RELATIONSHIP DETERMINANTS OF PERFORMANCE IN SERVICE TRIADS: A CONFIGURATIONAL APPROACH

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The increasing popularity of service-based strategies among manufacturers, such as solution provision, makes service triads commonplace within business. While there is some consensus that "relational" (i.e., close or collaborative) relationships are beneficial for the performance of individual actors and the triad as a whole, there is little known about what exactly affects the service performance of an actor in these triads. In this study, we investigate the influence of the manufacturer–service supplier relationship on the performance of the service supplier toward the manufacturer's customers. As this phenomenon is causally complex and context dependent, we assume that there will be alternative configurations of relationship characteristics and contingent factors that lead to high service performance. To uncover potential configurations, we deployed fuzzy-set qualitative comparative analysis, on data collected from 38 triads within the network of a large Anglo-German commercial vehicle manufacturer. Our research shows that—in this context—superior service performance cannot be generalized to one relationship configuration and is also contingent upon exogenous factors—that is, contract support and service site size. We uncovered four "core" configurations of relationship dimensions and two exogenous factors. Three of the configurations exhibited relational properties, while the fourth configuration had transactional properties. This is counter to extant research findings. We extend the perspective that within triads, service performance is not an outcome of a single "close," or "collaborative" relationship and is a combination of multiple configurations consisting of varying relationship dimensions and exogenous factors.

Keywords: *service triads; relationship determinants; service performance; fuzzy-set qualitative comparative analysis*

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INTRODUCTION

Services for equipment are frequently outsourced to third parties. These services are accessed either on an ad hoc basis, using a maintenance contract, or as part of a "solution" where the customer pays for the use of —or access to—equipment (Johnson, Christensen & Kagermann, 2008; Visnjic-Kastalli & Van Looy, 2013). In the case of maintenance, repair, and overhaul (MRO) contracts and solutions delivered by third

parties, the customer has a contract with the equipment manufacturer for both equipment and services, with services delivered by a third party. This creates a *service triad* (Wynstra, Spring & Schoenherr, 2015).

Service triads have become a prominent topic in the supply chain management discipline (Wynstra et al., 2015). The main pillar of triadic research, and the fundamental premise of this work, is that the performance of the three actors and the relationships between them are interdependent. In a triad, a dyadic relationship can affect another dyadic relationship and an actor can influence, or be influenced by, the relationship between the other two actors (Choi, Ellram & Koka, 2002; Havila, Johanson & Thilenius, 2004; Lazzarini, Claro & Mesquita, 2008; Rossetti & Choi, 2008; Wu & Choi, 2005). Thus, in service triads, the customer's ongoing satisfaction and their perception of their relationship with the manufacturer is dependent upon the performance of the service supplier (Raassens, Wuyts & Geyskens, 2014; Tate & van der Valk, 2008).

The focus of this study is to understand the role that the relationship between the manufacturer (or provider) and the service supplier (in this case MRO services) plays in the performance of the service supplier toward the provider's customers. Counter to existing research that treats relationships within the triad as monolithic (i.e., collaborative or competitive, positive or negative; *cf.* Choi & Kim, 2008; Choi & Wu, 2009a; Lazzarini et al., 2008; Wu & Choi, 2005), we adopt Cannon and Perreault's (1999) multidimensional framework of *relationship connectors*. We adopt this framework to create a more nuanced view of the relationships between the provider and its service suppliers. This is in line with the wider buyer–supplier relationship research that renders the distinction between cooperative and competitive relationships an oversimplification (Cannon & Perreault, 1999; Kim & Choi, 2015; Monczka, Petersen, Handfield & Ragatz, 1998; Morris, Brunyee & Page, 1998).

In addition to assuming that the relationship is multidimensional, and in line with previous triadic research, we adopt a contingency-theoretic approach (*cf.* Wu & Choi, 2005). Therefore, there is no single manufacturer–service supplier relationship type that elicits superior service performance. Rather, performance is dependent upon the relationship connectors as well as external (contingent) factors. For example, considering dyadic relationships within the UK grocery sector, Tesco has delisted some products from Coca-Cola (Telegraph, 2015) indicating the lack of a cooperative relationship, and a reliance upon formal governance. Despite their reliance on contracts, Tesco has maintained a close and collaborative relationship with Procter and Gamble (Logistics Manager, 2013). However, both Coca-Cola and Procter and Gamble exhibit high supply chain performance (Gartner, 2015). These observations agree with empirical research that has found that superior firm performance can be an outcome of different relationship types (Cannon & Perreault, 1999; Vesalainen & Kohtamaki, 2015). While these real-world examples and empirical research are from dyads, we suggest that the outcomes also hold within triads. We posit that the interplay between relationship connectors and performance is causally complex and contingent upon contextual variables. Thus, we propose that there are multiple, alternative relationship profiles that equifinally (Doty, Glick & Huber, 1993) enhance performance. To investigate this, we adopt a configurational approach to identify configurations of relationship connectors (i.e., information exchange, cooperative norms, legal bonds, adaptations, and operational linkages) and microlevel contingent factors (i.e., supplier size and proportion of supplier overall revenues coming from supporting solutions) that lead to the superior service performance of the MRO supplier toward the customer. A configurational approach is fully in line with contingency theory that looks for "ideal types" and "fit" between constellations of characteristics and the environment (*cf.* Fiss, 2011; Meuer, 2014; Ragin, 2008). Here, we specifically employ fuzzy-set qualitative comparative analysis (fsQCA), a set-theoretic analytic technique whose aim is to uncover configurations of variables (in fsQCA terminology: *conditions*) that bring about a given outcome (Ragin, 2008).

The adoption of a multidimensional framework, in conjunction with a configurational approach, facilitates the creation of a more nuanced view compared with basic assertions such as that closer, collaborative relationships in the triad lead to better outcomes (Choi & Kim, 2008; Wu, Choi & Rungtusanatham, 2010). We contribute to the study of service triads while elaborating theory about the effect of the provider–service supplier relationship (a dyad within a triad) on the service performance of the supplier toward the third actor (customers). Our first contribution is to show that relationship influences on performance are causally complex (*cf.* Ragin, 2008) and contingent upon context. We identify a number of alternative configurations that equifinally enhance the supplier's service performance, indicating that there is not one single, generalizable, "good" relationship type. Furthermore, we uncover that superior service performance in service triads is not just a result of different configurations of relationship dimensions but is also contingent upon factors extraneous to the provider–service supplier relationship. This is where we position our second contribution. These factors are the size of the service supplier, and the proportion of its revenues that comes from supporting solutions contracts between the manufacturer and its customers

(termed here "contract support"). Experience of and exposure to services as part of customer solutions, in the form of contract support, has, to date, not been considered in the study of service triads. Our third and last contribution is to show that the absence of a cooperative relationship does *not* negatively affect performance when the service supplier is large. This indicates *causal asymmetry* (Schneider & Wagemann, 2012) and adds nuance to the extant literature that promotes the view for increased relationality of buyer–supplier relationships in the service context.

The remainder of the paper is structured as follows. We next introduce the study's theoretic background. In the methodology section, we introduce the empirical setting of this study and describe both the qualitative and quantitative data collection processes. Next, we introduce and explain the purpose and key steps of fsQCA. This is followed by the presentation of the results. We close with a discussion of our findings, the study's key contributions and limitations, and suggestions for further research.

THEORETICAL BACKGROUND

Service Triads

For maintenance contracts and the provision of solutions, manufacturers (i.e., solution providers) often assign the delivery of services to third-party suppliers who interact directly with the provider's customer base (Bastl, Johnson, Lightfoot & Evans, 2012; Cohen, Agrawal & Agrawal, 2006; Quinn, Doorley & Paquette, 1990). This structural arrangement where a service supplier delivers services to a customer on behalf of the other organization is a type of *service triad* (Van der Valk & van Iwaarden, 2011; Wynstra et al., 2015). In service triads, all three actors are connected with relationships forming a *transitive triad* (Madhavan, Gnyawali & He, 2004).

In transitive triads, all three actors are interdependent (Li & Choi, 2009; Mena, Humphries & Choi, 2013) and their behavior and performance are influenced by: (1) the behavior and performance of the other two actors in the triad; and/or (2) the nature and management of direct and indirect relationships in the triad (Choi & Wu, 2009a,b; Van der Valk & van Iwaarden, 2011). Thus, the successful provision of the solution within a service triad is dependent upon the service supplier achieving the desired service performance. Positive relationship outcomes such as high levels of service performance are often associated with service triads of relational rather than transactional relationships (Peng, Lin & Martinez, 2010; Tate & van der Valk, 2008; Van der Valk & van Iwaarden, 2011). However, research on triads (Mena et al., 2013; Rossetti & Choi, 2008) has tended to adopt a binary distinction between relationships (e.g., positive versus negative, collaborative versus adversarial). This classification is "blunt" (Mena et al., 2013, p. 73) and ignores the multidimensional nature of buyer–supplier relationships (Monczka et al., 1998; Morris et al., 1998). To address this, this study adopts an established multidimensional framework (Cannon & Perreault, 1999) to allow for more granular insight into the influence of the provider–service supplier relationship on service performance. This framework is explicated in the following section.

Cannon and Perreault's (1999) Framework of Relationship Connectors

Buyer–supplier relationships are not monolithic; they have multiple dimensions. To date, different relationship dimensions, and their effect on organizational performance, have been considered in the relevant literature. These dimensions are aligned with the theoretic underpinnings of each study. For example, studies employing social exchange theory emphasize commitment and trust, while studies adopting transaction cost economics (TCE) emphasize asset specificity and opportunism (Palmatier, Dant & Grewal, 2007). Buyer–supplier relationships have also been examined through the lenses of resource dependence theory (Ireland & Webb, 2007), the resource-based view (Palmatier et al., 2007), TCE (Tangpong, Hung & Ro, 2010), and agency theory (Van der Valk & van Iwaarden, 2011). This theoretic diversity indicates the presence of multiple relationship dimensions. In this research, we adopted Cannon and Perreault's (1999) framework of *relationship connectors*. The relationship connectors (Table 1) comprise, "dimensions that reflect the behaviors and expectations of behaviors in a buyer–seller relationship," and "reflect the manner in which two parties interrelate and conduct commercial exchange" (Cannon & Perreault, 1999, p. 441).

There are two reasons for the adoption of this framework. First, in contrast to higher order, elusive concepts such as "commitment" and "trust," the relationship connectors echo the reality of commercial exchange as they are anchored in day-to-day business activities. Therefore, they reflect the key legal, political, sociological, economic, and psychological aspects of commercial relationships (Cannon & Perreault, 1999).

Second, the framework has been empirically validated and used in other studies that examine the linkage between relationships and performance (Bastl et al., 2012; Cai, Yang & Jun, 2011; Penttinen & Palmer, 2007; Saccani, Visintin & Rapaccini, 2014; Zhou, Poppo & Yang, 2008).

While the impact of buyer–supplier relationships on performance has been extensively studied, service performance has not. We discuss this next.

TABLE 1

Cannon and Perreault's (1999) Relationship Connectors

Relationship Connector	Description	Main Theory/ Approach of Origin
Information exchange	Information exchange is an expectation of an open sharing of information that might be useful for both parties.	Relational Contracting (RC), Social Exchange Theory
Operational linkages	Operational linkages capture the degree to which the systems, procedures, and routines of both parties (for example, customer and supplier) have been linked to facilitate operations.	Industrial Marketing and Purchasing (IMP) Interaction Model
Legal bonds	Legal bonds are detailed and binding contractual agreements that specify the obligations and roles of both parties in the relationship.	Transaction Cost Economics (TCE), Resource Dependency Theory
Cooperative norms	Cooperative norms reflect expectations the two exchanging parties have about working together to achieve mutual and individual goals jointly.	Relational Contracting, Social Exchange Theory
Buyer and supplier adaptations	Relationship-specific adaptations are investments in adaptations to process, product, or procedures specific to the needs or capabilities of an exchange partner.	TCE, Resource Dependency Theory

Service Performance and Its Relationship Determinants

The term "service performance" is frequently used interchangeably with "service quality" (Glynn, de Búrca, Brannick, Fynes & Ennis, 2003; Stank, Goldsby & Vickery, 1999). It is conceptually broad with many aspects, including flexibility, reliability, customization, customer responsiveness, and complaint resolution among others (De Búrca, Fynes & Brannick, 2006; Glynn et al., 2003).

Research examining the determinants of service performance in business-to-business contexts broadly falls into two categories, which differ on the basis of the dependent variables used in the studies:

1 The first category considers the link between the nature of interpersonal and interfirm relationships and service performance exclusively.
2 The second comes from the broader buyer–supplier relationship research and examines the link between multiple relationship dimensions and operational or organizational performance, of which service performance is an element.

Research from the first category suggests that a firm's service performance depends upon two groups of factors: (1) factors at the firm level, and (2) factors pertinent to the firm's network and its interfirm relationships with network actors, such as suppliers, customers, and partners. For example, at the firm level it has been shown that employee satisfaction and loyalty are positively associated with the service responsiveness of the organization (Theoharakis, Sajtos & Hooley, 2009).

At the network level, Droge, Vickery and Jacobs (2012) and Vickery, Jayaram, Droge and Calantone (2003) showed that supplier partnering and closer customer relationships enhance service performance (e.g., delivery flexibility, presale customer service, responsiveness, and product support). Moreover, where there is service co-production between personnel from the service provider and the customer, interpersonal relationships foster the development of cooperative norms safeguarding against hazards not covered in contracts (Guo & Ng, 2011). These relationships, in turn, result in increased levels of customer service and product support. Additionally, while informal control in a buyer–supplier relationship is normally positively associated with a supplier's service performance, formal control in the form of output monitoring only enhances performance in mass rather than professional services (Stouthuysen, Slabbinck & Roodhooft, 2012). The key characteristic of this body of research is that despite its focus on examining service performance explicitly, it still adopts a "blunt" approach, ignoring the multidimensionality of relationships, as it utilizes high-level con-

structs such as "partnering," "trust," or "closeness." Also, previous research tends to selectively focus on singular relationship dimensions (e.g., formal control and informal control).

The second category of research is part of the broader buyer–supplier relationship research and examines the link between various relationship dimensions such as trust, cooperative norms, relationship-specific adaptations, interdependence, information sharing, and *firm performance* in general (Anderson & Narus, 1990; Carr & Pearson, 1999; Krause, Handfield & Tyler, 2007; Poppo, Zhou & Zenger, 2008; Zaheer, McEvily & Perrone, 1998). In the majority of this research, *performance* refers to the organizational, operational, and/or relationship performance of the buyer or supplier. While these constructs often encompass aspects of service performance such as customer service support and service quality improvements (Cai et al., 2011; Kaufmann & Carter, 2006; Wong, Tjosvold & Chen, 2010), determining the net effect of multiple buyer–supplier relationship dimensions on service performance alone is difficult, if not impossible to disentangle. In addition, due to the multiplicity of theories employed to examine the effect of relationships on performance, there is a lack of consensus as to which of the relationship dimensions are responsible for superior firm performance and how they are causally ordered (De Vita, Tekaya & Wang, 2011; Palmatier et al., 2007; Rajamma, Zolfagharian & Pelton, 2011). Moreover, this effect is often contingent upon multiple factors that are external to the individual dyadic relationship (e.g., variables at the company, industry, and country level). This implies that the phenomenon of relationship–performance interdependence is causally complex (*cf.* Ragin, 2008) and context dependent. Thus, the outcome (i.e., superior performance) may be the result of alternative *causal recipes*, that is, different configurations of relationship dimensions and contextual factors (*cf.* Flynn, Huo & Zhao, 2010).

Toward Elaborating the Theory of Service Triads

Most recent empirical research examining triads has adopted a contingency-theoretic approach (Wynstra et al., 2015). For example, Wu and Choi (2005) presented five "ideal" types of supplier–supplier relationship management by a common buyer, depending on the buyer's strategy and product type, while Wuyts, Rindfleisch and Citrin (2015) showed the moderating role of a service buyer–service supplier relational relationship in the effect of customer focus of the service supplier on customer need fulfillment.

Accordingly, and to address the causally complex, asymmetrical and contingent nature of relationship–performance interdependence in service triads, we adopt configurational logic and a related technique: fsQCA. This technique can address causal complexity and is in line with a contingency-theoretic approach, enabling the understanding of the interplay between factors at different levels, namely the provider–supplier relationship and the business context (*cf.* Crilly, Zollo & Hansen, 2012). Hence, this research seeks to uncover configurations of *conditions* (relationship connectors and contextual factors) leading to superior service performance. Thus, alternative configurations may equifinally lead to superior performance. In addition, it is possible to see the presence of a certain condition (e.g., high information exchange) as part of a superiorly performing configuration, and its own absence (e.g., low information exchange) as part of another superiorly performing configuration (*causal asymmetry*—Ragin, 2008). Although recent fsQCA studies follow a deductive approach (Fiss, 2011), the method lends itself to theory elaboration (Crilly et al., 2012), which is the mode of this research. By conducting an in-depth investigation of the relationship between provider–supplier relationship connectors, exogenous factors, and service performance, this work aims to elaborate upon the current understanding of the effect of the relationships upon the performance of actors within service triads. And, contrary to a "clean slate," "Glaserian" approach, three general theoretic considerations (phrased as conjectures), in line with the reviewed literature and the assumptions of causal complexity and asymmetry, are contextualized and elaborated. These are as follows:

1. There will be more than one configuration of provider–service supplier relationship dimensions that lead to superior service performance of the supplier.
2. The configurations leading to superior performance are more likely to reflect relational rather than transactional provider–supplier relationships.
3. In conjunction with the relationship dimensions, contingent factors will affect service performance and hence will appear as components of some configurations.

The next section details the methodology.

METHODOLOGY

In this study, we seek to identify the configurations of dimensions of the manufacturer–service supplier relationship and contingent factors that elicit superior service performance by the MRO service supplier toward the manufacturer's customer base. We use configurational logic through fsQCA coupled with a multitheoretic framework of relationship dimensions (i.e., Cannon & Perreault's, 1999 *relationship connectors*). This required us to collect both qualitative and quan-

titative data. We first describe the empirical setting, then the qualitative data collection and analysis phase, and key insights derived from it. We then detail the quantitative phase.

Empirical Setting and Data Collection

Following the theoretic sampling logic and recommendations of Eisenhardt (1989), Meredith (1998), and Patton (2002), we developed two key criteria for the selection of the empirical setting:

1. The setting had to enable the study of multiple, transitive, service triads, comprising a manufacturer who has subcontracted the servicing of its complex products to independent service suppliers.
2. To achieve our research objective, we required variance in the service performance of the suppliers so that the relationship dimensions (and configurations thereof) that elicit superior performance could emerge from the analysis.

To satisfy the sampling criteria, we collected data within a network comprising the manufacturer/provider, independent service suppliers, and business customers (Figure 1).

The manufacturer/provider is a British branch of a large German commercial vehicles manufacturer (referred to herein as TrucksCo). TrucksCo is considered by industry experts as a pioneer in terms of transitioning into services. As part of their service business model, any TrucksCo customer can, instead of buying a vehicle, pay a fixed amount of money per week for the use of that vehicle. The fee depends on the services included in the contract. At the time of this research, approximately 60% of TrucksCo's yearly revenues came from customized fixed-cost service contracts sold with the vehicles. The services (e.g., preventive maintenance, breakdown attendance) were provided by a network of 79 service sites, of which 28 were owned by TrucksCo and 51 were independent service suppliers.

Relationships, communication, and interaction occurred within TrucksCo's network. TrucksCo regularly communicated at the strategic, tactical, and operational level with both service suppliers and its business customers (e.g., truckers, logistics companies). At the same time, independent service sites were in direct, frequent interaction with the customers of TrucksCo, largely due to the UK-specific requirement for commercial vehicles to be inspected every 6 weeks. This indicated that the research setting comprised transitive triads with frequent interactions, which was in line with our first sampling criterion.

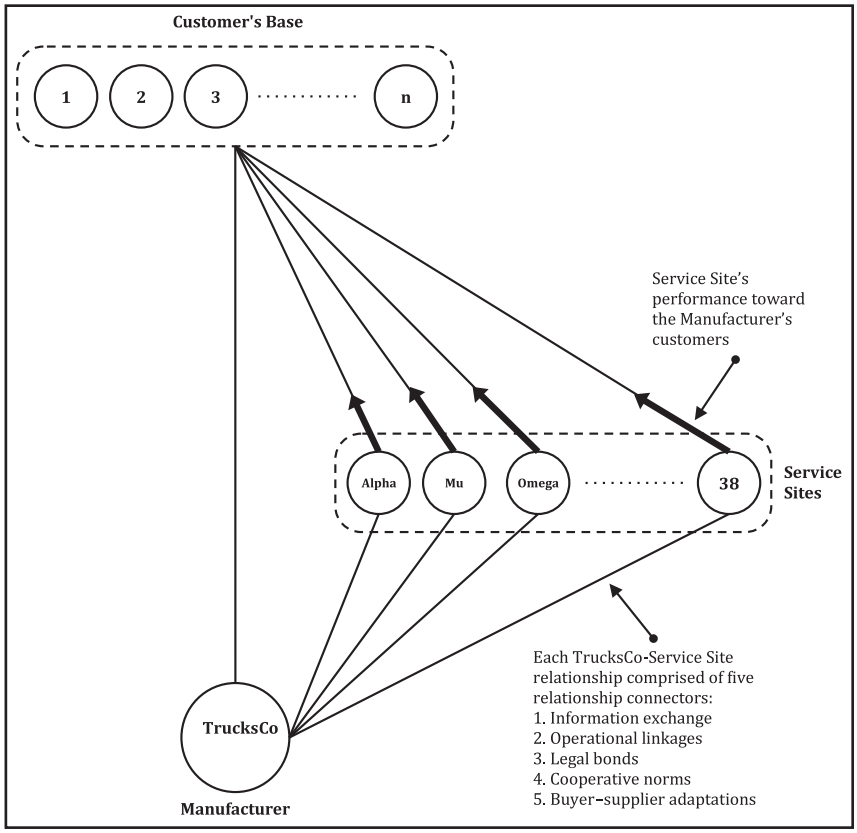
TrucksCo fastidiously measured service performance of their service suppliers toward its customers and rewarded them accordingly through quarterly financial bonus schemes. Key performance indicators (KPIs) were developed after consulting major business customers and included passing the Ministry of Transport (MOT) test for roadworthiness at the first attempt, breakdown attendance response times, spare parts availability, and the site's responsiveness to incidents for vehicles under fixed-cost service contracts. These measures signify how good each service site has been at keeping the customers' vehicles on the road (maximizing their "uptime"). Vehicle uptime was deemed to be a proxy for customer satisfaction. This was supported, for example, by the operations director of a major haulier who stated that "the most important thing for the customer is to have his vehicle available to him." His counterpart from a logistics provider added that his main requirement from the network is "making sure the vehicles are not off the road for too long a period, waiting for parts, for whatever reason."

Based on the initial review of performance data, we determined that performance according to these measures varied across service suppliers sufficiently to satisfy the second selection criterion. In the following section, we explain the rationale behind, the process of, and the key outcomes from, the qualitative data collection phase.

Qualitative Data Collection and Key Outcome. The first stage of the empirical work was an exploratory qualitative study. Its main purpose was to uncover the modes and quality of interaction between TrucksCo and its service suppliers with respect to performance toward their customers. It was also intended to provide us with the required substantive knowledge to inform the decisions that need to be taken during the fsQCA phase (Schneider & Wagemann, 2012). The exploratory stage was designed to ensure construct validity, internal and external validity, and reliability (Eisenhardt, 1989; Gibbert, Ruigrok & Wicki, 2008; Meredith, 1998). For parsimony, we submit a short summary of it, to provide a richer account of the fsQCA.

Qualitative data collection took place between September 2010 and April 2011. The cases were selected based on the service supplier performance, from high to low, in line with Patton's (2002) recommendations for a maximum variance sample. We examined three cases, referred to as Alpha (high performing), Mu (average performance), and Omega (low performing). A case comprised a dyadic relationship between TrucksCo and its service supplier, which was embedded in a TrucksCo-service supplier–customer triad. Performance levels were determined based on the TrucksCo's objective performance data (comprising the four KPIs detailed later in the Quantitative Data Collection subsection). In total, 31 semistructured interviews were carried out. The interviews were electronically recorded and lasted approximately an hour on average.

FIGURE 1
Structural Configuration of the Research Setting



In all three cases, data were collected from both sides of the relationship with managers knowledgeable about the relationship between TrucksCo and a specific service supplier and the implications of the relationship on service performance. Two interviews with national customers were also conducted to triangulate the findings. The interviews were transcribed verbatim and subsequently analyzed using template analysis (King, 2004). The initial template was of a hierarchical nature. The five connectors comprised the level-one categories, and the facets of each were organized as provisional subcategories. Indicators of each connector and case-specific cues were coded during the analysis. All data were scrutinized at least three times before the template was considered "final" (*cf.* King, 2004) and, as is common, the final template was a revised version of the initial one. To facilitate examination of the context-dependent nature of the phenomenon of relationship influence on performance, exogenous, contingent factors were allowed to emerge through the analysis. The key outcomes of this stage were as follows: (1) to operationalize the relationship connectors to the context and identify new variables within the constructs; (2) to identify two exogenous, contingent variables ("site size" and "contract support") that were deemed to influence service performance; and (3) to accumulate contextual knowledge to facilitate the calibration stage of fsQCA.

The two contingent factors have previously been utilized in the literature to explain performance. First, firm size is often used as a control variable in the buyer–supplier relationship literature (Krause et al., 2007; Poppo & Zenger, 2002) as it reflects: "scale and scope economies, market power aspirations, and the ability to aggregate inputs" (Anderson & Schmittlein, 1984, p. 388) and is indicative of financial resources (Contractor, Kumar & Kundu, 2007). It may also reflect the higher bargaining power of one exchange party over the other (Heide & John, 1988; Poppo et al., 2008).

Second, contract support (measured by the proportion of the supplier's revenues that comes from fixed-cost service contracts and warranty activity tied to the

provider's customer base) also has theoretic relevance. It is closely related to the concept of "service infusion," which has been shown to be an enabler of the success of service-based business models for manufacturing firms (Fang, Palmatier & Steenkamp, 2008; Fischer, Gebauer, Gregory, Ren & Fleisch, 2010; Suarez, Cusumano & Kahl, 2013; Visnjic-Kastalli & Van Looy, 2013). We posit that the higher the proportion of contract support activity over total revenues, the more experienced the supplier will be when it comes to supporting complex services such as maintenance contracts and solutions. Crucially, we also posit that in a triadic context where the manufacturer relies on third parties for service delivery, the higher the contract support is, the higher the mutual dependence between the manufacturer and the supplier. This is because, on the one hand, the supplier becomes more financially dependent on the manufacturer as the relative revenue from contract support increases (*cf.* Terpend & Krause, 2015). On the other hand, if contract support increases, which means that the volume and intensity of contracted services delivered to solutions customers increase, the manufacturer will become relatively more dependent on the supplier for customer satisfaction through exceptional service delivery. In addition, due to the nature of the industry and the need for a nationwide presence, the switching costs to another company in the locality also increase when the supplier has more contract support activity. In short, what we have termed here "contract support" is a proxy for mutual dependence, as well as for supplier experience supporting the solution. The qualitative work suggested that proportion of contract support positively affects service performance.

Quantitative Data Collection. The quantitative data collection took place in June 2011. The data collection instrument comprised a question to capture site size, and multi-item 7-point Likert-type scales for each contextualized relationship connector. Some items were adopted in their original form from Cannon and Perreault (1999), some were adapted to the context, and some were newly developed for the context. For example, for legal bonds we included the item: "TrucksCo is keeping their relationship with this workshop very rigid and formal" to measure the respondents' perception of the formality of the service site—TrucksCo relationship.

A panel of three academics, the TrucksCo Head of Service, and the general managers of two service sites reviewed the instrument. The list of items and the results of a reliability analysis are included in Appendix S1 (Supporting information). Reliability scores (Cronbach α) for four of the five relationship constructs exceeded .70. Operational Linkages achieved a score of only .587 which was borderline acceptable (*cf.* Kline, 2000). This comparably low alpha coefficient was due to the small sample size (Peterson, 1994) and the low item-to-total correlation of the item: "We have got closely linked business activities with individuals from TrucksCo (e.g., joint marketing, campaigns, visiting customers with the salesmen…)." The qualitative stage indicated that only some service suppliers had joint activities with TrucksCo so the low reliability could be explained. Thus, we decided not to drop the item, as without it we would not tap an important facet of the construct. The data collection process was as follows:

1. With the assistance of TrucksCo's managers, 108 individuals from the 51 independent service sites were identified who were deemed to have good knowledge of the service site–TrucksCo relationship.
2. These individuals were sent an e-mail by the TrucksCo Head of Service introducing the research, requesting their voluntary participation, and assuring participants that their responses would be treated anonymously.
3. This was then followed by an e-mail which included: (1) a personalized letter with the details of the project; (2) a note guaranteeing the confidential and anonymous treatment of respondents' information; (3) a hard copy of the survey with a self-addressed envelope; and (4) a link to the online version of the survey.

In total, 47 completed questionnaires from 38 service supplier sites were returned. Hence, the number of cases is 38, which falls within the acceptable sample size of n = 12–50 for fsQCA (Ragin, 2008).

To complete the data required for the analysis, TrucksCo provided us with the value for the proportion of contract support relative to overall revenue for each site for the last calendar year. Finally, we created a composite service performance measure by averaging the number of KPIs achieved by each site over eight quarters (from the 1st quarter of 2010 to the 4th quarter of 2011). The list of KPIs included four aspects of service performance: MOT first-time pass rate, breakdown attendance times, spare parts availability, and a specific measure capturing each site's responsiveness to incidents concerning vehicles under fixed-cost service contracts. To reflect the increased weight placed by TrucksCo on MOT first-time pass rate, we gave an additional point to each site that exceeded a certain threshold ($\geq$90%) of vehicle first-time passes. The composite service performance measure could therefore take a value between 0 and 5 each quarter. This was then averaged to obtain the overall performance score. Table 2 shows the descriptive statistics for the measures of the seven causal conditions and the outcome. We proceed with an overview of fsQCA.

TABLE 2

Descriptive Statistics

	Mean	Standard Deviation	Minimum	Maximum
Causal Condition				
Size (in employees)	27.5	17.4	8	98
Contract support (%)	35.1	16.1	5	67
Information exchange (7-point Likert-type scale)	5	1.1	1.7	6.7
Operational linkages (7-point Likert-type scale)	5.7	.78	4.2	7
Cooperative norms (7-point Likert-type scale)	5.1	1.03	2.2	6.6
Legal bonds (7-point Likert-type scale)	5.5	.7	4	7
Relationship adaptations (7-point Likert-type scale)	5.6	.78	3.75	7
Outcome				
Performance (based on composite consistent measure ranging from 1 to 5)	3.68	.8	1.5	5

FUZZY-SET QUALITATIVE COMPARATIVE ANALYSIS

Qualitative comparative analysis (QCA), and its variant, fsQCA, belong to a family of analytical techniques initially developed by Ragin (1987, 2006, 2008). QCA uses set-theoretic logic to identify relationships between the outcome of interest and its candidate antecedent variables (in QCA language: "causal conditions").[1] The rationale for adopting fsQCA in this study was threefold:

1. Our aim was to identify different *configurations* of *causal conditions* (i.e., relationship connectors and contingent factors) that enhance service performance, rather than the individual influence of each condition. fsQCA, by design, is concerned with entire configurations of such conditions and their conjunctional impact, and not the *net effects* of individual variables (Ragin, 1987). The technique does not implicitly treat the conditions as competing explanations of an outcome like multiple regression. It simultaneously maintains the integrity of each individual case (Ragin, 2008) instead of disaggregating them into independent, analytically separate aspects (Fiss, 2007).
2. fsQCA can be used when causation is complex, as is the case with the relationship determinants of service performance. It allows for multiple solutions (i.e., configurations of conditions) that can lead to the same outcome. This phenomenon is often referred to as "equifinality" (Doty et al., 1993; Fiss, 2007; Katz & Kahn, 1978).
3. The technique does not need large samples or normally distributed data (Ragin, 2008; Schneider & Wagemann, 2012). Intermediate samples such as ours (n = 38) would be too large for traditional qualitative analysis methods to handle systematically and too small for mainstream statistical techniques to produce robust results.

fsQCA comprises two key stages: (1) the measure calibration and (2) the configurational analysis through algorithmic minimization. The case studies provided substantive knowledge for the calibration of the survey responses. In line with Ragin (2008) and Schneider and Wagemann (2012), fs/QCA 2.0 was used to perform the configurational analysis (Ragin, Drass & Davey, 2006).

Measure Calibration

The purpose of the measure calibration stage in fsQCA is to identify meaningful groupings of *cases* by distinguishing between relevant and irrelevant variation (Ragin, 2008). Calibration allows scholars to move beyond the ranking of cases by value or by rudimentary "high" or "low" categories versus the central tendency (Ragin, 2008). Calibration requires the utilization of external, agreed upon standards or all available theoretic and substantive knowledge (Ragin, 2008; Schneider & Wagemann, 2012). In this research, we used the qualitative data to inform the measure calibration.

Calibration in fsQCA constitutes the assignment of a value signifying *degree of membership* of each case or observation in each of the *sets* corresponding to qualitative characterizations of the causal conditions and outcome. The degree of *membership* comprises the main difference between fsQCA and its parent, QCA. QCA allows only dichotomous membership (0 or 1), indicating that the *case* is either entirely in or entirely

[1]See Ragin (2008) for a detailed, self-contained presentation of fsQCA and also the logic behind QCA in general. See also: Crilly (2011), Crilly et al. (2012), Fiss (2011), Meuer (2014), and Ordanini and Maglio (2009) for recent applications in the management field that contain extensive introductions to the method.

out of a target *set*. Conversely, fsQCA utilizes the concept of the *fuzzy-set* (Zadeh, 1965) and allows any gradient score between 0 and 1 (e.g., 0, .2, .4, .6, .8, and 1.0) to indicate membership in the *defined sets*.

In the measure calibration stage of fsQCA in this research, we defined the *sets* to imply high levels of the underlying concept (i.e., the causal condition or outcome; Schneider & Wagemann, 2012); for example, "the set of cases with High Information Exchange" or "the set of Highly Performing Service sites." Hence, all 38 cases from the quantitative stage were assigned a score signifying membership in the defined sets examined in this research. There are two calibration methods, both of which were utilized in this study:

1. *Direct calibration*, whereby the researcher uses three qualitative thresholds to code the original values and subsequently transform them into fuzzy-set scores: The point of full inclusion in a target set (a fuzzy-set score of 1), the point of full exclusion (a score of 0), and the crossover point (.50). The transformation is based on a simple algorithm that takes into consideration the relative difference of each case from the thresholds (Fiss, 2011; Ragin, 2008).
2. *Indirect calibration*, whereby the researcher develops their own coding scheme of qualitative scores and assigns them to the original values of each variable. Our coding scheme, in line with exemplar schemes (Ragin, 2008), consisted of the following values and descriptors:

   0: "Out of the set;"
   .2: "Mostly, but not fully out of the set;"
   .4: "More out than in the set;"
   .6: "More in than out the set;"
   .8: "Mostly, but not fully in the set," and;
   1.0: "In the set."

The measures calibrated were the following:

1. For the five relationship connectors, the summated Likert scale scores after dropping the unreliable items (Appendix S1). For the nine of the 38 service sites from which more than one manager responded to the survey, we kept the response of the most senior one as we posit that they were more experienced and knowledgeable about the working relationship with TrucksCo. We also ran a paired *t*-test for each construct for the equality of means between the scores of the respondents we kept in the analysis (the most senior) and those we dropped. No statistically significant difference at the .10 level was observed.[2]
2. For "contract support," the actual proportion of revenues coming from TrucksCo MRO service contracts and warranty activity.
3. For "site size," the number of employees.
4. For "service performance," the un-weighted average of the quarterly composite score for each site.

We chose direct calibration for the set of "Highly Formalized Relationships" and the set of "Highly Performing Service Sites." For "Highly Formalized Relationships," our in-depth interviews uncovered a clear ranking of the three case relationships in terms of the degree of formalization. This was due to the possibility of resolving issues in an informal, nonprescribed manner. The survey responses, however, did not illustrate this clear ranking, as two cases have a summated score of 22 and one of 21 (of a possible 28), an indication of single-respondent bias. Because of this ambiguity, we used the direct method for calibration, which is usually employed when the researcher is unsure or does not have enough in-depth substantive and theoretic knowledge of the situation to construct a more granular coding scheme (Ragin, 2008). The second restrictive factor for implementing indirect calibration was the low variance and short range of the distribution of this measure. This was due to TrucksCo attempting to formalize all relationships by regularly introducing rules and procedures for standardizing service processes and operations.

Appendix S2 illustrates the indirect calibration of the set of "service sites with high contract support" and the direct calibration of the set of "highly performing service sites." Table 3 contains the measures and coding schemes for all causal conditions and performance. For expository purposes, it also includes the scores of the three case relationships.

Configurational Analysis

We first tested for causal necessity—whether any of the candidate causal conditions is *necessary* for the occurrence of the outcome.[3] As expected, no single relationship dimension or contingent factor was necessary for superior performance. We then tested for sufficiency, which uncovered the combinations of conditions that are *sufficient* for superior service supplier performance.

Provided that each case has acquired a fuzzy membership score in each defined set, fsQCA uses Boolean comparative logic to analyze interdependencies between conditions and the outcome. The Boolean operators AND, OR, and NOT are used, and a "truth table" exhibiting all possible logical combinations of

[2]We reran the whole analysis after averaging the duplicate responses. Despite some small changes in the calibrated measures, the analysis produced virtually identical results.

[3]If fuzzy-set membership scores implied that the outcome was a perfect or almost perfect subset of one condition, then the latter would be a *necessary* but not *sufficient* condition for the outcome (Ragin, 2008).

TABLE 3

Results of Measure Calibration

Indirect Calibration										
Set Name	Measure	Alpha	Mu	Omega	0 "Out of the Set"	.2 "Mostly but not Fully Out"	.4 "More Out than In"	.6 "More In than Out"	.8 "Mostly but not Fully In"	1.0 "In the Set'"
Large number of employees	Number	53	34	11	≤11	14–17	19–25	28–34	41–48	≥50
High contract support	%	54.1	19.3	23	≤7	11–21	23–34.1	35–43	44–54.1	≥60
High information exchange	Sum	47	51	16	≤16	28–30	33–43	44–52	53–58	≥58
High operational integration	Sum	32	29	23	N/A	21–24	26–27	28–29	30–33	≥34
Highly cooperative relationships	Sum	29	25	11	≤15	16–18	22–25	26–27	28–30	≥31
High relationship-specific adaptation	Sum	25	25	21	≤15	17–18	19–20	21–23	25–26	≥27
Direct Calibration										
					0 "Full Nonmembership"	.5 "Crossover Point"	1.0 "Full Membership"			
Highly formalized relationships	Sum	22	21	22	≤11	20.5	28			
High service performance	Score	4.13	3.63	3.25	2.25	3.63	4.8			

present and absent conditions is constructed. The case relationships (viewed in terms of their multiple set memberships) are then systematically compared to elucidate their similarities and differences. This allows for the omission of conditions that are unrelated to the outcome of interest and the minimization of the overall solution. After incorporating the simplifying assumptions for the *logical remainders* (i.e., all possible configurations of causal conditions that do not appear empirically in the sample), the *intermediate solution* is produced. This is a superset of the *complex solution* that does not involve any attempt to minimize the dimensionality of the data, and a subset of the *parsimonious solution* that involves all possible simplifications (see Schneider & Wagemann, 2012, for technical details). We present both the parsimonious (*core* conditions only) and the intermediate (*core* and *peripheral* [or contributing] conditions) solutions graphically (*cf.* Fiss, 2011) in the next section (Ragin, 2008). In Appendix S2, we present the steps we took to derive the solutions.

Following the recommendations of Schneider and Wagemann (2012), we also reran the analysis for the nonoccurrence of the outcome (i.e., *not* superior service performance). This takes advantage of the ability of set-relations to uncover causal asymmetry. This analysis may not produce an exact "mirror" of the analysis for the occurrence of the outcome. This is because the causal role of a condition, when present, does not provide any information regarding its causal role when absent (i.e., the explanation of the occurrence of an outcome cannot explain its nonoccurrence; Schneider & Wagemann, 2012). This is a characteristic that distinguishes fsQCA from regression-based techniques that are based on the symmetric notion of correlation. For the latter, assuming a positive correlation between size and performance, if large sites performed well, it would follow that smaller sites would perform badly. We graphically present the results for the negation of high service performance along with the main results in the following section.

RESULTS

Our analysis identified four configurations of provider–service supplier relationships that lead to superior service performance of a supplier toward the provider's customer base. These configurations were labeled: "Sanguine," "Pliant Coordinator," "Kindly Servicing," and "Professional." The reason for these labels will become apparent in the subsections explicating them. The configurations differ in terms of their constituent conditions. The first three configurations (Sanguine, Pliant Coordinator, and Kindly Servicing) have *neutral permutations*, meaning that the core conditions of these configurations combine with different contributing conditions, which jointly elicit superior service performance.

Figure 2 shows the configurations of causal conditions that lead to high service performance (*cf.* Ragin, 2008). The overall solution coverage indicates that our solution explains 71.52% of cases with superior service performance, with an overall consistency score of 87.71%. Solution consistency is the degree to which membership in the solution terms (the configurations) is a subset of membership in the outcome. The higher it is the better. In our case, both consistency and coverage are within the suggested boundaries for fuzzy-set analysis (Ragin, 2008).

The analysis for the negation of high service performance gave a simpler solution (Figure 3). Figure 3 shows that although there were several configurations leading to superior performance, there are fewer for low performance. Briefly, only small sites, which have a transactional relationship with TrucksCo, underperform (e.g., highly formalized with low information exchange and adaptation). We place this into the background and focus on the four distinct configurations that elicit superior service performance.

Sanguine

High relationship-specific adaptations by the service site and the negation of the set of highly formalized relationships were the *core* conditions of the first configuration. They were facilitated by two *contributing* conditions: *either* high site size *or* high contract support.

This configuration is easily interpretable and reflects service supplier sites such as Alpha. Alpha has been in the provider's network for a significant time period, from before the provider's adoption of a service-based business model. Alpha, and similar sites, should have gradually adapted their operations according to the provider's demands, possibly after investing significant time and money. In parallel with this investment, interpersonal relationships between managers from the two organizations will have developed, alleviating the constraints posed by the many rules, roles, and procedures that are explicitly prescribed by the provider. Managers in such sites perceive their relationship as not overly formalized (an absence of legal bonds). Problems are resolved quickly and informally through interpersonal relationships, and in combination with the right equipment, personnel, and training (high relationship-specific adaptations); these sites deliver superior service performance to the provider's customers. This is reinforced by the General Manager of Alpha, who stated, "I've known [colleague in TrucksCo] for 16 years so we have a relationship anyway. We know and respect each other for what we've done and when there is a conflict I think there's a lot

FIGURE 2
Configurations of Provider–Service Supplier Relationship Connectors and Exogenous Factors That Elicit Service Supplier's Superior Service Performance

Configurations	Sanguine		Pliant Coordinator		Kindly Servicing		Professional
Permutation	S_1	S_2	PC_1	PC_2	KS_1	KS_2	P
Information exchange			●		●	●	
Operational linkages			⬤	⬤		●	
Cooperative norms						●	⊗
Legal bonds	⊗	⊗				⊗	●
Relationship adaptations	⬤	⬤	⬤	⬤	●		
Site size	●		⬤	⬤	⬤	⬤	⬤
Contract support		●		●	⬤	⬤	
Consistency	93.6%	91.0%	90.0%	92.4%	93.6%	97.3%	90.0%
Raw coverage	37.5%	46.3%	48.2%	40.0%	40%	33.5%	32.6%
Unique coverage	1.0%	12.1%	5.8%	0.9%	0.9%	1.9%	2.8%
Overall solution coverage		**71.52%**					
Overall solution consistency		**87.81%**					

⬤ Core causal condition present
● Contributing causal condition present
⊗ Core causal condition absent
⊗ Contributing causal condition absent

of trust there and we resolve issues in an informal manner."

Pliant Coordinator

The second configuration consisted of high site size with high relationship-specific adaptations *and* high operational integration as core conditions. These were combined with two peripheral conditions: *either* high information exchange *or* high contract support.

This configuration suggests that relationships between TrucksCo and large service sites characterized by high operational integration and high relationship-specific adaptations led to superior service performance of service sites. As described by the General Manager of Alpha, size and integration are important: "As a workshop we need to make sure that we are, if you like, fully ready to support that product by investment in staff, training, and knowledge."

It is logical that a case exhibiting this profile will perform well. For example, a large service site will have more resources than a smaller site. It may also have undertaken significant relationship-specific investments, such as tooling and equipment, IT systems and software, and related training to keep abreast of the increasingly sophisticated service offerings and the increasing demands of the provider and the provider's customers. This may have resulted in higher operational integration between the site and the provider. This may have enabled the site to deliver superior service through greater levels of efficiency and competence when completing tasks and service activities.

Kindly Servicing

High site size and high contract support were the two core conditions of the third configuration. They were combined with either high adaptations and high information sharing, or high information sharing and high operational linkages and low formalization.

This configuration illustrated the importance of the exogenous contextual factors (i.e., site size and contract support) for achieving superior service site performance. According to configuration KS_2,[4] high site size and high contract support, facilitated by relational aspects (i.e., high cooperativeness, operational integration, information exchange, and low formalization), led to superior service performance at service sites. This configuration did not have the highest unique coverage but should logically lead to superior performance. The qualitative phase of this research suggested that larger sites with high contract support, whose relationship with the provider is relational,

[4]KS_1 has a unique coverage of only .9%, signifying negligible empirical presence. Note that unique coverage reflects the share of the outcome that is covered by a particular solution term and no other (see Ragin, 2008, for technical details).

FIGURE 3
Configurations of Provider–Service Supplier Relationship Connectors and Exogenous Factors That Elicit Service Supplier's Low Service Performance

Permutation	N_1	N_2	N_3
Information exchange		⊗	
Operational linkages			
Cooperative norms			
Legal bonds	●	●	⊗
Relationship adaptations	⊗		
Site size	⊗	⊗	⊗
Contract support	⊗		●
Consistency	83.1%	79.8%	77.6%
Raw coverage	35.6%	59.4%	43.4%
Unique coverage	2.1%	15.1%	6.3%
Overall solution coverage	**67.9%**		
Overall solution consistency	**73.4%**		

⊗ Core causal condition absent
⊗ Contributing causal condition absent
● Contributing causal condition present

should have performed well toward the provider's customer base. Such sites would resemble the opposite of Omega. For example, regarding contract support, the Service Manager of Omega said, "...we don't have a large turnaround of vehicles. If we were in the middle of Birmingham [large UK city], you'd have a big dealership, you get a lot more experience, whereas we don't. You'd get to know all the faults. It can be a very common fault, we see it once and it's like a massive thing to us." Contract support reflected high interdependence between the site and the provider. It also reflected high familiarity of the service site's personnel with the increasingly sophisticated product–service offering and with the needs of customers purchasing fixed-cost service contracts.

Professional

The fourth and last configuration was defined by two *core* conditions: high site size and the absence of the set of cooperative norms. Those were supplemented by high formalization as a *contributing* condition.

Crucially, this is the only configuration that did not resemble a relational governance structure. It suggests that large service sites whose relationship with TrucksCo was uncooperative and highly formalized could also deliver superior service to TrucksCo customers. In other words, a relational governance structure may not be a panacea for high service performance if the context is such that the former's "benefits" are not missed.

To provide background as to why this may be the case, imagine a large, professional service site that belongs to a national holding group. This site would exhibit a clear organizational hierarchy with distinct business functions whose directors report to a board, which may further report to investors or shareholders. Additionally, the site's directors may be running their own internal bonus schemes and customer satisfaction surveys. The managers and lower-level employees of such a site may be incentivized to satisfy the provider's and the provider's customers' requirements, independent of the state of the firm-level relationship with the provider. Staff may need to demonstrate with

objective targets (e.g., the performance measure in this study) that they strive for the company's best interests. Consequently, the implications of a transactional relationship can be offset or may not have any practical implication in everyday operations. Some indirect support for this came from the TrucksCo CEO's vision that there is a need for greater professionalism, and a concern regarding the future of small service suppliers who are simply "garages": "Whether that's fewer partners, or larger partners, who buy into the whole concept, I'm really not sure. But that is an area I have concerns with. We have some who are very, very good. They work very hard, they do their own customer satisfaction rating surveys, they do their own breakdown callouts. They engage HR people in their own right for a much smaller organization. And there are others that are just garages. And garages isn't what we're looking for."

DISCUSSION AND CONCLUSIONS

In the context of service triads, where a service supplier is responsible for the delivery of services to the manufacturer's customer base, this study used a configurational approach to examine the effect of the manufacturer/provider–service supplier relationship on service performance. Our findings support high-level assertions in the extant literature that providers should strive toward building relational (Droge et al., 2012; Lockett, Johnson, Evans & Bastl, 2011; Matthyssens & Vandenbempt, 2008; Vickery et al., 2003; Windahl & Lakemond, 2006; Wuyts et al., 2015), and closely integrated (Baines et al., 2009; Johnson & Mena, 2008; Slack, Lewis & Bates, 2004) relationships with their service suppliers to facilitate effective service exchange.

The first contribution of this work adds granularity to these assertions by showing that superior service performance is an outcome of alternative configurations of relationship dimensions and exogenous factors. In the context of our study, we uncovered four different configurations. In doing so, we showed that relationship dimensions such as cooperative norms, information exchange, formalization, and operational integration have a role to play in achieving superior service performance. However, their role varies across different configurations. For example, operational linkages, in the configuration "Pliant Coordinator," was one of the *core* conditions associated with superior service performance, while in the configuration "Professional" it did not play a role. Also, while legal bonds in the "Sanguine" configuration were absent, they were present as a *contributing* condition in the "Professional" configuration. What this suggests is that, at least in the empirical context of our study, relationships that can elicit superior service performance in service triads have multiple "faces," rather than a single face (i.e., close or relational) as previous research suggests (Tate & van der Valk, 2008; Van der Valk & van Iwaarden, 2011).

Our second contribution is showing that superior service performance in service triads is not just the result of different configurations of relationship dimensions. We identified and showed the importance of two exogenous contextual factors: (1) contract support (i.e., the proportion of the service site's revenue that comes from fixed-cost service contract and warranty activity) and (2) site size, defined in terms of the number of employees. These two factors, in conjunction with the relationship dimensions, determined the level of service performance of the supplier. Contract support relates to concepts such as "service infusion" which have been found to be positively associated with the effective and efficient delivery of product–service offerings (Fischer et al., 2010; Lightfoot & Gebauer, 2011; Oliva & Kallenberg, 2003) as well as the financial performance of a firm (Fang et al., 2008). Also, firm size effects are often found in the buyer–supplier relationship literature (Krause et al., 2007; Poppo & Zenger, 2002).

The third contribution of this work is to show that a nonrelational relationship (i.e., a relationship that lacks elements of relationality, such as absence of cooperative norms) does not necessarily lead to poorer performance. In this context, the "Professional" configuration indicated that site size offsets the presumably negative impact of a nonrelational governance structure, enabling the service site to still perform well. This finding challenged our theoretic expectations, adding an important perspective to the existing literature that advocates the need for increased relationality of buyer–supplier relationships in a service context (Tate & van der Valk, 2008; Van der Valk & van Iwaarden, 2011). As such, this insight extends the findings of studies such as Bastl et al. (2012) and Matthyssens and Vandenbempt (2008), who showed that firms in similar servitized settings breed expectations of highly relational behaviors from their exchange partners, but these expectations do not always materialize in practice.

In sum, our results have added further nuance to the phenomenon of relationship–performance interdependence within service triads, elaborating the existing theoretic insight.

Our study is also managerially relevant. It shows that operational linkages, a lack of legal bonds, relationship adaptations, size, and contract support activity all lead to improved service performance. As size and contract support volume are contingent upon market conditions, managers should focus on creating and adapting systems, procedures, and routines with the manufacturer to facilitate improved service performance toward the customer. Managers at sites that

have sufficient size and contract support activity can choose to be less reliant on relational characteristics but we argue that the creation of operational linkages and relationship adaptations will lead to improved performance. Managers should also be encouraged to not be overly reliant on contracts as these may hinder service performance.

Limitations and Future Research

The study has four primary limitations. The first limitation is that we constrained our data collection to the service network of a single firm. This makes generalizability to other networks a subject of future empirical work; however, it allowed us to isolate our theoretic elaboration from potentially confounding industry- and firm-specific effects (*cf.* Kim & Choi, 2015). The second limitation is related to the data collection process: the reliability analysis indicated that some items were not appropriately worded and were consequently dropped. Due to the small sample size, and the low subject-to-item ratio (Hair, Black, Babin & Anderson, 2010), a factor analysis would not produce reliable results. This means that we cannot guarantee the discriminant validity of the four relationship constructs. We instead rely on their face validity, which was established in the original study (Cannon & Perreault, 1999) and by the many studies that have adopted these scales (Cai et al., 2011; Zhou et al., 2008). The in-depth qualitative work also increased the face validity of the items. Third, we had to deal with the single-respondent bias. In one instance, our substantive insight from the qualitative work on the three case relationships was in disagreement with the single questionnaire responses from the three sites. These limitations have been ameliorated with calibration. However, calibration per se is a subjective endeavor, and in this particular instance it was based almost entirely on knowledge generated from the qualitative phase. Finally, our work was static in nature, and as such, the results provided a snapshot in time.

Future research should focus upon examining whether similar configurations are present within the service networks of different firms and industries. We do believe, however, that the main theoretic and practical implications are transferable to triads in industrial contexts bearing characteristics similar to the setting studied here. The offering examined in this research was a complex, capital asset where uptime was critical to the customer. Also, the manufacturer had introduced a new, service-based, business model to increase market share, with the success of the business model being reliant upon the service performance of a number of incentivized third parties. These characteristics are also, we argue, present within other industries such as construction equipment, transport, document management, and large information systems. We also suggest that in the future, a more dynamic approach could unravel the reverse effect of superior service performance on the provider–service supplier relationship (Autry & Golicic, 2010; Eggert, Hogreve, Ulaga & Muenkhoff, 2011). A research design involving surveying the same set of service suppliers at different points in time could also determine whether configurations remain stable across time, or change from mostly transactional in nature to mostly relational, and whether any potential changes are associated with changes in service performance.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article:

Appendix S1. Constructs, survey items and reliability analysis.
Appendix S2. FSQCA specifics.