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ORIGINAL EMPIRICAL RESEARCH

Effects of channel members' customer-centric structures on supplier performance

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Abstract

The authors examine the upstream impact of a firm's customer-centric organizational structure on its supplier, including both positive effects of greater revenue and negative effects of demanding services that raise the supplier's costs. These countervailing effects on supplier profit are moderated by characteristics of the firm's buying center and the firm–supplier relationship, in accordance with the value capture literature. Study 1 examines the proposed firm-level financial effects of the dual processes, using surveys of industrial firms matched with secondary data from their supplier. Study 2 assesses the supplier-level net impact of the dual processes, using publicly available data to shed light on the upstream financial impact of firms' customer-centric structures across a broad sample of *Fortune* 500 suppliers. Findings highlight the need for a supplier to proactively assess the structure of each buyer-firm, as a supplier can take steps to mitigate cost effects and enhance revenue effects.

Keywords Marketing channels · Customer-centric structure · Value capture · Supplier performance · Financial performance

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Firms are increasingly adopting a customer-centric structure, organizing business divisions around distinct customer groups rather than product categories (Homburg et al. 2000). The prevalence of this structural design in the U.S. rose by nearly 50% in the past decade (Lee et al. 2015). While individual firms adopt customer-centric structures to better understand and satisfy downstream customers' needs (Day 2006) and to generate more favorable financial outcomes for themselves (Gulati 2007; Rust et al. 2010), these actions impact other parties in their channels. Prior research has examined the impact of a firm's customer-centric structure on downstream parties (e.g., Lee et al. 2015), but upstream implications have not been studied.

We examine upstream effects of customer-centric structure in three-tiered vertical systems consisting of *firms* (also referred to as buyer-firms),[1] firms' *suppliers*, and firms' downstream business *customers*. Three-tiered systems take many forms, such as manufacturer→ distributor→ industrial customer, component supplier→ OEM → industrial customer, broad-line wholesaler→ specialty distributor→ industrial end-user, and others. As Fig. 1 demonstrates, this research is anchored in the under-researched domain of how a firm's

[1] We employ the term *buyer-firm* when describing the firm from the supplier's perspective.

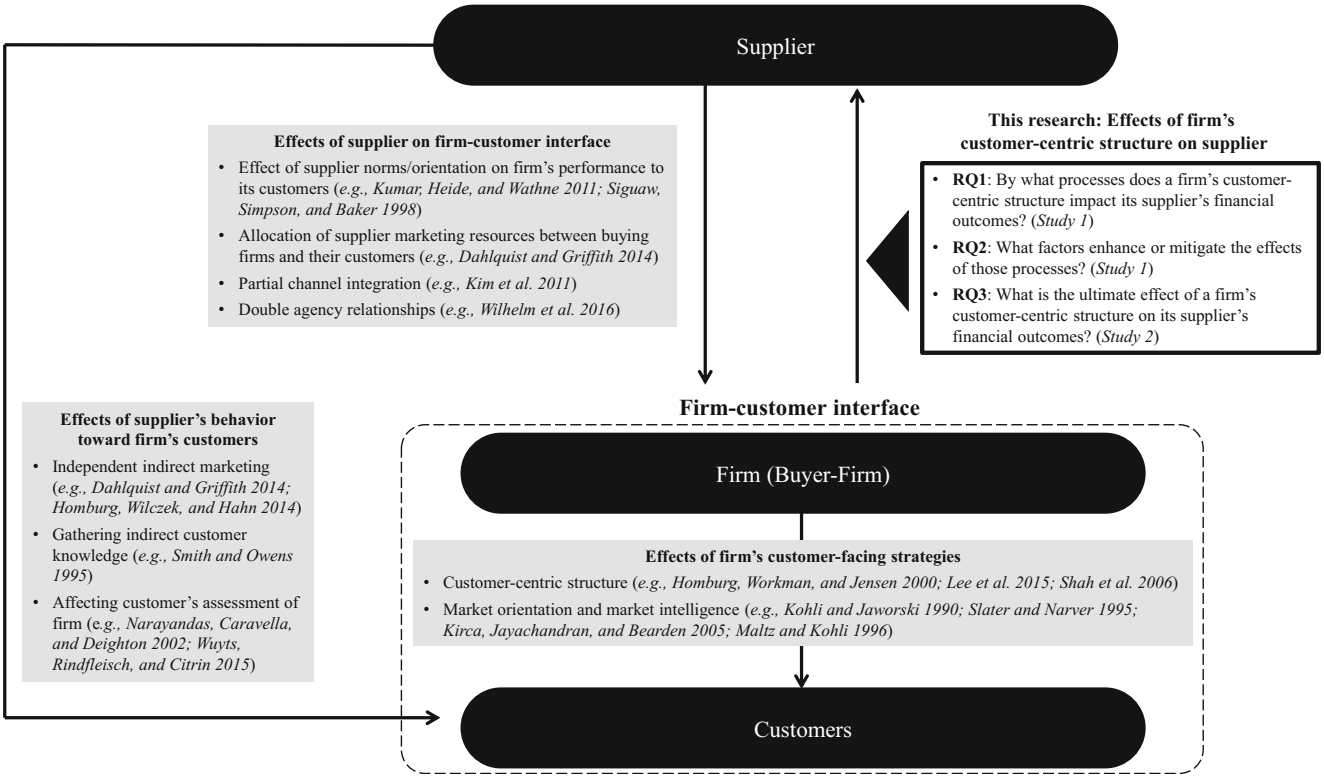

Fig. 1 Themes of prior research related to supplier–firm–customer three-tiered vertical systems

customer-facing strategies can affect its upstream suppliers. Specifically, we investigate the following research questions:

1. By what processes does a firm's customer-centric structure impact its supplier's financial outcomes?
2. What factors enhance or mitigate the effects of those processes?
3. What is the ultimate effect of a firm's customer-centric structure on its supplier's financial outcomes?

These questions are critical because a buyer-firm's customer-centric structure appears to exert simultaneous, countervailing effects on the supplier. Customer-centric structure engenders superior market knowledge (Shah et al. 2006), a scarce resource valued by upstream channel members (Teece 1998). Market knowledge "can help grow revenues, improve efficiency, and drive performance" to end customers (Hughes et al. 2014), providing value for the entire upstream channel. At the same time, however, market knowledgeable firms can pressure "suppliers to bring the full depth of expertise to every sale" (Davie et al. 2010), significantly raising the supplier's costs. We therefore investigate how a firm's customer-centric structure affects its supplier's profit via two countervailing processes.

We ground our conceptualization in the value capture literature, which addresses the tension between the value created for the upstream channel by a firm's strategies and the firm's and supplier's efforts to capture that created value (Brandenburger and Stuart 1996; Gans and Ryall 2017). Customer-centric structure creates value, enhancing the firm's sales to its own customers (Homburg et al. 2000; Rust et al. 2010) and increasing derived demand for its supplier's goods and services. Customer-centric structure is also associated with greater firm demandingness—expectations of quality in personalization, expertise, and value-added services from suppliers (Grewal et al. 2015; Schreiber et al. 2017; Wang and Netemeyer 2002)—leading the supplier to incur greater expenses by shouldering a larger share of the burden in meeting customer needs. We examine both countervailing effects on the supplier: the *revenue process* encapsulating a customer-centric buyer-firm's creation of additional value, and the *cost process* through which a customer-centric buyer-firm can impose additional costs on the supplier and impede the supplier's ability to capture that additional value.

The value captured by the supplier via these dual processes is contingent on cooperative and/or competitive allocation activities that apportion the revenues and costs incurred in the firm–supplier relationship (Bowman and Ambrosini 2000; Gans and Ryall 2017). The buying center, comprising the individuals who participate in procurement at one or more locations (McCabe 1987), is the primary interface through which the firm engages with the supplier in the allocation of value (Töytäri 2015). Firm buying center network size and decentralization impact the cost process by affecting the firm's

ability to leverage market intelligence to demand a greater share of value (Töytäri and Rajala 2015). Characteristics of the firm–supplier relationship also drive the allocation of value (Panico 2017) via both the cost and revenue processes. Relationship length and interfirm ties foster broader and deeper exchange, granting the supplier more opportunities to generate and capture value in the relationship (Blocker et al. 2012).

We test our dual process model in two studies. In Study 1, we analyze archival data of a large supplier matched with survey responses from 1320 of its buyer-firms, examining effects of each firm's customer-centric structure on the supplier's buyer-firm–level profit. In Study 2, we examine how the prevalence of customer-centric structures among major buyer-firms of 123 *Fortune* 500 B2B suppliers impacts the suppliers' profitability over a 17-year period. Whereas Study 1 investigates a single supplier with many buyer-firms to understand the underlying cost and revenue processes, Study 2 involves many suppliers with many buyer-firms in order to capture the overall net upstream effect of buyer-firm customer-centric structure.

Our findings advance theory and practice in several ways. First, we investigate upstream effects of customer-centric structure. In so doing, we find compelling support for our dual process model. In Study 1, each standard deviation increase in a buyer-firm's degree of customer-centric structure increases supplier profit 3% via the revenue process while also decreasing supplier profit 1% via the cost process. For a typical supplier in Study 2, a 1% increase in customer-centric structure among the supplier's portfolio of major buyer-firms increases sales an average of $1.3 million, but cost effects prevent an associated increase in the supplier's net profit. For example, when IBM, a customer-centric firm, was among the major buyer-firms of electronics manufacturing services provider Sanmina Corporation, Sanmina reported record high sales of over $10 billion, but negative net income; when Sanmina no longer identified IBM as a major buyer-firm, its revenue decreased but its net income improved.

Second, we extend prior research on the role and importance of the buying center, investigating the interplay between the firm's buying center and customer-centric structure. The implications of customer-centric structure for the cost process depend on the firm's buying center network structure. The effect of customer-centric structure on demandingness toward the supplier is three times greater for firms with small versus large buying center networks and seven times greater for firms with centralized versus decentralized buying centers.[2] An effective buying center can use the market intelligence derived from the firm's customer-centric structure to capture more value for the firm, reducing supplier profit.

[2] These statements are based on moderator levels one standard deviation above and below the mean.

Finally, we provide insights into managing buyer-firms with customer-centric structures, addressing the need to understand demanding B2B buyers (Grewal et al. 2015). While past research (e.g., Li and Calantone 1998; Wang and Netemeyer 2002) demonstrates how salespeople and firms learn from customer demandingness, we leverage customer-level cost-to-serve data to reveal deleterious implications of demandingness for supplier profitability. Suppliers can mitigate this profit erosion by engendering longer-term relationships and more extensive ties with buyer-firms. Demanding firms in an established relationship with the Study 1 supplier are 11% less costly to serve than those in newer relationships; those with extensive supplier ties are 18% less costly for the supplier to serve than those with limited ties.

Conceptual foundations and hypotheses development

Vertical channel relationships exist to create value for customers (Porter 1980). Creating value for customers also benefits the channel members who contribute to the provision of the goods and services that customers purchase. However, the "profit realized [from value creation] cannot be determined solely from an examination of processes *within*" the firm or supplier, but instead their profit is jointly determined by the actions of both parties (Bowman and Ambrosini 2000, p. 9). The value capture literature explicates this dependency, holding that firms and suppliers simultaneously engage in *value creation* by jointly generating value for downstream customers and in *value capture* by dividing the resulting value pie (Chatain 2011; Gans and Ryall 2017). Value capture is "determined by the portion of value, in the form of profits, that is captured … by the firm itself rather than others" (Ramon-Jeronimo et al. 2017). We theorize that the firm's customer-centric structure creates additional value that potentially benefits both itself and its supplier, but the extent to which the firm and supplier obtain positive financial outcomes depends on the parties' abilities to capture this value. Understanding what affects value appropriation between firm and supplier is very important, as Mizik and Jacobson (2003) find that value appropriation typically has a greater effect on performance than value creation.

We trace the effect of the firm's customer-centric structure on its supplier's profit through two distinct processes. Via the *revenue process*, the firm's customer-centric structure creates value to enhance its own sales, positively impacting supplier sales and profit. The *cost process* traces how the firm's customer-centric structure alters its behavior in interactions with the supplier to capture more value, becoming more demanding and negatively affecting supplier profit. Figure 2 presents the dual process model tested in Study 1.

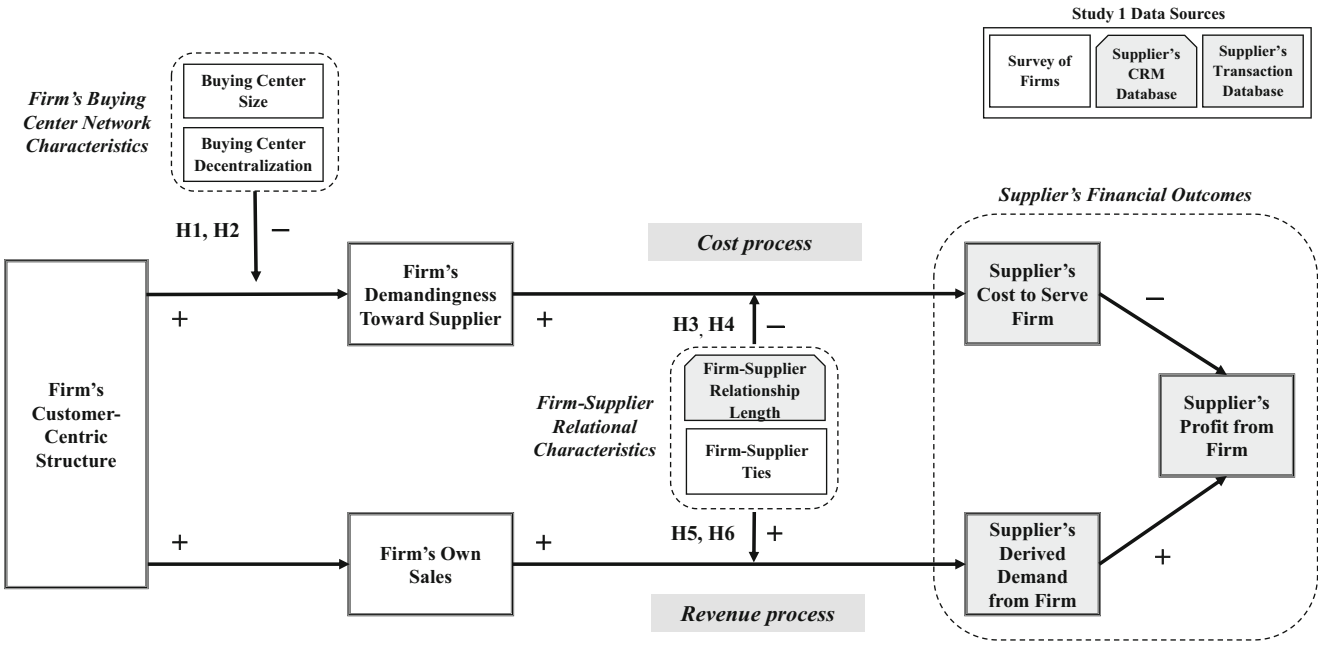

Fig. 2 Study 1 conceptual model: revenue and costs process effects of a firm's customer-centric structure

The revenue process: rising firm sales generate value for supplier

A firm's customer-centric structure creates value because it is designed to enhance understanding of the unique aspects of each customer segment. Compared to a product-centric structure, a customer-centric structure "should increase knowledge of … each customer group throughout the firm's hierarchy" (Lee et al. 2015, p. 253), thereby improving market intelligence (Gebauer et al. 2011; Homburg et al. 2000).[3] By infusing market intelligence—knowledge of customer needs and competing offerings gleaned from formal or informal sources (Maltz and Kohli 1996)—into product development, marketing, and selling, the firm delivers superior value to its customers (Day 2006; Kumar et al. 2008) and generates more favorable financial outcomes (Gulati 2007; Lee et al. 2015). We expect the firm's customer-centric structure to be positively related to its own sales.

The supplier also benefits from this incremental value creation as the increase in the firm's sales to its downstream customers generates *derived demand*; the supplier's sales to the firm rise as greater primary demand passes upstream (Bishop et al. 1984). Therefore, as the firm's sales to its customers expand, so do the supplier's opportunities to capture value from enhanced sales to the buyer-firm. All else remaining constant, we anticipate that greater derived demand from the buyer-firm contributes positively to supplier profit.

[3] Market orientation has also been linked to market intelligence; for a detailed discussion of the relationship between customer-centric structure, market intelligence, and market orientation, please see Web Appendix A.

The cost process: a demanding firm captures value by raising its supplier's costs

The value capture literature elucidates how competition and coordination determine channel members' ability to capture value and to minimize expenses associated with value creation (Chatain 2011). The strategic actions and orientations of one channel member affect not only the revenue and but also the costs of other channel members (Adner and Zemsky 2006; Barney 1986)—and customer-centric structure is no exception. Suppliers depend on buyer-firms for downstream market intelligence (Smith and Owens 1995) because those firms have direct contact with downstream customers and possess the most relevant and timely information (Homburg et al. 2014), giving firms leverage over suppliers (Grewal et al. 2015; Schreiber et al. 2017). Firms, in turn, expect to be compensated for providing valuable market intelligence (Roy and Cohen 2017; Teece 1998). As a firm gains greater market intelligence through its customer-centric structure, it is likely to contingently share those resources only if the supplier meets certain conditions (Scheer and Stern 1992). We therefore expect the firm with a customer-centric structure to exhibit greater demandingness toward the supplier.

This demandingness manifests as the firm's buying center pushes the supplier to increase its contribution to downstream customer value (Töytäri 2015) by offering greater value-added services such as more flexible logistics and delivery (Joerss et al. 2016), more attention and expertise from boundary spanning personnel (Gensler et al. 2012), and/or greater after-sales service to assure that product/service quality meets the firm's expectations and that customers receive sufficient

value (Li and Calantone 1998). These "administrative, commercial, and logistic activities related to customer-service delivery" represent the supplier's *cost to serve* the buyer-firm (Guerreiro et al. 2008, p. 392). How costs of value creation are allocated is a key determinant of the value captured by each channel member (Barney 1986). To the extent that the supplier satisfies the firm's demands, a demanding buyer-firm captures a greater portion of value by pushing the supplier to shoulder a greater share of the costs of value creation. As a channel member's profit is the value created less the value appropriated by other channel members (Schmidt and Keil 2013), the supplier is left with a smaller share of value from the relationship as firm demandingness increases. Therefore, we posit that firm demandingness increases the supplier's cost to serve and consequently undermines the supplier's profit.

Moderators of the cost and revenue processes

Implicit in both the revenue and cost processes is the notion that the supplier and firm will each obtain some portion of the value created by the firm's customer-centric structure. The apportionment of revenue and costs in a channel relationship results from ongoing allocation activities, such as cooperative agreements and/or competitive bargaining, between the firm and its supplier (Brandenburger and Stuart 1996; Gans and Ryall 2017). Based on the value capture literature, we examine two sets of moderators, detailed in subsequent sections, that influence this allocation. The intra-firm buying center network structure affects the firm's ability to capture a greater portion of value (Töytäri 2015), in this case by leveraging downstream market intelligence to form demands of the supplier. Firm–supplier relationship characteristics, on the other hand, impact the extent of the supplier's opportunities to generate and capture value in the relationship (Chatain 2011; Panico 2017), via the formation of broader and deeper exchanges.

Firm's buying center network characteristics The firm's assessment of the supplier's contribution to value creation impacts the firm's value-capturing strategies (Panico 2017), where "the evidence of [supplier] value is assessed by a buying center of decision makers" (Töytäri 2015, p. 263). The buying center is also directly involved in negotiating cooperative agreements and/or conducting bargaining that determine the allocation of revenue and costs in the firm–supplier relationship (Töytäri and Rajala 2015). In order for a firm with a customer-centric structure to fully leverage its superior market intelligence to form demands of the supplier, that intelligence must be disseminated within the organization (Ahearne et al. 2013; Maltz and Kohli 1996). If those in the firm's buying center do not have full access to that market intelligence, they cannot use it to capture greater value in purchasing agreements with the supplier. The structure of the buying center impacts its effectiveness in facilitating intra-firm flows of market intelligence (Lewin and Donthu 2005).

The buying center "exists as a *communication network* that does not necessarily derive its configuration nor operation from the formal organization, but rather from the regularized patterns of communication that reflect the individuals involved and their relationships" (Johnston and Bonoma 1981, p. 146, emphasis added). This network, typically spanning multiple geographic locations and/or departments (Johnston and Bonoma 1981), has a structure characterized by *size* and *decentralization* (Buckles and Ronchetto 1996; Dawes et al. 1998; McCabe 1987). Network size is the total number of individuals (Lewin and Donthu 2005), while decentralization is the degree to which relationships are dispersed rather than focused near one actor (Dawes et al. 1998). The cohesion principle asserts that the more interconnecting social ties within a group, the greater the information flow (Coleman 1988), as tight-knit groups tend to quickly share information within the group. Information flow is greatest in small, highly centralized intra-firm networks (Reagans and McEvily 2003), with market intelligence dissemination becoming more problematic as networks grow larger and more decentralized. For example, Greif, Inc. deals with small, centralized buying centers when selling industrial packaging products, exerting pressure on its bottom line; conversely, Kimberly-Clark's buyer-firms in the health and safety segment have large, decentralized buying centers that impede information dissemination (Schmidt et al. 2015).

We therefore theorize that, although a firm's customer-centric structure generates greater market intelligence, that firm will less effectively disseminate and actionably deploy that intelligence to become more demanding toward the supplier when the firm's buying center is larger or more decentralized across many geographic locations or departments. We hypothesize:

H1: The firm's customer-centric structure is *less positively* related to its demandingness toward the supplier when its buying center is *larger*.

H2: The firm's customer-centric structure is *less positively* related to its demandingness toward the supplier when its buying center is *more decentralized*.

Firm–supplier relational characteristics The nature of the firm–supplier relationship has implications for the supplier's ability to capture value (Panico 2017) along both the revenue and cost processes. Firm–supplier relationships are characterized by varied interdependence structures (Kumar et al. 1995), based in both the value received from the relationship and the switching costs incurred if the relationship ends (Scheer et al. 2010). "[B]uilding social bonds, or increasing switching costs

… can strengthen the relationship. This may enhance the buyer's value and create more value that can be appropriated by the seller" (Blocker et al. 2012, p. 20). We examine two key relational attributes associated with stronger bonds—longstanding interfirm relationships and a web of interfirm ties. Greater relationship length builds confidence, cultivates interdependence, and engenders familiarity with routines and procedures, deepening the relationship (Kalwani and Narayandas 1995; Noordhoff et al. 2011). Interfirm ties, touchpoints between firm and supplier, contribute to interdependence, knowledge transfer, and cross-buying, leading to a broader relationship (Dyer and Nobeoka 2000; Tuli et al. 2010). For example, jet engine supplier Rolls-Royce emphasizes long-term exchange and a dense web of ties with its airline buyer-firms, leading to tightly connected relationships (Kim et al. 2007).

By fostering deeper and broader firm–supplier links, relationship length and ties have two implications for the effect of firm demandingness on the supplier's cost to serve. First, the firm's ability to capture a greater portion of value via shifting costs to the supplier is weakened by longer relationship length and more interfirm ties. These characteristics create greater switching costs for the firm to establish a comparable relationship with an alternative supplier (Noordhoff et al. 2011; Tuli et al. 2010), thereby decreasing the firm's likelihood of changing suppliers (Blut et al. 2016). Firms that cannot easily shift to an alternative supplier capture a reduced portion of value (Bowman and Ambrosini 2000), manifesting as a diminished capacity to lobby the supplier for value-added services. Second, relationship length and interfirm ties facilitate open communication between the firm and supplier about meeting each other's needs (Joshi 2009; Noordhoff et al. 2011). When the supplier does grant value-added services, it can then provide these services in a more efficient and cost-effective manner, increasing the value the supplier can capture from the relationship. Therefore, we posit that firm–supplier relationship length and firm–supplier ties mitigate the supplier's harm from the cost process by suppressing the impact of firm demandingness on the supplier's cost to serve.

H3: The firm's demandingness towards the supplier is *less positively* related to the supplier's cost to serve the firm as firm–supplier relationship length *increases*.

H4: The firm's demandingness towards the supplier is *less positively* related to the supplier's cost to serve the firm as firm–supplier ties are *more extensive*.

The more open communication and greater switching costs associated with broader and deeper interfirm relationships not only suppress the negative impact of the cost process on the supplier but also enhance the supplier's ability to capture value via the revenue process.

A firm that has greater switching costs with a specific supplier is typically less attentive to offers from that supplier's competitors and exhibits greater share of wallet, giving the supplier a greater portion of the value pie (Scheer et al. 2010). Open exchange of information also gives the supplier tacit knowledge that enables it to better deliver value for the buyer-firm's customers (Dyer and Nobeoka 2000; Joshi 2009; Rindfleisch and Moorman 2001), thereby generating additional value for the firm and supplier to divide. As a longstanding relationship or extensive interfirm ties imply the firm is less likely to switch to a competitor, the supplier obtains even greater value from the relationship (Bowman and Ambrosini 2000). Therefore, we theorize that greater firm–supplier relationship length and interfirm ties enable the supplier to capture and sustain value from the relationship by amplifying the positive effect of the buyer-firm's sales to its downstream customers on the supplier's derived demand. We posit:

H5: The firm's sales are *more positively* related to the supplier's derived demand from the firm as firm–supplier relationship length *increases*.

H6: The firm's sales are *more positively* related to the supplier's derived demand from the firm as firm–supplier ties are *more extensive*.

Study 1: revenue and cost process effects of a firm's customer-centric structure on its supplier

Data collection

In Study 1, we test our hypotheses in a vertical channel consisting of a large B2B supplier headquartered in the U.S. and firms that purchase goods from that supplier. Our multisource dataset comprises a survey of these firms and secondary data from several databases of the collaborating supplier. This is an excellent context in which to test our hypotheses because the firms vary greatly in industry, size, structure, relationship types, sales, and profits.

We emailed a link to an online survey and two subsequent weekly reminders to the buyer-firms. Each buyer-firm is represented by a primary purchasing agent who handles the buying interface with the supplier. During the two-week response period, 1320 firms completed the survey, a response rate of approximately 7%. We also gathered from the supplier's transaction database the supplier's sales, profits, and cost-to-serve with each firm over the 3 months following the completion of the survey. Firm–supplier relationship length at the time of the survey was drawn from the supplier's CRM database. The final dataset used in our analysis includes firm-provided survey data and supplier archival data for 1320 firms.

Measurement

We adapted published scales when appropriate, developed new measures when necessary, and selected measures from secondary data that closely align with conceptual definitions. We provide details of all measures and factor loadings for reflective scales in Table 1. Descriptive statistics for all measures and the reliability of reflective scales are in Table 2.

Variables from surveys of firms We measure the firm's customer-centric structure (*FirmCCS*) with a newly-developed four-item reflective scale that assesses the degree to which the firm is organized around customers and exhibits a customer-focused structure. We operationalize demandingness toward the supplier (*FirmDemand*) with a four-item reflective scale adapted from Wang and Netemeyer (2002). Buying center size (*FirmBCSize*) is the total number of firm personnel involved in purchasing decisions related to the supplier, including the primary purchasing agent, regardless of physical location. Buying center decentralization (*FirmBCDecentr*) is the percentage of buying center members *not* physically based at the primary purchasing agent's location. We capture the firm's own sales (*FirmSales*) with a single item adapted from Grewal et al. (2010). Firm–supplier ties (*FirmSuppTies*) is operationalized as the number of supplier boundary-spanning departments that the purchasing agent interacted with in the prior 8 weeks; this variable ranges from zero (no contact with any supplier departments) to seven (contact with all seven departments including sales, customer care, pricing, marketing, returns, etc.) Finally, we control for firm size (*FirmSize*) with a single item capturing the number of employees.

Variables from supplier databases The supplier allocates certain fixed costs (e.g., customer service salaries) to each customer in proportion to that customer's activities which incur those costs (e.g., number of calls to customer service). Drawing on this data, the supplier's cost to serve each specific buyer-firm (*SuppCTS*) is the total customer service expense, salesperson expense, and distribution expense (inventory- and shipping-related costs) associated with that buyer-firm during the 3 months following the survey. These expenses fall under the umbrella that Kumar and Petersen (2005) describe as "retention costs," or expenses to provide value in ongoing customer relationships. Firm–supplier relationship length (*FirmSuppRelLength*) is the number of days the firm has done business with the supplier as of the date of the survey. The supplier's derived demand from the firm (*SuppSales*) is the total sales to the firm (in dollars) during the 3 months following the survey. Supplier profit from the firm (*SuppProfit*) is computed as sales net of both cost of goods sold and cost to serve. Variables drawn from the supplier's archive are scaled for confidentiality.

Measurement model

Our confirmatory factor analysis (CFA) of the multi-item scales reveals satisfactory measurement model fit indices: $\chi^2_{(41)} = 171.35$, comparative fit index (CFI) = .99, Tucker-Lewis index (TLI) = .98, and RMSEA = .05 (Bagozzi and Yi 2012). Convergent validity is obtained, as factor loadings meet the Hatcher (1994) criterion (Table 1). Average variances extracted (AVE) are between .62 and .78 (Table 2), with AVEs exceeding the shared variance between each pair of constructs (Fornell and Larcker 1981). Cronbach's alphas range from .82 to .94, indicating adequate reliability (Table 2). Although our design limits the threat of common method variance by using multisource data and non-attitudinal survey variables, we assess CMV using Lindell and Whitney's (2001) marker variable test. We selected a theoretically unrelated variable, a single item measuring the firm's service ratio (Fang et al. 2008): "What percent of your company's total sales are from services?" Pairwise correlations among focal constructs are significant after removing shared variance of the marker variable, suggesting common method variance is not a problem in our model.

Correcting for response bias from self-selection

We control for potential response bias in the survey using Heckman's (1979) two-step procedure. We first estimate the probability of a firm responding to our survey using the relevant information of whether the firm receives advertising from the supplier, firm–supplier relationship length, and the number of the firm's transactions with the supplier in the 6 months prior to the survey. From this first stage regression, we created the inverse Mills ratio (λ), and subsequently included it in our hypothesis testing to control for potential self-selection bias. By treating non-response bias as non-random and explicitly modeling it, this procedure corrects for any non-response bias that may result from the variables included in the first stage (Winer 1983).

Correcting for endogeneity

We address endogeneity concerns regarding customer-centric structure by incorporating the instrumental variable firm's openness to change (*FirmChange*), the degree to which the firm's culture embraces versus resists change. As most firms have historically had a product-centric structure (Homburg et al. 2000), shifting to a customer-centric structure requires an organization-wide commitment to extensive change (Shah et al. 2006). "The success of customer centricity lies in the ability of leaders to drive the change" (Lamberti 2013, p. 601). The instrument logically precedes the endogenous variable, as firms that embrace change are more likely to adopt, transition to, and enact a more customer-centric structure than those that

Table 1 Study 1: constructs and measurement

Construct	Definition	Operationalization (Standardized Loadings)	Data Source
Firm's Customer-Centric Structure *(FirmCCS)*	Degree to which the firm's business units are aligned to distinct customer groups	*(7-point. Not at all accurate; entirely accurate)* Our company is organized around our customers. (.86) Customers are the most important factor in how we organize our company. (.89) Our company's structure is customer-focused. (.91) Our company is structured around customer segments. (.76)	Firm Survey
Firm's Demandingness Toward Supplier *(FirmDemanding)*	Level of firm's expectations regarding supplier's product/service quality and reliability	*(7-point. Not at all accurate; entirely accurate)* Our company is demanding in regard to the quality and reliability we receive from [Supplier]. (.86) Our company requires a perfect fit between our needs and [Supplier's] product/service offering. (.85) Our company expects [Supplier] to deliver the highest levels of product and service quality. (.62)	Firm Survey
Firm's Buying Center Size *(FirmBCSize)*	The number of individuals in the firm's buying center	At your company, approximately how many people are involved in making purchasing decisions from this supplier including all locations?	Firm Survey
Firm's Buying Center Decentralization *(FirmBCDecentr)*	The degree to which the firm's buying center is dispersed outside the purchasing agent's location	At your company, approximately how many people are involved in making purchasing decisions from this supplier at only your location? *(Divide by FirmBCSize; subtract quotient from 1)*	Firm Survey
Firm's Own Sales *(FirmSales)*	Firm's sales performance to customers compared to objectives.	Please rate your company's sales performance over the past 12 months relative to your objectives. *(7-point. Well below objectives; well above objectives)*	Firm Survey
Firm-Supplier Relationship Length *(FirmSuppRelLength)*	The length of time the firm and supplier have engaged in exchange.	Count of days firm has transacted with supplier.	CRM Database
Firm-Supplier Ties *(FirmSuppTies)*	The number of different supplier departments with which the firm interacts.	How many times have you personally interacted with [supplier] personnel in the following departments? *(Count 1 for > 0 in each department. Sum across 7 departments.)*	Firm Survey
Supplier's Cost to Serve Firm *(SuppCTS)*	Extent of sales, service, and distribution expenses incurred by the supplier as a result of the firm's behavior during the period.	Customer service expense, salesperson expense, and distribution expense (warehouse expense, inventory shrinkage, inventory obsolescence, shipping and receiving labor, shipping and packaging supplies) divided by sales	ABC database
Supplier's Derived Demand from Firm *(SuppSales)*	Supplier's total sales from the firm during the period	Price x Quantity Sold	Transaction Database
Supplier's Profit from Firm *(SuppProfit)*	Supplier's total net profit from the firm during the period	Sales – COGS – Cost to serve	Transaction & ABC Databases
Firm Size *(FirmSize)*	The size of the firm in number of employees	What is the total number of employees in your company? 1 = 1–19; 2 = 20–99; 3 = 100–499; 4 = 500–999; 5 = 1000 - 4999; 6 = 5000 or more	Firm Survey
Firm's Openness to Change *(FirmChange)*	The degree to which the firm's culture embraces (vs. resists) change	*(7-point. Not at all accurate; entirely accurate)* Our company is quick to embrace change. (.81) Our company's leadership serves are role models for change. (.89) Adapting to change is part of our company's culture. (.92) Our company's leadership encourages us to embrace change. (.91)	Firm Survey

resist change. Openness or resistance to change does not have a clear and direct impact on the performance of organizations (Dent and Goldberg 1999; Porras and Robertson 1983) and should affect firm demandingness and sales only through

Table 2 Study 1: descriptive and reliability statistics

	1	2	3	4	5	6	7	8	9	10	11	12
(1) Firm's customer-centric structure	1											
(2) Firm's demandingness toward supplier	.21*	1										
(3) Firm's buying center size (# individuals)	.01	−.01	1									
(4) Firm's buying center decentralization (%)	−.21*	−.08*	.02	1								
(5) Firm's own sales	.29*	.15*	.02	−.03	1							
(6) Firm-supplier relationship length (days)	−.04	.10*	.08*	.18*	.04	1						
(7) Firm-supplier ties (# ties)	−.01	.02	.01	−.04	.03	.07*	1					
(8) Supplier's cost to serve firm (%)	.04	.21*	.05	−.10*	−.01	−.06*	−.05	1				
(9) Supplier's derived demand from firm ($10,000 s)	.02	.13*	.01	−.04	.05	.17*	.10*	−.04	1			
(10) Supplier's profit from firm ($1000 s)	.02	.11*	.02	−.04	.05	.07*	.07*	−.08*	.71*	1		
(11) Firm's size	−.05	.13*	.21*	.49*	.10*	.26*	−.05	−.05	−.01	.01	1	
(12) Firm's openness to change	.39*	.13*	.06*	−.06*	.26*	−.025	−.03	−.01	.01	.05	.14*	1
Mean	6.07	4.97	4.74	.30	5.02	5870	1.99	.12	2.07	1.22	2.23	4.83
Standard Deviation	.97	1.35	9.70	.35	1.21	2661	1.63	.12	3.68	3.04	1.37	1.35
Alpha	.92	.82	–	–	–	–	–	–	–	–	–	.94
AVE	.73	.62	–	–	–	–	–	–	–	–	–	.78

$n = 1320$; * $p < .05$

customer-centric structure, satisfying the exclusion restriction. There is no evidence that the instrument is weak, as the first-stage F-statistic is greater than 10 and the minimum eigenvalue statistic exceeds the critical value with rejection rate < 5% (Cragg and Donald 1993; Stock and Yogo 2005).

Econometric model

To examine our conceptual model, we formulate the following system of equations:

$$\text{FirmCCS}_i = \alpha_0 + \alpha_1 \text{FirmChange}_i + \varepsilon_{1i}, \quad (1)$$

$$\begin{aligned}\text{FirmDemanding}_i = {} & \beta_0 + \beta_1 \text{FirmCCS}_i + \beta_2 \text{FirmBCSize}_i \\ & + \beta_3 \text{FirmCCS}_i{}^{*}\text{FirmBCSize}_i + \beta_4 \text{FirmBCDecentr}_i \\ & + \beta_5 \text{FirmCCS}_i{}^{*}\text{FirmBCDecentr}_i + \beta_6 \text{FirmSuppRelLength}_i \\ & + \beta_7 \text{FirmSuppTies}_i + \beta_8 \text{FirmSize}_i + \beta_7 \lambda_i + \varepsilon_{2i},\end{aligned} \quad (2)$$

$$\begin{aligned}\text{SuppCTS}_i = {} & \delta_0 + \delta_1 \text{FirmDemanding}_i + \delta_2 \text{FirmSuppRelLength}_i \\ & + \delta_3 \text{FirmDemand}_i{}^{*}\text{FirmSuppRelLength}_i + \delta_4 \text{FirmSuppTies}_i \\ & + \delta_5 \text{FirmDemand}_i{}^{*}\text{FirmSuppTies}_i + \delta_6 \text{FirmSize}_i + \delta_7 \lambda_i + \varepsilon_{3i},\end{aligned} \quad (3)$$

$$\text{FirmSales}_i = \gamma_0 + \gamma_1 \text{FirmCCS}_i + \gamma_2 \text{FirmSize}_i + \gamma_3 \lambda_i + \varepsilon_{4i}, \quad (4)$$

$$\begin{aligned}\text{SuppSales}_i = {} & \zeta_0 + \zeta_1 \text{FirmSales}_i + \zeta_2 \text{FirmSuppRelLength}_i \\ & + \zeta_3 \text{FirmSales}_i{}^{*}\text{FirmSuppRelLength}_i + \zeta_4 \text{FirmSuppTies}_i \\ & + \zeta_5 \text{FirmSales}_i{}^{*}\text{FirmSuppTies}_i + \zeta_6 \text{FirmSize}_i + \zeta_7 \lambda_i + \varepsilon_{5i},\end{aligned} \quad (5)$$

$$\begin{aligned}\text{SuppProfit} = {} & \eta_0 + \eta_1 \text{SuppCTS}_i + \eta_2 \text{SuppSales}_i \\ & + \eta_3 \text{FirmSize}_i + \eta_4 \lambda_i + \varepsilon_{6i}.\end{aligned} \quad (6)$$

We include relationship length and ties as control variables affecting demandingness in Eq. 2 to account for the potential link between these variables and the firm's behavior toward the supplier.[4] We simultaneously estimated all equations using seemingly unrelated regression to account for contemporaneous correlations between error terms (Verhoef and Leeflang 2009). Variance inflation factors are all below 2.5 (O'Brien 2007), suggesting multicollinearity is not a concern. All regressors are mean centered and standardized to aid interpretation. We report robustness checks and additional model details in Web Appendix B.

Model results

We report the estimation results for Equations 1–6 in Table 3. We depict all significant interactions in Fig. 3. As expected, the firm's openness to change is positively associated with its customer-centric structure (Eq. 1, $\alpha_1 = .391$, $p < .05$).

Our findings support the theorized revenue and cost process effects of customer-centric structure. Verifying the revenue process, the firm's customer-centric structure is positively related to the firm's sales (Eq. 4, $\gamma_1 = .426$, $p < .05$) and the firm's sales are positively related to the supplier's derived demand (Eq. 5, $\zeta_1 = .187$, $p < .10$). Verifying the cost process, the firm's customer-centric structure is positively related to its demandingness toward the supplier (Eq. 2, $\beta_1 = .282$, $p < .05$) and that demandingness increases the supplier's cost to serve

[4] We thank the review team for this suggestion.

Table 3 Study 1: estimation results

Independent Variable		Dependent Variable	Est.	Std. Err.	Hyp.	Result
Firm's Openness to Change	→	Firm's Customer-Centric Structure	.391**	(.0246)		
Intercept		*(Equation 1; R^2 = .155)*	6.070**	(.0246)		
Firm's Customer-Centric Structure	→	Firm's Demandingness to Supplier	.282**	(.0363)	H1/2 (+)	Supported
Firm's Buying Center Size		*(Equation 2; R^2 = .118)*	−.063	(.0338)		
Firm's Buying Center Decentralization			−.230**	(.0412)		
Firm's Customer-Centric Structure × Buying Center Size			−.139**	(.0536)	H1 (−)	Supported
Firm's Customer-Centric Structure × Buying Center Decentralization			−.214**	(.0341)	H2 (−)	Supported
Firm's Size			.239**	(.0419)		
Firm-Supplier Relationship Length			.109**	(.0538)		
Firm-Supplier Ties			.007	(.0352)		
Inverse Mills ratio			−.091**	(.0330)		
Intercept			4.922**	(.0356)		
Firm's Demandingness to Supplier	→	Supplier's Cost to Serve Firm	.025**	(.0033)	H3/4 (+)	Supported
Firm-Supplier Relationship Length		*(Equation 3; R^2 = .064)*	−.008	(.0050)		
Firm-Supplier Ties			−.007**	(.0032)		
Firm's Demandingness × Firm-Supplier Relationship Length			−.008**	(.0030)	H3 (−)	Supported
Firm's Demandingness × Firm-Supplier Ties			−.007*	(.0035)	H4 (−)	Supported
Firm Size			−.007**	(.0034)		
Inverse Mills ratio			−.001	(.0049)		
Intercept			.120**	(.0032)		
Firm's Customer-Centric Structure	→	Firm's Own Sales	.426**	(.0322)		
Firm Size		*(Equation 4; R^2 = .115)*	.137**	(.0318)		
Inverse Mills ratio			.049	(.0315)		
Intercept			5.006**	(.0316)		
Firm's Own Sales	→	Supplier's Derived Demand	.187*	(.1010)	H5/6 (+)	Supported
Firm-Supplier Relationship Length		*(Eq. 5; R^2 = .049)*	.399**	(.1550)		
Firm-Supplier Ties			.311**	(.1000)		
Firm's Sales to Customers × Firm-Supplier Relationship Length			.177**	(.0895)	H5 (+)	Supported
Firm's Sales to Customers × Firm-Supplier Ties			−.125	(.1020)	H6 (+)	Not supported
Firm's Size			−.179*	(.1030)		
Inverse Mills ratio			−.336**	(.1490)		
Intercept			2.077**	(.0990)		
Supplier's Cost to Serve Firm	→	Supplier's Profit from Firm	−.148**	(.0590)		
Supplier's Derived Demand		*(Equation 6; R^2 = .497)*	2.352**	(.0661)		
Firm's Size			.041	(.0598)		
Inverse Mills ratio			.0980	(.0602)		
Intercept			1.241**	(.0594)		

n = 1320; All coefficients standardized; * $p < 0.10$, ** $p < 0.05$

the firm (Eq. 3, $\delta_1 = .025$, $p < .05$). As expected, the supplier's profit is positively impacted by derived demand from the firm (Eq. 6, $\eta_2 = 2.352$, $p < .05$) and negatively impacted by its cost to serve the firm (Eq. 6, $\eta_1 = -.148$, $p < .05$). Each standard

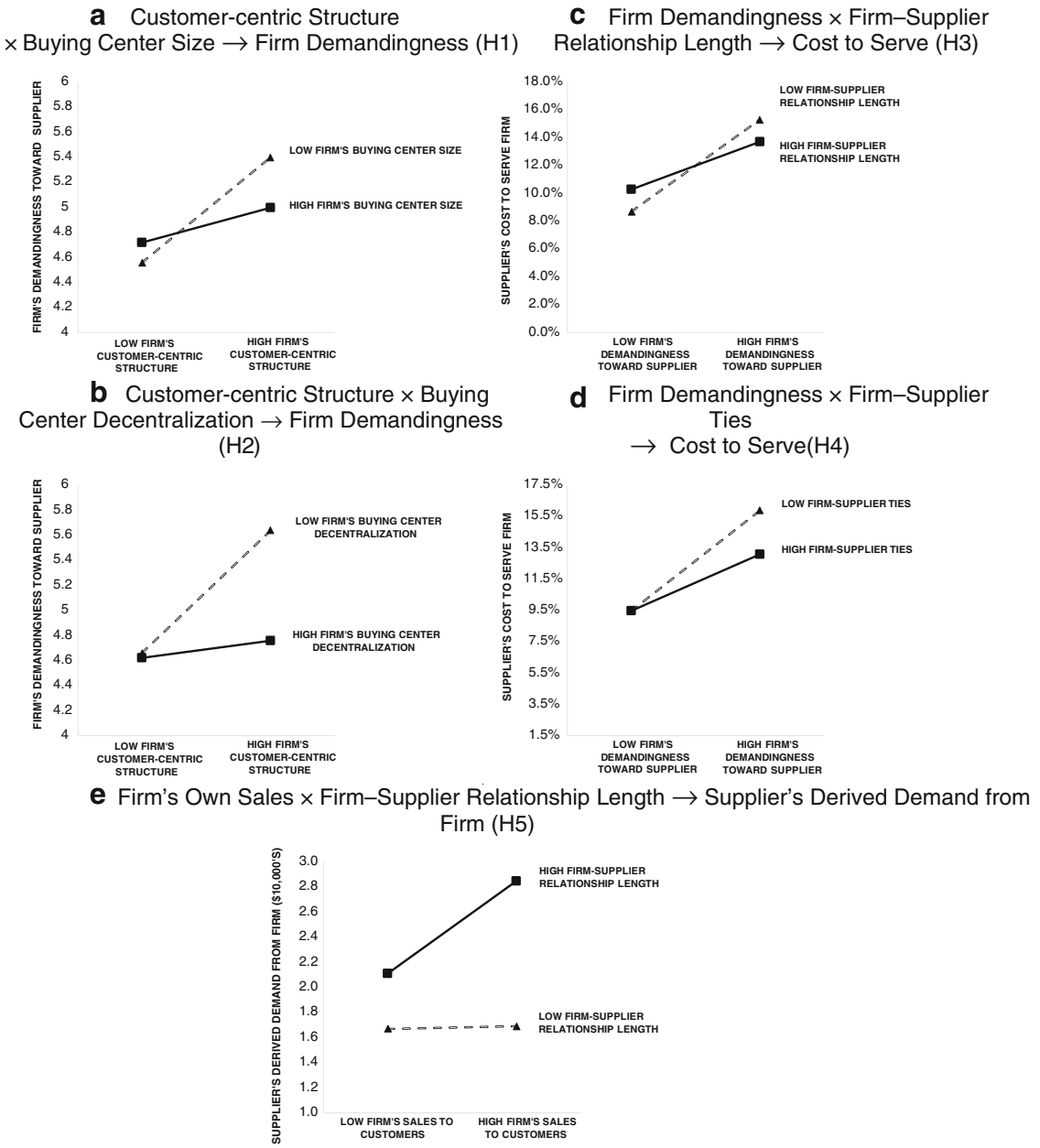

Fig. 3 Study 1 Interaction plots. **a** Customer-centric Structure × Buying Center Size → Firm Demandingness (H1) **b** Customer-centric Structure × Buying Center Decentralization → Firm Demandingness (H2) **c** Firm Demandingness × Firm–Supplier Relationship Length → Cost to Serve (H3) **d** Firm Demandingness × Firm–Supplier Ties **e** Firm's Own Sales × Firm–Supplier Relationship Length → Supplier's Derived Demand from Firm (H5)

deviation increase in a firm's degree of customer-centric structure increases supplier profit 3% via increased revenue while also decreasing supplier profit 1% via increased costs, for a net, non-significant effect of 2% ($p > .10$). For the average buyer-firm of this supplier, cost effects rendered the benefits from the revenue process uncertain.

Regarding the interaction hypotheses, Eq. 2 reveals that the positive effect of customer-centric structure on demandingness is negatively moderated by the firm's buying center size ($\beta_3 = -.139$, $p < .05$) and buying center decentralization ($\beta_5 = -.214$, $p < .05$). As Fig. 3a, b demonstrate, these are attenuation interactions, such that high size and decentralization reduce the positive effect of customer-centric structure on demandingness. This suggests that market intelligence is more easily diffused in small, centralized buying centers, enabling greater demandingness. In larger, decentralized buying centers, the dissemination and use of market intelligence is undermined, suppressing

the impact of customer-centric structure on demandingness. H1 and H2 are supported.

As shown in Eq. 3, the positive effect of demandingness on the supplier's cost to serve the firm is negatively moderated by both firm–supplier relationship length ($\delta_3 = -.008$, $p < .05$) and firm–supplier ties ($\delta_5 = -.007$, $p < .10$). Figure 3c, d demonstrate that relationship length and firm–supplier ties reduce the positive slope of the demandingness-cost-to-serve relationship. Firm demandingness encourages costly value-added services from the supplier, but broader, deeper firm–supplier relationships mitigate this impact. H3 and H4 are supported.

Finally, Eq. 5 indicates that the positive effect of the firm's own sales on its supplier's derived demand is positively moderated by firm–supplier relationship length ($\zeta_3 = .177$, $p < .05$), but firm–supplier ties have no moderating effect. Figure 3e demonstrates this amplifying effect. The longer the firm–supplier relationship, the more the supplier is able to capture value from increased firm downstream sales. H5 is supported, but H6 is not supported.

Discussion

These results suggest that customer-centric structure generates value for the firm and its supplier, but the extent to which the firm captures that value depends on both the revenue process and the cost process as well as the structure of the firm's buying center and the nature of the firm–supplier relationship. The supplier benefits from the greater downstream sales generated by the firm's customer-centric structure but its profit is threatened by the firm's greater demands for costly value-added services. Study 1 provides strong support for our dual process model of the effects of a firm's customer-centric structure on its supplier.

Study 1 has two key limitations, however. First, it focuses on a single supplier and its buyer-firms; therefore, the net impact of the revenue and cost processes discussed earlier pertains to the average buyer-firm *of this supplier*. If the effects are much larger in this context than is typical, the importance of buyer-firm customer-centric structure may be overstated. Second, all buyer-firms in Study 1 are resellers, potentially calling into question generalizability to other buyer-firm contexts. To further investigate the net upstream effect of customer-centric structure on suppliers' financial outcomes—implicitly, the degree to which negative effects typically offset positive effects—and to enhance the generalizability of our findings, we conduct a second study that addresses both limitations. Study 2 examines diverse suppliers from multiple industries which sell to firms of many different types and roles in the value chain. Thus, while Study 1 took advantage of the single-supplier context to delve deeply into *processes*, Study 2 pivots to the multiple-supplier context to test the *overall impact*.

Study 2: the prevalence of customer-centric buyer-firms and supplier performance

In Study 1, we examined how a single supplier's sales and profits were impacted by the customer-centric structures of buyer-firms that resell the supplier's products. The vertical marketing system studied consisted of a distributor → its resellers → the resellers' business customers. In Study 2, we investigate a diverse set of B2B suppliers with varied vertical marketing systems over several years. We examine how the prevalence of customer-centric structures among suppliers' major buyer-firms impacts suppliers' financial performance.

Data

We collected secondary data from the COMPUSTAT Industrial Annual database, COMPUSTAT Business Segments database, and the Form 10-K and 10-Q financial reports that companies file with the Securities and Exchange Commission. First, we retrieved all companies listed in the *Fortune* 500 from 1998 to 2014. Second, following Tuli et al. (2010), we used COMPUSTAT Business Segments to identify suppliers that operate in B2B markets and have one or more *major* buyer-firms, each of which represents at least 10% of the supplier's sales revenue. Third, we eliminated all buyer-firms not publicly traded in the U.S. This three-step process generated a sample of 148 publicly-traded suppliers, each of which was matched with one or more publicly-traded major buyer-firms, totaling 447 unique dyads of suppliers and major buyer-firms. We aggregated these dyads to the supplier level. After accounting for missing values, we retained a total of 123 suppliers and 854 supplier-year observations.

Measures and operationalizations

Prevalence of customer-centric structure among major buyer-firms We sought to capture the overall extent of customer-centric structure among a supplier's major buyer-firms. To accomplish this, we followed Lee et al. (2015) and used unit operating segment information from Forms 10-K and 10-Q, required by the Statement of Financial Accounting Standards (SFAS) No. 131; this is appropriate because "the segments are evident from the structure of the enterprise's internal organization" (Financial Accounting Standards Board 1997, p. 6). Two researchers independently reviewed each firm's unit operating segment information from their Forms 10-K and 10-Q and classified its structure

as either customer-centric or product-centric (please see Web Appendix D for detailed coding procedures, coding decisions, and examples). Differences in coding occurred less than 5% of the time and were resolved through discussion. Examples include: "[Customer-centric structure:] Our new segments are business markets, mass markets and wholesale markets." (Qwest Communications International Inc. 2008, p. 128) and "[Product-centric structure:] We manufacture complex metal components and products in three principal business segments: Investment Cast Products, Forged Products and Fastener Products." (Precision Castparts Corp. 2008, p. 1).

Next, we calculated each supplier's share of sales to major buyer-firms arising from customer-centric firms. Consistent with extant work (e.g., Cui and O'Connor 2012), we use the five-year moving average of this share measure to capture the prevalence of customer-centric structure among the supplier's major buyer-firms. For each supplier, we calculate the following score, in which n represents the period (year 1–5):

$$\frac{1}{n}\sum_{j=0}^{n=1}\frac{\text{Supplier's dollar sales to major buyer-firms with customer-centric structures}_{t-j}}{\text{Supplier's dollar sales to all major buyer-firms}_{t-j}}$$

For example, semiconductor manufacturer Broadcom's prevalence of customer-centric structure among its major buyer-firms was zero until Cisco Systems, whose structure is customer-centric, first appeared among Broadcom's major buyer-firms in year 2000.

Supplier's performance and control variables

We examine two financial performance metrics, both in millions of dollars: the supplier's sales revenue and net income. To account for time-varying heterogeneity in the data, we controlled for the supplier's customer-centric structure as well as several variables that have been commonly used to account for supplier performance including supplier age, supplier size, supplier market share, supplier receivables intensity, supplier merger and acquisition intensity, and industry capital intensity (e.g., Saboo et al. 2017). In addition, we control for the average sales revenue from major buyer-firms[5] to account for the magnitude of their purchasing from the supplier. We provide definitions and measurement in Table 4 and descriptive statistics in Table 5.

Table 4 Study 2: constructs and measurement

Construct	Measurement	Data Source
Supplier's sales revenue	Supplier's sales revenue [sale] ($ millions).	COMPUSTAT Industrial Annual
Supplier's net income	Supplier's net income [ib] ($ millions).	COMPUSTAT Industrial Annual
Prevalence of customer-centric structure among major buyer-firms	$\frac{1}{n}\sum_{j=0}^{n=1}\frac{\text{Supplier's dollar sales to major buyer-firms customer-centric structures}_{t-j}}{\text{Supplier's dollar sales to all major buyer-firms}_{t-j}}$ where n represents the period (year 1–5).	COMPUSTAT Segment, 10-Ks, 10-Qs
Supplier's customer-centric structure	Dummy variable coded as 1 if the firm organizes its business units by customer groups and 0 if it organizes its business units by product.	COMPUSTAT Segment, 10-Ks, 10-Qs
Supplier age	Number of years since the supplier's first compustat listing.	COMPUSTAT Industrial Annual
Supplier size	Log of market capitalization of the supplier [prcc_f × csho].	
Supplier market share	The average of the supplier's market share in each segment in which the supplier operates, where segment market share is calculated as the ratio of supplier sales revenue [sales] to overall sales revenue of all publicly-traded firms in that two-digit SIC industry.	COMPUSTAT Segment
Supplier receivables intensity	The ratio of the supplier's accounts receivables [rect] to its sales revenue [sale].	COMPUSTAT Industrial Annual
Supplier merger and acquisition intensity	The ratio of the supplier's acquisitions spending [aqc] to its sales revenue [sale].	COMPUSTAT Industrial Annual
Industry capital intensity	The average of the ratio of the value of property, plant and equipment [ppent] to total sales [sale] across all firms in each two-digit SIC industry.	COMPUSTAT Industrial Annual
Average sales revenue of major buyer-firms	The five-year moving average of sales generated by all major buyer-firms [sale] in the supplier's portfolio.	COMPUSTAT Segment

We provide COMPUSTAT labels in square brackets where applicable

Table 5 Study 2: descriptive statistics

		1	2	3	4	5	6	7	8	9	10	11
(1)	Supplier's sales revenue ($ millions)	1										
(2)	Supplier's net income ($ millions)	.65*	1									
(3)	Prevalence of customer-centric structure among major buyer-firms (%)	−.09*	−.09*	1								
(4)	Supplier's customer-centric structure	.08*	.05	.01	1							
(5)	Supplier age (years)	.24*	.41*	−.03	−.04	1						
(6)	Supplier size	.47*	.68*	−.11*	.05	.39*	1					
(7)	Supplier market share (%)	.44*	.18*	−.01	.25*	.11*	.21*	1				
(8)	Supplier receivables intensity	.08*	.12*	.08*	.08*	.08*	.11*	.03	1			
(9)	Supplier merger and acquisition intensity	−.04	−.03	.00	−.03	−.09*	−.05	−.00	−.01	1		
(10)	Industry capital intensity	−.23*	−.16*	−.08*	−.10*	−.18*	−.19*	−.27*	−.12*	.08*	1	
(11)	Average sales revenue from major buyer-firms ($ millions)	.13*	.13*	−.07*	−.05	.22*	.01	.16*	−.02	−.02	−.10*	1
Mean		13,183.67	868.50	.04	.07	30.09	8.83	.09	.16	.02	.05	50,977.57
Standard Deviation		17,237.25	2039.54	.17	.26	19.88	1.40	.10	.25	.09	.03	39,016.05

$n = 854$; * $p < .05$

Methodology: panel data analysis

To investigate the financial impact of the prevalence of customer-centric structure among a supplier's major buyer-firms, we specify the model as follows:

$$\begin{aligned}\text{Supplier Performance}_{i,t+1} &= \text{Supplier Performance}_{i,t} + \zeta_0 \\ &+ \zeta_1 \text{Prevalence of Customer-Centric Structure Among Major Buyer-Firms}_{i,t} \\ &+ \zeta_2 \text{Control Variables}_{i,t} + \zeta_3 \text{YearDummies}_t + \zeta_4 \text{IndustryDummies}_t + \eta_i + \varepsilon_{i,t+1},\end{aligned} \quad (7)$$

To estimate this model, we employ system generalized method of moments (GMM). We simultaneously estimate first-difference and level models to account for unobserved supplier heterogeneity and endogeneity (Arellano and Bond 1991; Arellano and Bover 1995). We account for unobserved supplier heterogeneity by including supplier fixed effects (η_i) and through first differencing. To account for potential omitted variable bias, we treat the prevalence of customer-centric structure among the supplier's major buyer-firms, the control variable supplier's customer-centric structure, and the dependent variable as endogenous. We instrument them with the second-lags of their own differences because the first differences of independent variables can be still endogenous (Roodman 2006). They are valid instruments because they are correlated with their own values but not correlated with the error terms. To test this specification, we conducted Arellano–Bond tests; AR(1) and AR(2) test the null hypotheses of no first- and second- order serial correlation in the first-differenced residuals, respectively. For our models, the AR(1) tests are statistically significant, but the AR(2) tests fail to reject the null hypotheses (indicating the absence of second-order autocorrelation). The Hansen J over-identification test statistics fail to reject the null hypotheses, indicating valid instruments. We use the robust GMM estimator to handle heteroscedasticity and autocorrelation.

Because we only observe the prevalence of customer-centric structure among major buyer-firms when the supplier has major buyer-firms, the sample might not be representative of all *Fortune* 500 suppliers. To address this potential selection bias, we adopted Heckman's (1979) two-step approach. The first-stage probit model used a sample of all *Fortune* 500 firms to predict what types of firms are more likely to have major buyer-firms; the dependent variable is "1" if a supplier firm has major buyer-firms in a given year and "0" otherwise. We regress this dependent variable on the following: supplier age, size, market share, receivables intensity, merger and acquisition intensity; and industry capital intensity. We also included the prevalence of major buyer-firms among the focal supplier's peers; these peers operate in the same industry (two-digit SIC) and are similar in asset size (same total asset quartile) (Germann et al. 2015; Kale et al. 2009). For each supplier, the prevalence of major buyer-firms refers to the ratio of the number of suppliers in that supplier's peer group that have major buyer-firms to the total number of suppliers in the peer group. We generated inverse Mills ratios from the first-stage model results (reported in Web Appendix C) and entered these into Eq. 7.

Model results

We report the estimation results in Table 6. We find that prevalence of customer-centric structure among the supplier's major buyer-firms is positively related to the supplier's sales revenue ($\zeta_{1,\text{Sales}} = 2194.435$, $p < .05$). As in Study 1, the supplier's sales are positively impacted by buyer-firms' customer-centric structures. Suppliers benefit from a pass-through portion of the firm's sales to downstream customers. However, the suppliers ultimately are unable to capture significant value from those increased sales in terms of profit. In fact, we find evidence that greater

Table 6 Study 2: estimation results

Variables	Supplier's Sales Revenue		Supplier's Net Income	
	Est.	Std. Err.	Est.	Std. Err.
Focal variable				
Prevalence of customer-centric structure among supplier's major buyer-firms	2194.435**	(1073.796)	−1116.277*	(655.477)
Control variables				
Supplier's customer-centric structure	4512.031	(3106.890)	−2895.389	(2476.845)
Supplier age	−6.841	(8.095)	6.573	(5.673)
Supplier size	349.939**	(136.237)	170.277**	(85.762)
Supplier market share	−5359.664*	(2820.226)	923.792	(2076.339)
Supplier receivables intensity	−360.645	(616.156)	−4328.840**	(1022.909)
Supplier merger and acquisition intensity	4784.833**	(2105.795)	−1445.132	(1766.256)
Industry capital intensity	1364.064	(7326.303)	−8586.095**	(4257.743)
Average sales revenue of major buyer-firms	.005	(.005)	−.003	(.003)
Inverse Mills ratio	164.808	(343.610)	−85.091	(260.710)
Lag of dependent variable	1.030**	(.021)	.708**	(.158)
	Year dummies included		Year dummies included	
	Industry dummies included		Industry dummies included	
Model Details				
Wald χ^2	853,603.92**		1297.843**	
AR(1)	−3.087**		−3.451**	
AR(2)	−.704		.484	
Hansen J test	39.457		37.956	

n = 854; * $p < 0.10$, ** $p < 0.05$

prevalence of customer-centric structures among a supplier's major buyer-firms can negatively impact that supplier's net income ($\zeta_{1,\text{NetIncome}} = -1116.277$, $p < .10$).

Discussion

In Study 2, we find that the greater costs imposed on the supplier by firm with customer-centric structures neutralize or overwhelm additional revenue those firms generate. These results reinforce Study 1, indicating that a firm's customer-centric structure has a positive impact on supplier profit via the revenue process, but potential supplier value capture is undermined by the cost process. The buyer-firms in this study each provide at least 10% of the supplier's sales; these major buyer-firms have greater relative power to be more successfully demanding of costly value-added services from upstream suppliers, thereby capturing a greater share of the value created and eroding the supplier's profit. To quantify the magnitude of sales and profit effects, we calculate the supplier performance elasticity, specifically, the percentage change in a supplier's sales due to a 1% change in the prevalence of customer-centric structure among its major buyer-firms. On average, a 1% increase in the prevalence of customer-centric structure among major buyer-firms increases supplier's sales an average of .01% or $1.3 million. However, greater costs appear to prevent an associated increase in net profit.

General discussion

The shift towards customer-centric structure is central to the modern marketing concept (Hanssens and Pauwels 2016), but researchers have begun to consider its unintended consequences (Gummesson 2008; Lee et al. 2015). We advance this discussion by investigating the heretofore-unexamined effects of a firm's customer-centric structure on its suppliers. In Study 1, we drew data from a wide variety of firms that buy from a single supplier, which allowed us to examine the processes by which a firm's customer-centric structure impacts the value captured by the supplier in the form of profit. Study 2 complements Study 1 by examining multiple suppliers and linking the prevalence of customer-centric structures among their major buyer-firms with supplier financial outcomes. The current research offers several theoretical and managerial implications.

Mechanisms through which a firm's customer-centric structure impacts supplier financial outcomes

Study 1 indicates that a firm's customer-centric structure drives its suppliers' financial outcomes via two distinct processes. Via the *revenue process*, the firm's customer-centric structure enhances value creation to generate greater sales, thereby increasing derived demand and, in turn, profit for the supplier. Via the

cost process, the firm with customer-centric structure becomes more demanding and thereby captures a greater portion of value in the relationship by obtaining more costly supplier services, resulting in reduced supplier profits. Study 2 suggests that if the supplier's relative dependence on the buyer-firm is great, such as when the buyer-firm provides a large share of the supplier's sales, the cost process can neutralize supplier benefits from the revenue process as the firm captures a larger share of the value generated from its customer-centric structure. Our research highlights the challenges for the supplier that seeks to capture value from downstream partners with customer-centric organizational structures.

We also identify several contingencies that moderate the value capture struggle embodied in the dual processes (Blocker et al. 2012; Töytäri and Rajala 2015). Buying center network size and decentralization diminish the firm's ability to disseminate market intelligence in its purchasing activities and become more demanding toward its supplier, reducing its ability to capture a greater portion of value in the relationship. Firm–supplier relationship length and ties are associated with a broader, deeper relationship, which creates more opportunities for the supplier to create and capture value by better meeting the firm's needs and impeding the firm's ability to shift costs to the supplier. A supplier is most likely to benefit from a buyer-firm's customer-centric structure when the firm's buying center is larger and more decentralized, when the firm–supplier relationship is older, and when there are more extensive firm–supplier ties.

Implications for theory

Prior investigations of customer-centric structure have restricted the focus to the firm and its proximal customers (Gulati 2007; Lee et al. 2015). We expanded our focus beyond the firm and its customers to consider previously unexamined upstream effects on suppliers. We theorized and observed how the supplier is affected by its customer-centric buyer-firms' relationships with their downstream customers and how firm–supplier interactions can be altered by the firms' customer-centric structures. Our research bolsters Gummesson's (2008) *balanced centricity* perspective, which emphasizes customer-centric structure's nuanced role in a multi-tiered channel of distribution. Our findings also support the core contention of the value capture literature (Gans and Ryall 2017): the profit earned by a channel member (supplier) depends not only on the value created by that supplier's own efforts, but also on the value appropriated from relationships with other channel members (buyer-firm). Our findings suggest that under certain conditions, a firm may capture all the value created by its customer-centric structure, resulting in no net additional profit for the supplier. Firm customer-centric structure positively affects supplier sales and profits (Study 1 and Study 2) but the ultimate impact on supplier profit is contingent on the firm's buying center structure and nature of the firm–supplier relationship (Study 1). This demonstrates the additional insights that may be uncovered by examining the interconnectedness of relationships and the derived nature of demand in B2B marketing channels (Grewal and Lilien 2012; Homburg et al. 2014).

We also extend prior research on firm demandingness (Li and Calantone 1998; Wang and Netemeyer 2002), using customer-level cost-to-serve data to demonstrate harmful effects of demandingness for supplier value capture and profitability. At the time same, by showing how firm–supplier relationship length and ties mitigate this harm—while also enhancing the supplier's revenue advantages from buyer-firm customer-centric structure—we illustrate an additional advantage, from the supplier's perspective, of highly-developed interfirm relationships. We therefore contribute another layer to the complex literature on the diverse costs and benefits of such relationships (e.g., Noordhoff et al. 2011; Rindfleisch and Moorman 2001).

Further, we shed additional light on the marketing-purchasing disconnect, which can result in "a Janus-faced organization, one face looking forward to the customer and the other facing the supplier" (Sheth et al. 2009, p. 866). Following the demand-supply integration concept of Esper et al. (2010), our research highlights that executing a firm's marketing strategy with customers is entwined with its upstream relationships. We add a piece to this largely-neglected puzzle (cf. Wagner and Eggert 2016) by illustrating that the effects of a firm's downstream-facing strategic element—customer-centric structure—are contingent on an upstream-facing element, the firm's buying center network structure.

Implications for practice

Firms with customer-centric structures Managers should consider structural changes in customer-facing activities and changes in supplier-facing activities as interconnected decisions. Specifically, a customer-centric structure is most beneficial for firms with a smaller, highly centralized buying center. Within our Study 1 context, the effect of a firm's customer-centric structure on demandingness toward the supplier is three times greater for a firm with a small versus large buying center; the effect of customer-centric structure on demandingness is seven times greater when the firm's buying center is decentralized rather than decentralized. Firms should also strive to manage supplier relationships to maximize the potential benefits of customer-centric structure, remaining vigilant even after developing extensive interfirm ties and long-term relationships. Among the firms in our Study 1 sample, a demanding firm in a newer supplier relationship obtains value-added services resulting in 22% higher supplier's cost-to-serve ($546 average monthly impact) than a less demanding

firm, while in an established supplier relationship the more demanding firm receives value-added services resulting in only 12% higher cost-to-serve ($298 average monthly impact). Similarly, our data from Study 2 show that when customer-centric IBM was among Sanmina Corporation's major buyer-firms, Sanmina showed sales revenue of more than $10 billion but a negative net income; when IBM was no longer one of its major buyer-firms, Sanmina's sales revenue decreased but its net income improved.

B2B suppliers Managers of B2B suppliers should be cognizant that a downstream channel member's customer-centric or product-centric structure is not merely an internal concern of that firm, spinning off vague passive benefits for the upstream supplier. Rather, a firm's customer-centric structure has critical implications for the supplier's ability to capture the value created in serving downstream customers (Gans and Ryall 2017). A firm's customer-centric structure creates more value that the supplier can potentially capture in the form of revenue, but it also increases the firm's potential to shift costs to the supplier by demanding additional costly services. For the average supplier in Study 2, a 1% increase in customer-centric structure among major buyer-firms increases sales an average of $1.3 million. However, the net effect of the revenue and cost processes can either benefit or undermine the supplier's profitability from a given buyer-firm. As more firms transition to customer-centric structures, coping with these countervailing forces is an increasingly important challenge for suppliers.

Suppliers have two primary strategies to maximize profit from customer-centric buyer-firms: (1) pursue buyer-firms whose customer-centric structure is less likely to translate into demandingness, and (2) mitigate cost effects while enhancing revenue effects. The first route is markedly more difficult. A supplier benefits more from a firm's customer-centric structure when that firm's buying center is larger and more decentralized; suppliers must therefore uncover internal characteristics of prospective buyer-firms. Suppliers should leverage the expertise of salespeople as well as CRM systems to identify buying center structures among current buyer-firms, while using managers' and salespeople's network contacts to learn about buying centers within potential buyer-firms. This information can be used to segment buyer-firms according to their proclivity to demand costly value-added services, allowing the supplier to cultivate business with customer-centric firms under circumstances that are conducive to generating greater profit. If a supplier must deal with a highly demanding buyer-firm, the supplier should carefully evaluate when providing demanded services is profitable. The supplier must discern whether the buyer-firm seeks new value-added services that are necessary to satisfy that firm's downstream customers—such as salesperson product expertise that the buyer-firm lacks—or merely strives to shift costs to the supplier in order to capture a greater portion of value. The former increases the value pie, potentially providing greater profit for the supplier; the latter creates no additional value, but only reallocates existing value to the firm from the supplier.

The second route through which a supplier can maximize profit from customer-centric buyer-firms is to take proactive steps to develop longer-term and more interconnected relationships with those firms. A deeper, more entwined relationship increases the odds that the supplier can maintain or increase the customer-centric buyer-firm's share of wallet without providing additional costly value-added services, allowing the supplier to capture greater value from the relationship. In our Study 1 context, the magnitude of the positive effect of the firm's downstream sales on the supplier's sales is $7200 greater in established relationships than in newer relationships. The supplier should cultivate extensive ties with customer-centric firms and think twice before ending a long-standing relationship with a buyer-firm.

Limitations and future research directions

The rationale for much of our conceptual framework is based on the greater market intelligence obtained in customer-centric structures. However, given our interorganizational focus, we did not directly measure market intelligence or observe the use of intelligence in the buying center. Future studies could build on our research by explicitly drawing the link from customer-centric structure, to market intelligence, to the marketing-purchasing interface. Future research could also delve into strategies suppliers could deploy to encourage reluctant buyer-firms to share their market intelligence.

Because our research involves U.S.-based samples, we do not know if the dual process model will function similarly in divergent cultural contexts. We speculate that the effects pertaining to firm demandingness and firm–supplier relationship length may be particularly culture-bound. We focus on demandingness with respect to the quality of the product/service offering in our North American setting, but other types of demands (related to price, production schedules, etc.) may be more relevant in other cultures. More research is needed to understand such cultural variation.

Finally, while our dual process model should apply for buyer-firms of all sizes, the net impact on the supplier of the revenue and cost processes will vary. Panico (2017) suggests that interdependence asymmetry between the firm and its supplier impact value capture and, ultimately, the supplier's profit. Our two studies implicitly represent different interdependence structures (Kumar et al. 1995). Many firms in Study 1 are smaller than the supplier, suggesting potential asymmetry favoring the supplier. In contrast, Study 2 focuses on *Fortune* 500 suppliers and their publicly-traded major buyer-firms, a setting likely characterized by more symmetric firm–supplier interdependence. Future research could test our conceptual model in other B2B channels with varied firm and supplier sizes and interdependence structures.

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