term specificity* is low. Moreover, the contract describes the services to be delivered and the associated boundary conditions, resulting from, for example, Alpha's existing IT architecture. Thus, within certain boundaries, Kappa has the autonomy to operate as it chooses. This can also be observed in the contract excerpts and interview data shown in Examples 1 and 2 of Appendix B2. However, both the Kappa and Alpha interviewees stated that Kappa's actual autonomy in contract execution is limited, as shown in Example 3 of Appendix B2. The case observations lead us to conclude that although the contract is characterized by low term specificity, Kappa's autonomy in the day-to-day operations of its service is limited due to interference from Alpha's enterprise architects. This limits Kappa's ability to organize its activities as it sees best.

Kappa's reward scheme is as follows: price * quantity * service level. This means that Alpha pays Kappa for every service, user, workstation, mailbox, etcetera, depending on the service levels achieved. Hence, Kappa's reward schemes are related to its performance. Furthermore, one of Alpha's objectives in this contract is to reduce costs. Assuming that service levels must be maintained, therefore, and given that Alpha expects Kappa to lower its prices, Kappa's only option for maintaining its revenue is to increase volume. At the same time, Alpha wants Kappa to renew its service package, and this may result in the termination of certain services, such as landlines. To ensure that Kappa adheres to this requirement, Alpha does not provide bonuses if Kappa innovates, but Kappa will receive a penalty in the form of no future business if it does not achieve the agreed cost reductions. If Kappa underperforms, new business will not be awarded. This penalty is linked to Kappa's performance and can hence be viewed as a negative reward.

This also suggests that Kappa is confronted with a substantial level of risk. First, underperformance will lead to reduced revenue. Second, if Kappa does not make a sufficient contribution to Alpha's cost-reduction objective, Alpha may decide to seek a new supplier, possibly after three years. Kappa would then lose both future business and some or all of its current business with Alpha, as shown in Example 3 of Appendix B2. (Alpha might also decide to terminate only some of the services that Kappa provides.) Kappa has accepted this risk, although it is a large, traditional, conservative company and so has a tendency to be reactive and avoid risk. Example 4 of Appendix B2 shows that Kappa is more inclined towards protecting its current business than engaging in new activities. We observed from the interviews that Kappa is more focused on supporting projects where expected returns are more certain. We therefore conclude that Kappa is a risk-averse organization.

4.2.3. Innovation

Kappa has not engaged in innovative activities. This was reflected in the statements from the interviewees of both parties, as shown in Appendix B2 — Example 5. We conclude that Kappa does not engage in innovative activities. Neither party is satisfied with Kappa's level of innovation.

5. Cross-case analysis and discussion

The results of our within-case analyses are summarized in Table 4.

The cases are similar in the sense that both contracts are performance-based: they each specify a certain performance to be attained, without prescribing how it should be achieved. The pay-for-performance clauses specify a fixed fee that is relative to performance: lower-than-agreed availability/service levels result in lower rewards. Since the desired service level in the Sigma case is 100%, overperformance is not possible and neither is a bonus. Kappa's service

Table 4
Cross-case results.

	Case 1: Alpha & Sigma	Case 2: Alpha & Kappa
Term specificity	Low	Low
Pay-for-performance	Yes	Yes
Risk-aversion	Low	High
Innovation	Higher	Lower
Granted autonomy	High	Low

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level targets are set below 100%, allowing for overperformance and associated rewards.

At the same time, there are clear differences in the levels of innovation: Sigma is more innovative than Kappa. The interview quotes show that Alpha clearly perceives Sigma's initiatives as innovation. Sigma confirms that it continuously searches for improvements that result in better service performance and agrees that this could be considered innovation, in the broadest sense of the term. By contrast, Alpha perceives Kappa to be reactive rather than proactive, and Kappa admits that they have not engaged in new initiatives. Thus, although both contracts have the right contractual characteristics (i.e., low term specificity and pay-for-performance) for stimulating innovation, the resulting levels of innovation are different.

To understand the difference in innovation between the two cases, we explore additional plausible explanations. These relate first of all to what could be considered control variables in empirical survey research, such as supplier characteristics and types of services delivered. Kappa actually lists multiple arguments for not engaging in innovation, one of which could be related to their organizational characteristics. More specifically, Kappa admits to focusing on the continuity of their services rather than on innovative activities. In other words, Kappa is risk-averse. Being a long-time market leader, Kappa was confronted with the need for innovation only when competition was introduced into the formerly public national telecom market, some 12 years ago. Kappa suddenly had to compete in new domains with firms that had already been engaging in these new-age technologies for a substantially longer period of time. For example, the rise of mobile communications has been a specific threat; development of this technology will eventually lead to the end of landline telephony, which has long been the basis of Kappa's revenue model.

In contrast, being a specialist supplier that purposely focuses on the niche market for customer-critical IT processes for businesses, Sigma does not have too many competitors. At the same time, the risk of reputation damage is substantial, since performance failures in what Sigma refers to as "mission-critical applications" will immediately affect the customer's business performance. As a result, Sigma is committed to maintaining and enhancing performance, and innovation is key to maintaining their market position and has thus become an integral part of their company culture/way of doing business. Their organizational design has been tailored to this mission, with a relatively limited number of specialists (150) and relatively little formalization compared to the much larger and more formalized Kappa. Furthermore, their focus on innovation forces Sigma to take risks: they know that risk is part of their job, but careful risk assessment, and the associated contingency planning, allows them to deal with these risks and not be bothered by them. Rather than being "non-risk averse," then, Sigma could perhaps be labeled "risk ready."

On the other hand, Kappa, too, certainly has an incentive to innovate if they wish to attain and maintain position. In the case studied here, the existing IT infrastructure was considered too old to sustain innovation in the long run. Alpha therefore wanted to renew its IT landscape and also wanted Kappa to make changes towards this new environment. While in the short run, the innovations required would cause some existing services to disappear (thereby seriously impacting Kappa's business), in the long run, changing to a new landscape would lead to new business, which Kappa could acquire if their performance were sufficiently good. Obtaining new business in this way would also be a sign of having developed the new capabilities needed to earn them a license-to-operate in this changing market. Thus, the contract provides long-term incentives to innovate in the form of reward schemes. As theory suggests, these incentives may have been less effective in the case of risk-averse Kappa. However, we would argue that the incentives provided, along with the long-term threat of losing their competitive position, are more than enough to push Kappa from avoiding risk to taking risk.

An alternative explanation may be found in the type of services the two suppliers provide. Although the technical content of the two contracts is similar (i.e., IT services), from a more strategic perspective, it could be argued that Sigma deals with so-called front-end or component services (Balakrishnan, Mohan, & Seshadri, 2008; Wynstra, Axelsson, & Van der Valk, 2006), meaning IT that has a strong impact on the customer's business performance (i.e., mission-critical applications). Kappa's services, on the other hand, would be referred to as consumption services (Wynstra et al., 2006), which impact the customer's internal organization (i.e., employees). Traditional IT is becoming increasingly commoditized, but this perhaps holds for traditional approaches to IT in both mission-critical and IT-enabling applications (i.e., consumption services): in both areas, collaboration needs to be prioritized over mandatory and maintenance activities if IT suppliers wish to meet their customers' demands. Innovation would then be more peripheral to the core IT service and reside, instead, more in new ways of interacting with the customer than in making noticeable changes to the service processes as such. This is also the area in which Sigma undertook its innovations. It is possible that it is easier to focus on innovation for mission-critical applications because these generally involve a more collaborative (i.e., strategic) approach.

Thus, we believe that the nature of the two suppliers and the types of services they deliver provide *some* explanation for the observed difference in innovation. This resonates with the existing literature, which argues that innovation is dependent on multiple factors, such as the nature, size, and age of an organization, and transaction characteristics (Damanpour, 1991; De Brentani, 2001; Faems, Van Looy, & Debackere, 2005; Powell, Koput, & Smith-Doerr, 1996). Nevertheless, both suppliers need to undertake innovation, each in its respective market; both should display similar achievements compared to a certain baseline (e.g., start of the contract period).

Another, in our view more plausible explanation, resides in the fact that the two contracts were managed quite differently by Alpha. While Sigma was allowed to operate autonomously at the contract execution stage, Kappa was not granted this autonomy. The reasons for this are threefold. First, there are clear differences in relationship status: the PBC with Kappa concerned a new contract form being applied to an existing relationship, but the PBC with Sigma was a new relationship. In the interviews, Kappa explicitly mentions the transition process they are involved in with Alpha, which has two aspects to it: renewing the old, complex IT environment, which would take time, possibly lasting beyond the duration of the contract at the time of study (six months), and getting used to the new contract form. The prior contract between Alpha and Kappa had been much more prescriptive in nature. While the existence of this prior history offers the advantage of enabling changes in innovative behavior or attempted changes to be observed, it is also important to consider that the nature of the prior contract is likely reflected in the way the parties continued to collaborate, despite the lower term specificity of the new contract. In prescriptive contracts, organizations carefully monitor the activities being conducted by their partner (Zsidisin & Smith, 2005).

Second, past experience had taught Alpha that they needed to keep a close eye on Kappa's operations. For example, all IT initiatives have to be approved by Alpha's IT division, but since such decision-making processes are slow in large organizations like Alpha, initiatives are frequently outdated by the time the decision is made. This approach to dealing with changes limits Kappa's freedom in executing and optimizing service delivery. Third, Kappa received limited autonomy in the day-to-day operations of the service delivery, meaning that Alpha remains overly involved with the actual service delivery processes. Specifically, Kappa interviewees noted that Alpha's enterprise architects are too closely involved with the tasks to be performed, and they focus on minor details rather than the big picture.

Such behaviors on the part of Alpha have substantially affected Kappa's level of innovation. Alpha interviewees argued that beyond the specified boundary conditions, the level of term specificity in the

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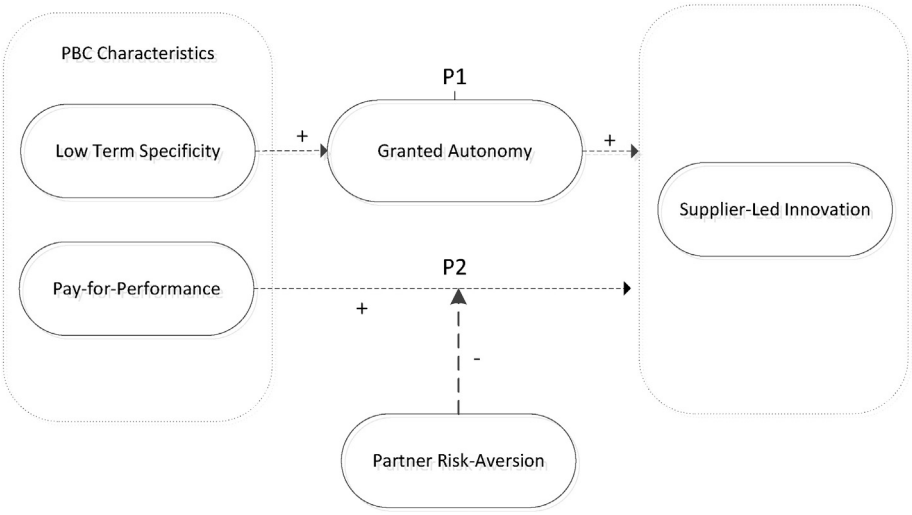

Fig. 1. Effects of PBCs on innovation.

contract should leave Kappa free to perform its tasks as it sees fit, but they acknowledged that they do interfere considerably with Kappa's daily operations. These observations suggest that although the contract with Kappa was *designed* with low term specificity, this did not result in *granted autonomy*, that is, autonomy granted to the supplier in the day-to-day operations involved with actual service delivery. This is in conflict with the existing PBC literature, which assumes that a low degree of term specificity in the contract design phase automatically results in supplier autonomy during the contract execution phase (Kim et al., 2007; Martin, 2002; Ng & Nudurupati, 2010). We found in one of our cases that during the contract execution phase, the buying organization was not providing the supplier the autonomy it needed to deliver the service to the best of its ability, thereby not living up to the contractual agreement of a low degree of term specificity. Hence, we distinguish between autonomy agreed upon in the contract design and *granted* autonomy, being the actual autonomy given to the supplier during the contract execution phase.

Since there was no history of past collaboration between Alpha and Sigma, adopting a performance-based approach did not require any adaptations to previous methods of working together. The lack of past collaboration possibly made it easier for both parties in the relationship to adopt a performance-based approach. The contract between Alpha and Sigma is collaborative in nature and involves a dedicated team from Sigma working on Alpha's IT applications. The team is proactive in managing the applications, holding regular meetings with Alpha representatives to discuss current performance, the ongoing service delivery process, and future developments. In the absence of a prior relationship, Sigma managed to create initial trust through their dealings with Alpha in the pre-contractual stage, which involved extensive discussions on how they deal with critical IT applications for such organizations as pension funds and references from reputable customers. This record of accomplishment was confirmed early on in the collaboration with Alpha. As a result, Alpha trusted Sigma to deliver the agreed upon performance and granted them the autonomy needed to perform and innovate.

In conclusion, certain other relevant factors aside, our findings suggest that a lack of *granted* autonomy during contract execution is the main factor explaining the level of supplier-led innovation. It is therefore not sufficient to merely include autonomy in the *contract design*: this autonomy should also shape subsequent contract management in the *contract execution* phase. Hence, in accordance with existing theory, we first posit that low levels of term specificity allow a supplier freedom in organizing the delivery of the transaction. The supplier is given the autonomy to decide which activities to engage in and which resources to use. However, the buyer should also grant this autonomy to the supplier during contract execution. We therefore put forward:

P1. *The positive relationship between low term specificity and innovation is mediated positively by the degree of granted autonomy.*

In other words, the buyer should not interfere with all the details involved with ongoing service delivery, but remain focused on the result (i.e., targeted performance). This does not mean, however, that the buyer should not be involved at all: monitoring of the ongoing service delivery is important to identify new business opportunities, structural performance deviations and their causes (exogenous or endogenous), and deviations between specification and reality.

Finally, theory suggests that paying the supplier for performance incentivizes them to behave in the interests of the buyer and engage in innovative activities that result in new and improved ways of achieving performance, since this maximizes returns. Nevertheless, all else being equal, theory also suggests that the more risk-averse the supplier, the less it will engage in innovative activities, since such suppliers will be less sensitive to the pay-for-performance clause. Risk-averse suppliers will exhibit behavior associated with maintaining status, making conservative decisions and preferring solutions with known results (Ederer & Manso, 2013). Hence:

P2. *The positive relationship between pay-for-performance and innovation is negatively moderated by a supplier's degree of risk-averseness.*

Our finding that the degree of innovation was lower for the PBC involving a risk-averse supplier initially seems to provide support for this proposition. However, as we ascribe a higher explanatory power to the lack of granted autonomy in this case, we cannot make specific claims regarding this proposition based on our case studies. Fig. 1 summarizes these propositions and describes the relationships between the characteristics of PBCs and innovation.

6. Conclusion

Although it has been suggested that PBCs foster innovation, hitherto, there has been little empirical evidence for this claim. This exploratory study adds to the limited number of studies on the use and effects of PBCs by empirically studying their use and how they affect supplier-led innovation in outsourced service delivery. The findings suggest that first and foremost, supplier-led innovation may occur as a result of increased supplier autonomy, which is enabled by the low term specificity that is inherent to PBCs. We observed, however, that low term specificity in itself is not sufficient for innovation: innovation only occurs when the supplier is actually *granted autonomy* in the contract execution phase. This conflicts with the existing literature, which assumes that less detailed contracts automatically imply supplier autonomy. As

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such, our research has highlighted the importance of the contract execution phase, in addition to the contract design phase. It is important that organizations draft a well-designed contract (Argyres & Mayer, 2007), but it is at least as important that the parties ensure that the spirit of that contract is followed.

Our study also demonstrates the use of performance-based reward structures to counter the possible downside (i.e., opportunistic behavior) of providing suppliers with very large degrees of freedom. Rewarding suppliers for their performance is expected to encourage them to innovate rather than act opportunistically, since such innovation will garner them a large share of the associated net profits. These two findings in combination also suggest that the collective use of these two mechanisms, which stem from different theoretical perspectives (i.e., TCE and AT), promotes supplier-led innovation in outsourced service delivery. In other words, buyer–supplier relationships can be governed by contracts that are low in term specificity, as long as these contracts also contain pay-for-performance clauses.

Finally, our findings seem to provide some initial support for the proposition that the positive relationship between pay-for-performance and innovation is moderated negatively by the degree of a supplier's risk-averseness. Nevertheless, since we consider the lack of granted autonomy to be the main explanatory variable for the different innovation levels, we cannot make specific claims regarding this proposition based on our empirical data. We therefore suggest that this proposition be tested and corroborated in future research.

6.1. Theoretical and managerial implications

Our study has a number of *theoretical* implications. First, the available current literature on PBCs is primarily of a descriptive (i.e., case-based) nature (Hypko et al., 2010; Martin, 2002). We contribute to the PBC literature by empirically studying the use and effects of PBCs. More specifically, even though the existing literature argues that PBCs can lead to innovation (Kim et al., 2007; Martin, 2002; Ng & Nudurupati, 2010), this has not been empirically demonstrated. This study extends the extant PBC and innovation literature by empirically studying the effects of PBCs on supplier-led innovation in outsourced service delivery. Moreover, by showing more generally that contracts can have a positive effect on innovation, this study tries to eliminate the skepticism stemming from the traditional view of contracts being an organizational protection mechanism and stimulate future researchers to continue examining the relationship between contracts and innovation, in particular, and – in line with Schepker et al. (2014) – the performance implications of contracts, in general.

In addition, the identification of the concept of "granted autonomy" and its role in enhancing supplier-led innovation under PBCs enhances the existing literature on formal IOR governance and innovation by identifying the underlying mechanisms that explain the relationship between PBCs and innovation. The existing literature has extensively demonstrated the importance of autonomy for innovation, yet has either implicitly or explicitly assumed that there is a one-to-one relationship between contractual incompleteness and partner autonomy (Al-Najjar, 1995; Bernheim & Whinston, 1998; Kim et al., 2007). Our study demonstrates the role of the buyer in enabling the supplier to innovate under PBCs: only if the buyer really leaves the supplier free to act according to their best knowledge and insights can innovation be achieved. This finding warrants a distinction in the future between autonomy as *designed into the contract* and autonomy as given/received *during contract execution*.

Finally, this study demonstrates the importance of the roles of both parties in the buyer–supplier relationship. Unlike traditional contracts in which the role of the buyer is underemphasized and linear, one-directional thinking is used, PBCs require an interactive, multi-dimensional thinking in which people, resources, and knowledge from both parties are implemented (Ng & Nudurupati, 2010). Hence, this study has shown that PBCs demand changes in the way buyers and suppliers collaborate, whereby the buyer and supplier are considered to be co-creators of value and pushed to improve processes and put into place the right culture and resources for making the contract work (Ng & Nudurupati, 2010). Given the difficulties of value co-creation and the solid relationship that seems to be required for PBCs, we suggest that this line of research be extended to investigate how PBCs can successfully be implemented to create a win-win situation for the parties involved.

From a *managerial* perspective, our results suggest that a supplier's ex-post managerial decision-making is influenced by the incentives (i.e., rewards linked to performance) and freedom (i.e., low term specificity) it receives through the contract, in combination with its risk perceptions. Furthermore, when applying PBCs, organizations should collaborate with their suppliers in the spirit of the contract, granting them the autonomy that has been created by the low term specificity so that they indeed have the freedom to optimize their processes and activities. Since organizations' experience in using PBCs is still limited, achieving granted autonomy may also require a proactive attitude on the part of the supplier — for example, in terms of explicitly asking for that autonomy and actively coaching the outsourcer to get it. This underlines the importance of intensive and ongoing collaboration when applying PBCs. Our findings also suggest that given that a supplier's risk attitude (i.e., risk-averse versus what we call "risk-ready") influences the degree of innovation, managers may want to carefully investigate this characteristic of their intended partner before engaging in incomplete contracts such as PBCs.

6.2. Limitations and future research

First, our dataset has limitations in terms of generalization; nevertheless, studying just these two cases allowed us to extensively analyze contracts and other documents in addition to the interview data, thereby enabling an in-depth investigation (Easton, 2010; Voss et al., 2002). Limiting our study to one focal company and one type of service furthermore created the possibility of context-specific findings. Our research should therefore be replicated for other industries and services with more cases.

Second, besides the contractual elements, the characteristics of the suppliers (e.g., company size), services delivered (i.e., mission-critical applications versus business-enabling applications), and relationships (i.e., presence or absence of a prior relationship) do seem to have played a role in explaining the observed difference in innovation. A different research design would enable disentangling the effects of these variables, which would require selecting suppliers that are, for example, similar in size and level of formalization. Hence, even though our aim was to uncover the relationship between the characteristics of PBCs and innovation, rather than focusing on the organizational factors that impact innovation, we urge other researchers to control for these factors when empirically testing the model.

Finally, our study focuses on the effects of formal control on innovation and does not address other factors that may influence innovation, such as relational governance (Al-Najjar, 1995). Relational aspects such as trust, communication, and commitment become important when contracts are open and could affect innovation, for example, through the know-how exchanged by parties that interact closely. In the Alpha-Sigma case, for example, interviewees emphasized the importance of the relationship with such phrases as "we can contact each other directly at any time" and "it feels like friendship." Future research could explore the interaction between PBCs and relational governance.

There are several interesting avenues for future research. First, future research should clearly separate the creation of autonomy (in contract design) from the actual autonomy allowed (in contract execution). This will likely require some effort in the area of scale development, since current measures focus on the autonomy created in the contract and not on autonomy granted during execution. Second, our

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propositions could be developed into hypotheses and tested by means of large-scale studies in the form of surveys. Third, we have modeled the contract as an antecedent to buyer–supplier collaboration because behaviors are usually regarded as consequences of a state, here: the contract. However, evidence from the Kappa case suggests that despite the lower term specificity in their new contract, the more prescriptive contract of the previous collaboration was still affecting the way the partners conducted business. Future research could study whether and how a collaboration's history affects contract design and execution. Finally, both suppliers accepted the PBC and the shift in risk it brings, despite relative differences in their risk attitudes. Kappa's conservative decision-making and tendency to hold on to its existing investments make them a clear example of a risk-averse supplier. In contrast, Sigma's approach of knowingly taking risk in a controlled manner is more appropriately reflected by the label "risk-ready." Future research could further uncover different mindsets towards risk, as well as their antecedents.

We have taken a valuable step by investigating the aspects of the design and management of PBCs that are essential for supplier-led innovation. Given the theory-building nature of this study, there are several future directions that could improve our understanding of the use and effects of PBCs in buyer–supplier relationships.

Appendix A

Appendix A1
Data analysis of key variables for Alpha (Alp) – Sigma (Sig) (columns 2–7 concern interviews: STR = strategic; OPE = operational; OVE = overall).

Alpha & Sigma	Con-tract	Alp. STR	Alp. OPE	Alp. OVE	Sig. STR	Sig. OPE	Sig. OVE
Specificity level	Low	Low	Low	Low	Low	Low	Low
Time frame for completion of each stage is specified	N	N	N	N	N	N	N
Number of employees to be contributed is specified	N	N	N	N	N	N	N
Specific persons stipulated for management or other development work specified	N	N	N	N	N	N	N
Specific technologies to be contributed are specified	N	N	N	N	N	N	N
Development specifications are included	N	N	N	N	N	N	N
How to perform the tasks is stipulated	N	N	N	N	N	N	N
Intellectual property rights are defined over specific technologies	Y	N	N	N	N	N	N
Pay-for-performance	Y	Y	Y	Y	Y	Y	Y
The supplier's rewards are linked to outcomes of the service	Y	Y	Y	Y	Y	Y	Y
The supplier has sufficient financial incentives to improve/innovate the service	Y	Y	Y	Y	Y	Y	Y
The supplier is compensated for a better quality or delivery of the service	Y	Y	Y	Y	Y	Y	Y
The supplier's rewards are linked to improving performance	N	N	N	N	N	N	N
We have agreed on performance bonuses on top of the regular payment schemes when higher-level performance goals are overachieved	N	N	N	N	N	N	N
The supplier is rewarded (financially) for new ways of achieving performance	Y	Y	Y	Y	Y	Y	Y
Risk aversion		Low	Low	Low	Low	Low	Low
The supplier adopts a conservative view when making major decisions		N	N	N	N	N	N
The supplier has a tendency to support projects where the expected returns are certain		N	N	N	N	N	N
The supplier's operations have generally followed the "tried and true" paths		N	N	N	N	N	N
The supplier's operations can generally be characterized as high risk		Y	Y	Y	N	N	N
The supplier's new projects are approved on a stage-by-stage basis rather than with blanket approval		N	N	N	N	N	N
Innovation		Y	Y	Y	Y	Y	Y
Creation of a new service within a particular market		N	N	N	N	N	N
A new way of interacting with the client		Y	Y	Y	Y	Y	Y
A new/changed internal organizational arrangement to allow service workers to perform their jobs more efficiently/effectively		N	N	N	N	N	N
A new product/technology		N	N	N	N	N	N
Faster service delivery		N	N	N	N	N	N
Cheaper way of delivering the service		N	N	N	N	N	N
Better quality of service		Y	Y	Y	Y	Y	Y

Appendix A2
Data analysis of key variables for Alpha (Alp) – Kappa (Kap) (columns 2–4 concern the interviews: STR = strategic; OPE = operational; OVE = overall).

Alpha & Kappa	Con-tract	Alp. STR	Alp. OPE	Alp. OVE	Kap. OPE
Specificity level	Low	Low	Low	Low	Low
Time frame for completion of each stage is specified	N	N	N	N	N
Number of employees to be contributed is specified	N	N	N	N	N
Specific persons stipulated for management or other development work specified	N	N	N	N	N
Specific technologies to be contributed is specified	N	N	N	N	N
Development specifications are included	N	N	N	N	N
How to perform the tasks is stipulated	N	N	N	N	N
Intellectual property rights are defined over specific technologies	Y	N	N	N	N
Pay-for-performance	*Y*	*Y*	*Y*	*Y*	*Y*
The supplier's rewards are linked to outcomes of the service	Y	Y	Y	Y	Y
The supplier has sufficient financial incentives to improve/innovate the service	Y	Y	Y	Y	N
The supplier is compensated for a better quality or delivery of the service	Y	N	Y	Y	N
The supplier's rewards are linked to improving performance	N	Y	N	Y	Y
We have agreed on performance bonuses on top of the regular payment schemes when higher-level performance goals are overachieved	Y	Y	N	Y/N	Y
The supplier is rewarded (financially) for new ways of achieving performance	Y	N	N	N	N
Risk aversion		High	Low	High	High
The supplier adopts a conservative view when making major decisions		N	N	N	N
The supplier has a tendency to support projects where the expected returns are certain		Y	N	Y	N
The supplier's operations have generally followed the "tried and true" paths		N	N	N	N
The supplier's operations can generally be		N	N	N	N

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Appendix A2 (*continued*)

Alpha & Kappa	Con-tract	Alp. STR	Alp. OPE	Alp. OVE	Kap. OPE
characterized as high risk					
The supplier's new projects are approved on a stage-by-stage basis rather than with blanket approval		N	N	N	N
Innovation		N	N	N	Y/N
Creation of a new service within a particular market		N	N	N	N
A new way of interacting with the client		N	N	N	N
A new/changed internal organizational arrangement to allow service workers to perform their jobs more efficiently/effectively		N	N	N	N
A new product/technology		N	N	N	N
Faster service delivery		N	N	N	N
Cheaper way of delivering the service		N	N	N	N
Better quality of service		N	N	N	Y

Appendix B

Appendix B1
Interview and contract examples — Alpha & Sigma

Example number	Interview and/or contract example
1 — Term specificity	*"The contract between Alpha and Sigma can be considered a PBC; it doesn't matter how Sigma operates, as long as it delivers the necessary performance at the time that Asset Management needs it." – Alpha operational manager* *"Sigma will ensure that the service is in accordance with Alpha's IT policy … will ensure the current and future availability of a sufficient number of qualified employees with sufficient skills and knowledge of Alpha's business and management to deliver the service … will ensure that the environment, software, and other resources used to deliver the service do not contain 'diseases' (e.g., time bombs, Trojan horses, and viruses)." – Alpha-Sigma contract, Article 24.13, p. 21, and Article 30.1, p. 23*
2 — Term specificity	*"We do not always ask Alpha for permission if we want to do something … especially if we want to do something that will make our task easier (such as automating processes), since doing such things will also benefit Alpha. However, if Alpha plays a role in the process/change, then we do discuss it, because we need their involvement and consent." – Sigma operational manager* *"[T]he contract with Alpha is good; the basics [of the contract] are well written, but it does not specify all the details, which gives us room to innovate." – Sigma operational manager*
3 — Pay-for-performance	*"Sigma takes operational responsibility for 100% functional uptime, integration with the application partners and the technical and organizational interfaces, and overall 100% availability and control [of all hosted IT elements] … If Sigma does not meet the performance goal, then Alpha is entitled to claim service credits irrespective of the cause of the downtime." – Alpha-Sigma contract, Appendix 1: Description of the Service, Article 1, p. 5, and Appendix 2: Service Level Agreements, Article 4.1, p. 13* *"Sigma accepts the penalties. We had a one-time failure of the system, due to human error, and it was understandable: the system had been, at that time, running for only one month. Sigma insisted we claim the penalty because the failure was their fault. I told them I understood that I should claim the penalty, but that I did not consider it necessary to do so. In the end we did claim the penalty. It felt good to know that we were collaborating with a partner [i.e., supplier] that acknowledges their mistakes and keeps their promise to solve the problem." – Alpha operational manager*
4 — Risk-averseness	*"Risk management is very important for us. When we make [IT-related] choices, we first make a risk assessment. If the partner [i.e., customer] wants to make high-risk choices [e.g., by preferring certain brands], we warn them of possible consequences. In the end, the partner decides. Because our risk management is controlled tightly, we can handle risk because we know what we are doing. So yes, there are risks, but that does not feel wrong." – Sigma strategic manager*
5 — Innovation	*"Sigma has definitely engaged in innovative activities; they surprise us every now and then with developments that make the service better for us. For example, they incorporated a dashboard for Asset Management employees to monitor the functionality/availability of the applications. As a result, asset managers can directly monitor the IT infrastructure. I have not seen such initiatives from other partners." – Alpha's strategic and operational manager* *"Though we try to satisfy our partners with new things, we do not always consider these innovations. They are continuous improvements that make our services faster, easier, more reliable, and more insightful. So, yes, we have engaged in innovation if you define the term broadly. For example, before Alpha contracted us, the data from Asset Management's external partners were not transparent and not on time. The managers could not rely on this data for decision-making. We rearranged minor things in the IT applications in such a way that these are now more reliable." – Sigma operational manager*

Appendix B2
Interview and contract examples — Alpha & Kappa

Example number	Interview and/or contract example
1 — Term specificity	*"Kappa will deliver the services according to the agreed performance, which is an outcome obligation. Kappa will use its available expertise and experience to provide the services … Kappa will ensure that it has a sufficient number of qualified employees allocated to the service delivery with sufficient skills and knowledge of Alpha's business." – Alpha-Kappa contract, Article 5.1, p. 12, and Article 7.1, p. 20*
2 — Term specificity	*"[Kappa decides how to deliver the services and which resources to use.] … Alpha decides the IT enterprise Architecture. alpha's enterprise architects translate this into certain IT boundary conditions." – Alpha operational manager* (bracketed text added by authors)
3 — Term specificity	*"Alpha does not tell us how we should deliver the service, but in certain areas it interferes. In my opinion, Alpha's enterprise architects interfere too much with what we do … If you are an enterprise architect, you should be concerned with high-level IT design and have a long-term perspective, not focus on every minor change Kappa incorporates." – Kappa operational manager* *"[T]here is a limit on the amount by which Kappa can deviate from these boundary conditions [set by Alpha's enterprise architects], and the openness of Alpha's enterprise architects to deviations from the IT enterprise architecture is limited … which has certain implications for Kappa's innovative activities." – Alpha operational manager*
3 — Pay-for-performance	*"If Kappa does not perform according to what was agreed in the contract, Alpha has the right to partly end the relationship three years after the starting date, provided that Alpha gives at least three months' notice. Alpha will then be obliged to buy out the remaining contract term by paying an amount that equals 10% of the 'connectivity part' revenue." – Alpha-Kappa contract, Article 4.2, p. 11*
4 — Risk-averseness	*"Kappa is protective of its investments and seeks to maintain volume rather than increase margins on new or improved service delivery. It does not want to take the risk of losing volume … This shows that we are dealing with a partner with limited innovation." – Alpha strategic manager*
5 — Innovation	*"Kappa is sometimes reactive, sometimes proactive. We want them to be proactive, but that is a game that Kappa has yet to learn. [Being proactive] is not the way Kappa conducts business." – Alpha strategic manager*

(*continued on next page*)

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Appendix B2 (*continued*)

Example number	Interview and/or contract example
	"[*These are the reasons that Kappa has not engaged in new initiatives.*] *First, we are focused on the continuity of the service rather than on innovative activities. Second, Alpha and Kappa are in the middle of a transition process involving service improvements. Because the current* [*IT*] *environment is complex and old, it is difficult to renew the environment and speed up the transition. Third, Alpha's decision-making is slow. … There are too many parties* [*within Alpha*] *that can interfere in the way we deliver the service. This may delay the process of getting innovations through; by the time a decision has been made, the world has changed and the innovation is outdated.*" – *Kappa operational manager*

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