The Effects of Power and Sourcing Philosophy on Supplier Performance

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Abstract. In this paper, we propose to study the direct and moderating effects of selecting a single sourcing strategy as opposed to a multiple sourcing strategy. More particularly, we investigate how the single vs. multiple sourcing decision may affect various sources of power used by buyers to extract performance from their suppliers.

Introduction. Empirical research in supply chain management places considerable emphasis on buyer-supplier relationships and the ways in which various relationship configurations translate into improved performance. Interestingly, relatively little empirical research has been conducted to study how the size of the supply base, more specifically whether a particular good or service is single or multi-sourced, might contribute to performance. The academic literature that exists essentially parallels the practitioner and educational material in debating the advantages and disadvantages of single vs. multiple sourcing strategies. There seems to be a sharp divide in opinion on the matter, with strong advocates on either side.

This paper attempts to address this issue by empirically investigating what potential impact the single or multiple-sourcing decision may have on a buyer's ability to extract supplier performance. Particularly, we propose to study how a single versus a multiple sourcing strategy may moderate the relationship between the exercise of various types of power and the performance extracted from a supplier. A better understanding of that moderating effect would be useful for companies in deciding what type of power to adopt in relation to what sourcing approach (i.e., single sourcing vs. multiple sourcing) in order to maximize the value extracted from a supplier.

The first research question motivating this study is: does the choice of a single-sourcing strategy (as opposed to a multiple-sourcing strategy) affect supplier performance, *ceteris paribus*? Given that buyer are interested in extracting performance from their supply base, and that power relationships are by definition included among the factors influencing buyer-supplier relationships, the second research question motivating this research is: does the choice of a single-sourcing strategy (as opposed to a multiple-sourcing strategy) influence the way in which sources of power are leveraged to extract performance from suppliers?

To address these questions, we chose to focus on six sources of power: French and Raven's (1959) classic five sources of power and manipulative power (Gaski, 1984). We collected and analyzed data to understand how these six forms of power affect supplier performance, and more precisely to study the direct and moderating effects of a single-sourcing strategy versus a multiple-sourcing strategy.

Literature Background: Single vs. Multiple Sourcing. Practitioner sources and educational materials place considerable emphasis on the importance of a key component of the supplier selection process: the decision to single or multiple source (in this manuscript, we differentiate between single sourcing, which implies choice, and *sole* sourcing, which indicates the use of one supplier due to the fact that no feasible alternatives exist, per Trevelen and Schweikhart, 1988). "Pro" single-sourcing practitioner authors tend to argue that its implementation results in greater cost savings, improved supplier performance and enhancement of the buyer-supplier relationship, particularly when considered along with total quality management (TQM) or just-

in-time (JIT) policies (see Cooke, 2004; Morgan, 2004; and Stork, 1999a; 1999b as typical in this regard). Those that are more "pro multiple sourcing" suggest that disruption of supply and increased dependence upon a complacent or opportunistic supplier are good reasons to approach single sourcing with great caution, if at all (Porter, 1999; Treece and Rechtin, 1997). Textbooks for purchasing/supply chain classes also lay out the advantages of each, and by and large come to similar conclusions. Two of these texts (Monczka et al., 2008; Benton, 2006) lay out the "pros and cons" of single vs. multiple sourcing in a few brief paragraphs, while the others (Burt et al.; Leenders et al.,) provide extensive "laundry lists" of the advantages of each.

Given the importance placed upon the single vs. multiple sourcing decision in practitioner sources and student educational materials, the academic literature is somewhat sparse. Among purely conceptual work, Hahn et al. (1986) argue that maintaining supplier competition does not (contra conventional wisdom) lead to reduced input costs. Ramsay (1990), in contrast, suggests that single sourcing should only be used when a buyer enjoys a large power advantage, and even then with caution. Newman (1989) offers a more balanced perspective, arguing that single sourcing contains the seeds of stifled innovation and increased buyer dependence. Trevelen and Schweikhart (1988) suggest a risk/benefit analysis model which can be used to determine which approach is best for specific situations. To some extent, the debate can be traced to the "giants" of quality and strategy, W. Edwards Deming and Micheal Porter, respectively. The fourth of Deming's fourteen points calls for a "move toward a single supplier for any one item, on a long-term relationship of loyalty and trust" (Deming, 1986, p.23). Alternative, Porter (1980) warns that single-sourcing cedes too much power to the supplier in question.

The empirical literature has attempted to establish the extent to which a single or multiple sourcing approach yields gains in supplier performance. Segal (1989) found that firms which tended towards the use of single sourcing placed greater emphasis on supplier price competitiveness, sales force helpfulness and delivery performance than did those favoring the use of multiple sourcing. Swift (1995) found that purchasing managers who favored single sourcing rated technical support, product reliability and total cost as more important than their counterparts who favored multiple sourcing, whereas the latter rated low price more important than did their counterparts. Larson and Kulchitsky (1998) found evidence that single sourcing was positively correlated with improved quality, reduced total buyer cost and increased buyer-supplier cooperation.

Research relying on mathematical modeling and simulation methods has helped to clarify the conditions under which single or multiple sourcing might be more efficacious. Yu et al. (2009) put forth a model suggesting when single or dual sourcing should be used, provided that profitability and the probability of a major supply disruption can be reasonably estimated. Hong and Hayya (1992) propose a just-in-time purchasing model to estimate an optimal number of suppliers (for multiple sourcing) or an optimal deliver number (in the case of single sourcing). Inderst (2008) examines a reverse auction model, suggesting that single sourcing is only advantageous in conditions where the buyer is relatively large vis-à-vis the supplier market. Richardson and Roumasset (1995) employ an agency modeling approach, and suggest that "parallel sourcing" (a form of multiple sourcing in which similar components are purchased from competing suppliers) is generally superior to single sourcing, given certain assumptions

regarding the tradeoffs between switching costs, monitoring costs and the credible threat of moving the business to a competing supplier.

Hypothesis Development. Beginning in the 1970s, the marketing literature began to focus upon the effect of power in distribution channels, but few articles have attempted to measure the direct effects of various sources of power on performance in the supply chain. Gaski and Nevin (1985) found no significant relationship between exercised reward or coercive power and dealer sales. Brown et al. (1995) found evidence that mediated and non-mediated power were influential on two different types of supplier performance (demand stimulation and support activities), as well as retailer's financial performance.

In contrast, the bulk of the power literature has emphasized effects of various sources of power on other relevant aspects of the buyer-supplier relationship, including conflict level (e.g., Lusch 1976; Gaski and Nevin, 1985); Frazier and Rody, 1991; Maloni and Benton 2000), trust (e.g., Busch and Wilson, 1976; Maloni and Benton 2000;), collaboration (e.g., Benton and Maloni 2005), commitment (e.g., Maloni and Benton, 2000) and satisfaction (e.g., Hunt and Nevin, 1974; Gaski and Nevin, 1985). In general, the power literature assumes that the relationship between various sources of power and performance is indirect and mediated by the factors previously mentioned.

The different sources of power can be classified into two sub-categories: mediated and non-mediated power. *Mediated* sources of power (*coercive* and *reward* sources of power) implies that the source of power deliberately controls the reinforcements that change the behavior of the target (Brown et al., 1995). *Non-mediated* sources of power include *expert*, *referent* and *legitimate* (Maloni and Benton, 2000). Overall, empirical research findings suggest that mediated forms of power tend to have a negative effect on performance, while non-mediated forms of power have a positive effect on performance. These results have been confirmed by measuring both the direct and indirect effects of mediated and non-mediated forms of power. For instance, Maloni and Benton (2000) found that mediated forms of power have a negative effect on trust and commitment while non-mediated forms of power have a positive effect on trust and commitment. In turn, trust and commitment have a positive effect on supply chain performance (Brown et al., 1995; Maloni and Benton, 2000; Benton and Maloni, 2005).

The study of performance in the power literature has also tended to focus on generic or aggregate measurements of performance rather than more specific types of performance. For instance Maloni and Benton (2000) used aggregate measures for supplier performance, buyer performance and supply chain performance. In this paper, we segregate performance into the five dimensions of purchasing performance proposed by Krause, Pagell and Curkovic (2001): delivery, quality, cost, innovation, and flexibility. In the absence of prior research linking mediated and non-mediated power to these specific measures of performance, we posit that the effect of mediated and non-mediated power will be similar for all five dimensions of supplier performance:

H1: Non-mediated sources of power have a significant and positive effect on delivery, quality, cost, innovation and flexibility performance extracted from that supplier.

H2: Mediated sources of power have a significant and negative effect on delivery, quality, cost, innovation and flexibility performance extracted from that supplier.

When it comes to foster quality and innovation, the literature makes a compelling argument in favor of single sourcing. Treleven and Schweikhart (1988) note that reaching a high standard of quality often requires a deep involvement of buyers with suppliers, and is therefore easier to achieve with fewer suppliers. They suggest that single-sourcing permits suppliers to better understand buyer needs and to enable them to continuously improve processes and reduce variation. Over time, buyers and suppliers are able to share quality systems and learn from one another. For a buyer, choosing multiple suppliers would of necessity create weaker links than would be possible with a single supplier, and in addition discrepancies among multiple suppliers would create another potential source of problems. Larson and Kulchitsky (1998) found evidence suggesting that single-sourcing leads to higher supplier quality.

Single sourcing also favors innovation. Suppliers in a single-sourcing situation are more likely to share information about new product development with a partner buyer. Moreover, suppliers are more willing to invest more in new technology because of a higher likelihood to recover their development costs. Single sourcing also allows the buyer to work with a supplier from the early stages of product development and work on developing product and processes.

Single sourcing promotes delivery reliability because it is much easier for a buyer to coordinate delivery from a single supplier than it is from multiple suppliers (Treleven and Schweikhart, 1988). Segal (1989) found evidence that firms pursuing single-sourcing strategies placed higher emphasis on a suppliers ability to deliver shipments promptly. In the long-term, single-sourcing provides a better opportunity for buyers and suppliers to coordinate their production schedules and improve delivery schedules.

The ability of one supplier to provide flexibility would imply a high level of assets specificity of that supplier with the buyer's product and would probably require costly investment. It is unlikely that a supplier would invest in a flexible process if it does not have the assurance of receiving orders from a customer. Therefore, we posit that single sourcing would increase the propensity of one particular supplier to improve flexibility.

The literature is somewhat more ambivalent about whether single sourcing or multiple sourcing is the best approach for cost reduction. Segal (1989) found that firms following a single-sourcing strategy were more concerned with price competitiveness than were those following a multiple-sourcing strategy, but Swift(1995) found that purchasing managers who preferred multiple-sourcing focused on low prices to a greater extent than their counterparts:

> *$H3_a$: Single sourcing has a significant and positive effect on delivery, quality, innovation and flexibility performance extracted from one particular supplier compared to purchasing from the same supplier in a multiple sourcing context.*
>
> *$H3_b$: Single sourcing has no significant effect on cost performance extracted from a supplier compared to purchasing from the same supplier in a multiple sourcing context.*

In a single-sourcing context, the buyer's dependence upon the supplier increases its vulnerability (Ramsay, 1990). The supplier may well be aware of the advantage afforded by this situation, and is likely in good position to "rebel" if it feels uncomfortable with the level of pressure the buyer exerts. Since mediated power can be thought of as the most offensive form

of power (from the standpoint of the party against whom the power is exercised), its use has considerable potential to negatively affect the buyer-supplier relationship. Indeed, mediated power has been shown to increase the level of conflict (Lusch, 1976; Gaski and Nevin 1985; Maloni and Benton, 2000), which in turn has a negative impact on performance (Maloni and Benton, 2000). Mediated power essentially relies on positive and negative reinforcement which results in the "infantilization" of the supplier vis-à-vis the buyer. Conversely, research indicates that non-mediated power tends to promote collaboration (Maloni and Benton, 2000). We expect that the effect of mediated power on performance will be exacerbated in a negative way in a single sourcing context because the supplier has more power and may choose not to comply with it. On the other hand, we hypothesize that non-mediated power will have a stronger influence on supplier performance in a multiple sourcing context because non-meditated power will be more meaningful to suppliers than in a single sourcing context. In a single-sourcing context, the act of selecting a single source already sends a strong signal to the supplier that it has a special relationship with the buyer, which will decrease to impact of additional non-mediated power that would come on top of it.

$H4_a$: Single sourcing has a negative moderating effect on the relationship between mediated sources of power and supplier performance compared to multiple sourcing.

$H4_b$: Single sourcing has a negative moderating effect on the relationship between non-mediated sources of power and supplier performance compared to multiple sourcing.

Methodology. We collected survey data from 226 buyers in a sample of US industrial firms and analyzed the results via a hierarchical multiple regression.

Results. Results will be presented in a later version of the paper.

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