HOW BUYERS SHAPE SUPPLIER PERFORMANCE: CAN GOVERNANCE SKILLS SUBSTITUTE FOR TECHNICAL EXPERTISE IN MANAGING OUT-SOURCING RELATIONSHIPS?

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INTRODUCTION

Firms throughout the world are increasingly turning to domestic and foreign out-sourcing relationships to acquire components that they might once have produced internally. With the growth of out-sourcing activity, firms’ ability to achieve high performance in their supplier relationships – including the prices that they are able to negotiate, the quality of the goods that they purchase from suppliers, and the willingness of suppliers to cooperate with them – is critically important to firm performance. Several studies address the question of how firms can best engender high levels of supplier performance. An emerging literature suggests that producers can use supplier governance mechanisms to improve supplier performance, where such mechanisms include relational governance skills that monitor and teach skills to suppliers (Dyer, 1997) as well as formal contracts that specify terms and align incentives (Macneil, 1978; Williamson, 1985). A parallel literature suggests that buyers can enhance their ability to achieve high levels of supplier performance if they retain strong technical expertise of their own (Bradach & Eccles, 1989); the technical skills create a credible threat to replace suppliers with internal sourcing (Richardson, 1993) and provide a base of knowledgeable understanding from which to attract, monitor, and assist suppliers (Lorenzoni & Lipperini, 1999). However, little research has compared and contrasted how a buyer’s supplier governance skills and technical skills influence different aspects of supplier performance.

Two related issues arise. First, it is not clear whether supplier governance skills can substitute for buyer technical expertise in facilitating supplier performance. If so, then firms might be able to increase their out-sourcing activities to the point that they primarily become successful assemblers of out-sourced components and services or even pure contractual brokers of out-sourced activities. If not, firms that attempt to substitute supplier governance skills for their own technical skills might find themselves on a downward spiral of unsatisfactory supplier relationships and hollowed out failure in their own end-product markets. Indeed, it is possible that a buyer requires both strong underlying technical expertise and effective governance skills to ensure supplier performance on key dimensions.

Second, even within the concept of supplier governance skills, it is not clear whether relational or contractual governance mechanisms have the biggest impact on supplier performance. One line of reasoning suggests that buyers need active hands on engagement with their suppliers in order to shape their performance (Dyer & Singh, 1998; Womack, Jones, & Roos, 1990). An alternative logic suggests that the key governance skill is being able to create the right kind of contract, as transaction cost theorists suggest that long term agreements can help align incentives and thereby improve supplier performance (Williamson 1985).

This paper studies how buyers’ technical expertise and supplier governance skills shape
their satisfaction with suppliers' price, quality, and cooperativeness. We draw on several literatures, including the knowledge-based view of strategy, evolutionary economics, and transaction cost economics. The research contributes to the literature on buyer-supplier relationships, with a particular focus on out-sourcing performance, and more generally to the literature on relationship management. In doing so, we highlight the multi-dimensionality of supplier performance, supply management capability, and technical expertise. As out-sourcing becomes an increasing important part of firms' production strategies, it is important to understand whether firms can use governance skills to ensure strong supplier performance or whether they need to retain their own technical skills even as they increase their reliance on external suppliers. The study examines buyer/supplier relationships among 182 firms in the U.S. metal forming industry in 2002. Our arguments and results suggest that firms cannot rely solely on governance skills to maintain superior out-sourcing performance, but need to complement management capabilities with technical expertise.

BACKGROUND AND PREDICTIONS

Suppliers and their performance affect buyer outcomes on several dimensions. The prices suppliers charge influence firm profitability, particularly as over sixty percent of a firm’s costs can arise from purchased components in some industries (Degraeve & Roodhooft, 2001). The quality of purchased items affects a firm’s downstream production process as well as the final quality of its end products and its reputation with customers (Mascarenhas, Baveja, & Jamil, 1998; Womack et al., 1990). Cooperative relationships with suppliers affect short-term performance by smoothing deliveries and reducing tactical coordination costs, while influencing longer-term performance by helping firms develop new capabilities (Dyer & Nobeoka, 2000; Novak & Eppinger, 2001). Research has measured supplier performance on dimensions such as quality, cost, responsiveness, improvements in product or process design, lead time, and inventory turns (Kotabe, Martin, & Domoto, 2003; Noordewier, John, & Nevin, 1990; Poppo & Zenger, 1998). The core conclusion is that supplier performance strongly influences short-term and long-term buyer performance.

Technical Expertise

A firm’s technical expertise relating to out-sourced goods can affect its supply relationships. We define technical expertise as the extent to which a buyer understands the production processes and affiliated technologies related to a purchased good. The skill involves technical know-how, is specific to the good, and is developed over time. Firms gain this expertise directly through production of the component or indirectly through producing related products and conducting relevant research activities (Cohen & Levinthal, 1990; Lane & Lubatkin, 1998; Pisano, 1994). Firms with greater technical expertise will better predict how varying attributes of the good can affect downstream production processes and, ultimately, the performance of the end product (Dosi, 1988). Quite simply, firms that understand core elements of the development and production process will be more likely to identify strong suppliers and to provide assistance in improving supplier skills (Wheelwright & Hayes, 1985). Technically proficient buyers will be more adept at screening and selecting suppliers, as well as be more accurate in evaluating their offerings (Lincoln, Ahmadjian, & Mason, 1998). They also will be highly sought after by suppliers since they will be seen as a technically elite firm from whom the supplier can learn. Therefore, more cooperation between the firm and its suppliers should arise, since suppliers will be motivated to exchange knowledge. More expert firms will be able to
select from better suppliers and get rid of poorly performing suppliers, increasing their satisfaction with their suppliers’ performance. This logic supports our first proposition:

Proposition 1: The stronger a firm’s technical expertise related to an out-sourced good, the greater its satisfaction with the performance of its suppliers.

Supplier Governance Skills: Relational Governance and Formal Contracts

We first consider relational governance in the form of supply management capabilities, which we define as the routines a firm uses to develop its connections with suppliers, such as processes for evaluating suppliers and for sharing information with them. Supply management capabilities are accumulated over time, difficult to change, and reinforced through daily routines (Nelson & Winter, 1982). Supply management capabilities are analogous to alliance management capabilities, in that firms will be more successful if they are aware of how they manage suppliers and dedicate resources to this activity (Kale, Dyer, & Singh, 2002). Unlike technical expertise, supply management capabilities do not relate directly to specific goods, but rather are a firm-level characteristic that firms can leverage across multiple items that they purchase. Firms vary in this managerial capability, even if they have common institutional and/or industrial contexts (Lincoln, et al., 1998). Supply relationships can be a self-fulfilling prophecy, as firms that strive to create and maintain partnerships with suppliers will be likely to have more harmonious relationships than those who emphasize more adversarial roles (Axelrod 1984; Hayes, et al., 1988). Dyer and Singh (1998) investigated knowledge exchanges between buyers and suppliers, noting that a firm that develops these relational capabilities can gain competitive advantage. Through emphasizing mutually beneficial relationships, informally connecting with suppliers, and building interfirm trust, firms will enjoy better supplier performance and cooperation (Zaheer, McEvily, & Perrone, 1998). Thus, firms with more extensive supply management skills should gain increased satisfaction with supplier performance:

Proposition 2: The stronger a firm’s supply management capabilities, the greater its satisfaction with the performance of its suppliers.

While firms can build effective supplier relationships through hands on supply management processes, they also often support supplier relationships through formal contracts. Formal contracts spell out the ex ante details of the exchange. They also assist in subsequent monitoring of the exchange (Alchian & Demsetz, 1972). Firms will consider supplier incentives and opportunities for opportunism and try to build safeguards into the agreement (Williamson, 1985). By agreeing to a contract, both the firm and the supplier explicitly or implicitly agree to deal fairly with each other (Helper & Levine, 1992). The existence of a formal agreement can influence performance outcomes. The process of creating the agreement assists in developing more robust communication between the firm and its supplier (Arrow, 1974), which should increase the firm’s satisfaction with performance, because both they and their suppliers have a common understanding of each other’s goals. Suppliers in a formal contract may be more likely to make investments to support the agreement and will work harder to maintain performance levels to extend the relationship and protect these investments (Williamson, 1985). Suppliers will also be likely to pay more heed to a contracted customer relationship and strive for better performance, particularly since these type of relationships lead to higher growth and lower costs for the supplier (Kulwani & Narayandas, 1995). Finally, neither desires going to court, motivating both the firm and its supplier to work out any issues and cooperate. This rationale supports our third proposition:

Proposition 3: Firms that use formal contractual agreements to govern supply
relationships will have greater satisfaction with the performance of its suppliers than firms that rely on only informal agreements.

Joint Effects of Technical Expertise and Supplier Governance Skills

Firms with high levels of technical expertise and supplier governance skills may find that these skills reinforce each other. Technical expertise may complement the effect of both supply management capabilities and formal contracting, while supply management capabilities and formal contracting also may bolster each other.

First, greater technical expertise may reinforce the power of supply management capabilities. A buyer’s technical expertise will assist in developing accurate and detailed specifications that can then be used within superior evaluation tools, resulting in higher supplier performance. The buyers should be better able to detect quality slippage and assist their suppliers in modifying their processes. Buyers should also benefit from deeper information sharing with suppliers, since they can exchange more complex technical details. The combination of technical expertise and supplier management capabilities may help the firm develop dyadic communication, promoting greater learning and cooperation (Tunisi & Zanfei, 1998). Following this logic, our fourth proposition results:

Proposition 4: The stronger a firm’s technical expertise related to an out-sourced good, the more impact that supply management capabilities will have on its satisfaction with the performance of its suppliers.

Second, a firm’s technical expertise will also heighten the effectiveness of formal contracting. Firms that have a better technical understanding about a component will create more complete and meaningful specifications for suppliers to follow. They can better anticipate technological changes and can thus incorporate these contingencies into the contract, making it more complete. Technical expertise will enable the firm to better monitor and evaluate suppliers and thus better enforce contract terms. Suppliers will also recognize the firm’s expertise and be less likely to engage in opportunistic behavior, such as substituting inferior raw materials, since the firm will be able to recognize such infractions. A firm’s technical reputation can also supplement contracting. Lyons (1996), for instance, noted that reputation and frequent trade can reinforce formal contracts. This line of reasoning leads to our next proposition.

Proposition 5: The stronger a firm’s technical expertise related to an out-sourced good, the more impact that the use of formal contracts will have on its satisfaction with the performance of its suppliers.

Finally, it is possible that firms with strong supply management capabilities that also tend to use formal contracts will achieve superior supplier performance. Many scholars suggest a degree of complementarity between formal and informal aspects of the supply relationship (e.g., Sako, 1992). Macauley (1963) viewed the formal contract as operating in the background rather than the foreground, where the details of a business exchange were handled based on industry customs and non-legal sanctions, noting that the give and take of business goes more smoothly without lawyers. While recognizing the importance of informal, personal relationships, these scholars presume the existence of the formal contract as a baseline for the exchange, suggesting that the formal agreements and informal contacts work in concert (see also Poppo and Zenger 2002). This logic supports our final proposition.

Proposition 6: The stronger a firm’s supply management capabilities, the more impact that the use of formal contracts will have on its satisfaction with the performance of its suppliers.
DATA, METHODS, AND RESULTS

We studied the sourcing decisions of U.S. metal stamping and powder metal firms for production tooling and services. We selected these two sectors of the metal forming industry because they consist of numerous, independent, small firms. This choice enables us to focus on relatively simple buyer/supplier relationships. Following exploratory interviews, we created a mail survey to collect data on the sourcing decisions of five production-related inputs: die design, die building, die maintenance, end-part machining, and end-part surface coating. After obtaining mailing lists from industry associations and making screening calls to identify the best respondent, we sent the survey to 453 firms in Fall 2002. We initiated between two and six contacts with each firm, resulting in a 43% usable response rate, which is significantly higher than 20% rate that is common for firm surveys (Paxson, Dillman, & Tarnai, 1995). No indication of non-response bias or sample selection bias was apparent in the data (Armstrong & Overton, 1977, Tomaskovic-Devey, Leiter, & Thompson, 1994). After culling cases that did not include an external supplier, the survey data represent 508 sourcing decisions of 182 firms for the five different inputs.

For our dependent variable, we followed prior scholars by using the firm’s level of satisfaction to indicate supplier performance (Poppo & Zenger, 1998) and devised three performance variables for satisfaction with supplier cooperativeness, quality, and price. Our technical expertise variable consisted of four items and reflected the extent to which the firm possesses capabilities for producing the focal input and a deep understanding of its technology. Our supply management capability variable was comprised of thirteen items, encompassing key aspects of the firms’ ability to manage suppliers, including information sharing, the ability to maintain a long-term relationship, and performance evaluation techniques. Some items for these variables were adapted from prior work (Noordewier, et al., 1990; Walker & Weber, 1984; Dyer 1997). We created a formal contracts variable with an item that asked whether the buyer used a formal written agreement for the purchased component. A 0-1 binary variable indicated whether the buyer had a formal contract with supplier(s) for this input. Missing data reduced our dataset to 368 cases, but we detected no systematic difference by firm or input type for this set of data relative to the larger dataset. We also include control variables of firm age (years), volume of the input required (annual units, based on a 5 point scale), and dummy variables for the five input types. We used seven point Likert scales for all key variable items.

We chose ordered logit for the model specification, adjusting the standard errors to account for potential interdependence of observations. Our first models indicate how the firm’s technical expertise and supply management capability influence the three supplier performance outcomes, testing propositions 1 and 2. We then include an interaction term to test proposition 4. We next add the binary variable for formal contracting to test propositions 3 and 5. Finally, we add interaction terms between the formal contract variable and the technical expertise and supply management capability variables to test proposition 6.

To summarize our model results, we find at least moderate support for propositions 1 to 4 and proposition 6, albeit on different performance outcomes. Technical expertise improves quality and price performance, supporting proposition 1. Greater supply management capability led to improved cooperation, agreeing with proposition 2. Formal contracts also improved cooperation, following proposition 3. Greater technical expertise intensified the positive effect of supply management capability for cooperation and quality, confirming proposition 4. Stronger supply management capabilities enhanced the impact of formal contracts on pricing satisfaction, corroborating proposition 6. By contrast, the interaction of technical expertise and formal
contracts had no influence on supplier performance, rejecting proposition 5. Thus, it appears that the firm’s technical expertise is the most general driver of satisfaction with supplier performance. At the same time, though, both the relational governance and contractual governance elements of supplier governance skills also influence supplier performance, most strikingly on the ability to engender cooperative relationships and on pricing.

CONTRIBUTIONS AND CONCLUSION

This paper offers several focal contributions. The study adds to work that indicates the importance of firm characteristics on exchange relationships (e.g., Argyres & Liebeskind, 1999), while contributing to our understanding of the complementarity between formal and informal governance mechanisms (Poppo & Zenger, 2002). The work also highlights the multidimensionality of both supplier governance and performance. From a practical viewpoint, the results demonstrate the need for firms to maintain their technical skill even as they follow an outsourcing strategy.

More generally, supplier management skill is a form of what Dyer and Singh (1998) refer to as a relational capability. The study increases our understanding of the relational governance capability and how it affects supplier performance, both alone and in conjunction with technical expertise. We found relational governance influenced cooperation more directly than price or quality. It is possible that price and quality are more objective criteria that are less affected by relatively informal mechanisms, stemming more from a firm’s ability to undertake credible evaluation of a supplier’s cost and quality potential. Moreover, contractual governance increased cooperation, but did not affect price or quality outcomes, possibly because formal agreements facilitate supplier commitments and investments by protecting the terms of the exchange. Suppliers may be more cooperative because they do not want to be causing problems that would place these investments at risk.

The work suggests that different aspects of supplier performance arise from distinct antecedents. Price performance, in particular, was difficult to model, although we did identify an impact of technical expertise as well as a joint impact of relational and formal governance. The modeling difficulty might arise because firms continually are dissatisfied with prices obtained by external suppliers. We were able to identify significant models for quality and cooperation, but with different explanations for superior performance. This would be important for applications where firms desire one type of performance more than others. For example, if quality outcomes are vitally important, a firm can focus on improving its own expertise to determine how best to specify the good. In addition, it is possible that suppliers focus their efforts differentially toward more technically adept and demanding customers, assuming that they will not tolerate poor performance. Therefore, the ex-post mechanisms of quality evaluation may be less important, which could lead to our positive but not significant relational capability result for this outcome.

As firms continue to outsource, they need to better understand how to manage supplier relationships. This study demonstrates that both technical and governance skills influence supplier performance. Technical skills improve quality and price performance directly and, in conjunction with governance skills, supplier cooperation. Both informal and formal governance skills affect supplier cooperativeness. Thus, firms need to maintain a multidimensional set of skills to manage their supplier relationships and, more generally, their inter-firm relationships.

REFERENCES AVAILABLE FROM THE AUTHORS