VALUE MAXIMIZING AND CLAIMING BEHAVIOR IN MULTI-DYADIC SUPPLY CHAIN STRUCTURES

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ABSTRACT

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Multi-dyadic supply chain structures are of growing importance to industrial marketers and marketing strategy academics because they reflect increasing global competition among suppliers, original equipment manufacturers (OEMs), and industrial buyers. Marketing strategy research in a multi-dyadic context is of growing interest because it provides a view of the complexities of industrial supply chains and a more complete analysis of interfirm behavior. This work utilizes governance value analysis (GVA) as the underlying theory for two essays that empirically investigate the performance and behavioral implications for component suppliers and OEMs of a multi-dyadic structure. Essay One investigates the value maximizing and value claiming implications of a component supplier's marketing allocation between the OEM and industrial buyer. Findings suggest that an increased allocation toward the industrial buyer positively affects value maximizing and claiming. Essay Two investigates the OEM's governance response in the form of exploitation and/or countering vis-à-vis the component supplier's marketing investment allocation, and finds an increasing allocation toward the industrial buyer positively influences both responses. In both essays market and exchange factors, derived from GVA, are found to moderate the direct relationships. Each essay employs a multi-method two-study approach to test the hypotheses and investigate the causal mechanisms.

This work is dedicated to my mother, Elsa Dahlquist. She raised me, inspires me, and is a lifelong example that anything is possible at any age!

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INTRODUCTION

Competition in industrial product markets compels component suppliers to continuously seek innovative strategies to defend and strengthen their competitive positions in the market. Currently, component suppliers increasingly engage in marketing strategies that allocate their marketing investments between their direct customers (i.e., original equipment manufacturers (OEMs)) and their indirect customers (i.e., industrial buyers that purchase products from OEMs in which the component suppliers' products are embedded). This marketing investment strategy develops a multi-dyadic supply chain structure and affords component suppliers the ability to build value-based bonds (Srivastava, Shervani, and Fahey 1998) with industrial buyers. Such bonds can lead to higher levels of brand equity for component suppliers and increased demand for the component suppliers' products. In response to this strategy, an OEM may be compelled to counter the component supplier's initiative in an effort to maintain the strength of the OEM-industrial buyer relationship. The OEM may also work to exploit the component supplier's investment in an effort to benefit from the value-based bond. While increasingly common in industrial supply chains, the complexity and inherent challenges present within such a multi-dyadic exchange structure are not always well understood in practice. If managed effectively by the component supplier and OEM, both parties may realize substantial strategic and economic gains (i.e., stronger market positions and increased profits). Conversely, the potential strategic and economic downsides of mismanagement by either party are also substantial. It is the analysis of the challenges and opportunities associated with this multi-dyadic structure that forms the basis of this research and provides the potential for important contribution to industrial strategic marketing practice.

More specifically, the bond between the component supplier and industrial buyer provides an opportunity for the component supplier to create additional product value for the industrial buyer that may not otherwise be realized if the direct tie did not exist. Because the component supplier's product is integrated into the OEM's product, the OEM also potentially gains from this incremental value. The incremental value may be in the form of increased product appeal or performance of the industrial buyer's product, or lower production costs for the industrial buyer. Regardless of the form of incremental value, the result can be that the industrial buyer expresses a preference for the use of the component supplier's product by the OEM. In addition, the value-based bond can increase the appeal of the OEM's product to the industrial buyer (i.e., differentiation capability), should it contain the component supplier's product (Ghosh and John 2009). This dynamic leads to a fundamental strategic question for the component supplier: if it can increase demand for its product by marketing to the industrial buyer, how then should it allocate its marketing investments between the two? A second question also arises. Because the component supplier's product is integrated in the OEM's product and the OEM has the ability to control pricing of its product to the industrial buyer, can the component supplier also reap incremental profits from its investment strategy? Finally, regardless of the potential incremental value resulting from the component supplier's actions, its actions may be problematic for the OEM because of the OEM's broader interests as a manufacturer. Hence the component supplier may benefit in the short-term, but the tactic may have long-term strategic implications and consequences. A two-essay approach is taken to address these issues.

Essay One seeks to increase understanding of value maximizing and value claiming effects when a component supplier engages in differing marketing investment allocations between its OEM and industrial buyer. Furthermore, it seeks to determine the role of other key exchange and market factors in these relationships. Applying constructs from the governance value analysis (GVA) model (Ghosh and John 1999), the research investigates the moderating effects of the component supplier's market position relative to its competitors (i.e., market stickiness), the uncertainty related to the design requirements of the component supplier's product (i.e., market uncertainty), and the ability of the component supplier to observe the installation and use of its product (i.e., performance ambiguity). These analyses have broad appeal and utility in practice, because they may assist industrial suppliers in determining both the appropriate allocation of marketing investments between direct and downstream customers, and how certain market and exchange factors influence the outcomes of those allocation decisions. In addition, it provides guidance on how short-term marketing tactics may affect long-term marketing strategies.

Essay Two of this research seeks to increase our understanding of a strategic challenge often confronted by firms in industrial supply chains: i.e., how to effectively manage and respond to a value-based relationship between the firm's supplier and the firm's customer. In addition to the direct effect between the component supplier's marketing behavior and the OEM's response to that behavior, the essay seeks to determine the role of other key GVA exchange and market factors. Specifically, the research investigates the moderating effects of the OEM's resource advantage relative to the component supplier (i.e., technological, end-customer equity, and supply network resources), the uncertainty related to the design requirements of the OEM's product (i.e., market uncertainty), and the ability of the OEM to observe the use of its product (i.e., performance ambiguity). These analyses also have broad appeal and utility in practice, because they may assist firms in determining both the criteria for governance responses (i.e., exploit and counter) to the behavior of suppliers and customers, and the market and exchange factors that may influence those responses.

The theoretical foundation for this research is the GVA paradigm (Ghosh and John 1999). Building from transaction cost economics, the GVA framework illuminates the importance of contingency alignment in the analysis of firm behavior, specifically considering alignment of the firm's strategic positioning, the firm's resources, the exchange attributes, and forms of governance. The framework extends what Williamson referred to as the "Discriminating Alignment Hypothesis," which is the contention that transaction attributes' alignment with governance mechanisms leads to discriminating performance results (Williamson 1975). This hypothesis has served as the underlying premise for a number of marketing strategy studies such as Heide and John's (1988) study of dependence balancing in channels, Wathne and Heide's (2004) analysis of upstream governance mechanisms (e.g., supplier qualification and incentive design) on downstream response (e.g., flexibility) to customer uncertainty, and Kumar, Heide and Wathne's (2011) study of the effects of internal and external governance alignment (vis-à-vis suppliers) on manufacturer performance (vis-à-vis customers).

Essay One: Value Maximizing and Claiming by Component Suppliers in Multi-Dyadic Industrial Supply Chains

Introduction

Due to increased global competition and economic volatility, industrial component manufacturers in technology driven industries are increasingly challenged to adopt more aggressive and effective marketing strategies. Traditional marketing doctrine suggests that component suppliers should concentrate their marketing efforts (i.e., marketing investments) on direct customers that integrate their components into products; i.e., component suppliers should target original equipment manufacturers (OEMs). The problem with this approach is that the component supplier is then largely reliant on each OEM's decision to select it as a supplier, versus selecting its competitors. In an effort to mitigate a dependence on OEMs, component suppliers increasingly allocate a portion of their marketing investments on the OEMs' direct customers, referred to here as industrial buyers. That allocation of investments can lead to a value-based bond and brand equity with industrial buyers, and stimulate demand for the component suppliers' products (i.e., pull). This strategy is not without risks. While an OEM may benefit from the component supplier's initiative (e.g., enhancing the OEM's product), the OEM may also perceive the bond as a threat to its control over product sourcing. In essence, the strategy potentially creates a strain on the relationship with the component supplier's direct customer, which may result in lower sales and profits than if the component supplier had concentrated its marketing investments on the OEM. The component supplier must thus consider its allocation of marketing investments and the resulting consequences, which motivates the key questions of the research: in an industrial supply chain involving three relational dyads, (1) what are the effects of the component supplier's allocation of marketing investments between the OEM and industrial buyer on its ability to maximize and claim value (i.e., sales and profits respectively); and (2) how do market and transactional factors (i.e., supplier market stickiness, market uncertainty, and performance ambiguity) moderate those relationships?

The nature of such multi-dyadic supply chain structures is of growing importance to industrial marketers in high value product markets because of ongoing market consolidation and increasing global competition among suppliers, as well as enhanced efforts by industrial buyers to gain competitive advantages through strategic supply chain management initiatives. Interfirm relationships between buyers and sellers have received sizeable consideration in marketing research, with predominant attention given to dyadic relationships (e.g., Ghosh and John 2005; 2009; Heide and Weiss 1995; Jap 2001; Kim et al. 2011). The importance of the effects of business networks or environmental factors on dyadic relationships has been alluded to in conceptual frameworks offered by Achrol et al. (1983), Wernerfelt (1994), Ghosh and John (1999), and is the central issue in the research of Anderson, Hakansson, and Johanson (1994). In an effort to more fully understand interfirm dyadic relationships, scholars increasingly consider the effects introduced by other actors in the networks containing the focal dyad (e.g., Kumar, Heide, and Wathne 2011; McFarland, Bloodgood, and Payan 2008; Wathne and Heide 2004; Wuyts et al. 2004). More specifically, this growing body of research suggests that exchange in one relationship is contingent on, or has consequences for, exchange in another relationship.

Previous empirical marketing strategy studies in multi-dyadic contexts include the analysis of downstream efforts (e.g., dependence balancing) by agents to safeguard upstream channel investments (Heide and John 1988), the effects of upstream governance mechanisms (e.g., supplier qualification and incentive design) on downstream response (e.g., flexibility) to customer uncertainty (Wathne and Heide 2004), the strength of tie effects on buyer preferences in multi-dyadic (supplier, vendor, buyer) vertical marketing of integrated computer networks

(Wuyts et al. 2004), the propagation (contagion) of behaviors from one dyadic relationship to an adjacent dyadic relationship in the supply chain (McFarland, Bloodgood, and Payan 2008), and the effects of internal and external governance alignment (vis-à-vis suppliers) on manufacturer performance (vis-à-vis customers) (Kumar, Heide, and Wathne 2011). However, with the exception of Wuyts et al. (2004), who considered the direct link between the upstream supplier and downstream buyer as a protection against opportunism (buyer vis-à-vis the vendor), past empirical research is largely silent on the dynamics of a multi-dyadic structure possessing three interdependent relational dyads. Because the link between the component supplier and industrial buyer introduces important challenges and opportunities for all three participants, a failure to consider the effects and implications of the additional dyad represents a substantial limitation.

The current study addresses this limitation by probing further into the effects of this additional relational link, specifically finding that a component supplier's marketing investment allocation toward the industrial buyer is positively related to both value maximizing and claiming. Following the governance value analysis (GVA) model offered by Ghosh and John (1999), the study includes a number of that model's constructs in a model investigating the contingency alignment between firm resources, transaction factors, and modes of governance. The results show that a number of the market and exchange related factors do moderate the aforementioned direct relationships. In addition, through the employment of a second study, this research delves further into the demand-related conditions associated with the component supplier's value maximizing and claiming outcomes. Specifically, it determines that two demand-related mechanisms originating at the industrial buyer (i.e., increased demand for the OEM's product and specification of the component supplier's product) could influence the component supplier's value maximizing and claiming outcomes.

The research contributes to the literature in two ways. First, the study of marketing allocation strategies in a multi-dyadic supply chain context contributes to the marketing strategy literature by enhancing understanding of interfirm behavior and the performance outcomes associated with that behavior. At this time, although these types of investment decisions are prominent in the marketplace, and theoretically important, there is limited empirical research (e.g., Palmatier, Gopalakrishna, and Houston 2006), thus leaving academics and practitioners with an incomplete understanding of this behavior. Study One's focal decision variable, the component supplier's allocation of marketing investments, is a key marketing strategy decision variable because it reflects the firm's intended strategic market position and value proposition, the factors (i.e., resources) sustaining that position, and the attributes of the exchange environment (Ghosh and John 1999). In a multi-dyadic context, the complexity and implications of the allocation decision are more fully illuminated since behavior in one dyad may affect behavior in adjacent dyads (e.g., Kumar, Heide, and Wathne 2011; McFarland, Bloodgood, and Payan 2008; Wathne and Heide 2004; Wuyts et al. 2004). Accordingly, while the component supplier's marketing investments in a downstream industrial buyer may create opportunities, it may also generate both positive and negative value related consequences vis-à-vis the OEM. This research employs two studies, the first of which determines the relationships between investment allocation and value maximizing and claiming. The second study then extends the first by experimentally testing two demand-related conditions underlying the relationships of interest (i.e., OEM product demand and component supplier brand preference). Through empirical analyses of performance outcomes in a complex industrial exchange context, the study advances the use of GVA as a framework for better understanding firm behavior.

The second contribution lies in studying the moderating effects (i.e., contingency) of certain market and exchange factors (i.e., component supplier market stickiness, market uncertainty and performance ambiguity) on value maximizing and claiming behavior between firms. Studying moderation increases understanding of how those factors may influence firm behavior, and thereby extends the current GVA literature. Specifically, "market stickiness" is defined as the degree to which the component supplier's product is difficult to imitate by competitors, or be substituted with alternative technologies or products. This definition is adopted because in industrial markets, a component supplier's product is the most tangible manifestation of its strategic market positioning. As suggested by Ghosh and John (1999), a firm determines and sustains its market position based largely on the resources it possesses, and the extent to which those resources are both scarce and appropriable by the firm. The research thus utilizes the component supplier's product as a proxy of its market stickiness because its product is what most directly influences its ability to generate value and claim profits. Market uncertainty, is defined as the component supplier's uncertainty related to its product design, as required by the OEM, industrial buyer, or both. This definition is a narrower one than described by Wathne and Heide (2004); i.e., the extent to which it is difficult to predict changing customer needs and preferences. The focus on product design was adopted because value maximizing activities in industrial markets often require manufacturers to alter their product designs to meet the unique needs of customers (Ghosh and John 2005). Performance ambiguity is defined as the difficulty experienced by the component supplier in observing the installation, use, and performance assessment, of its product by the OEM and industrial buyer. This definition is a narrower one than provided by Ghosh and John (1999); i.e., product performance assessment difficulties including both measurement accuracy and the performance of other parties. Previous research has determined that these factors (i.e., market stickiness, market uncertainty, and performance ambiguity) are important to consider in the study of how firms make governance decisions vis-à-vis heterogeneous resources, exchange attributes, and strategic positioning (e.g., Ghosh and John 2004; 2009; Kumar, Heide and Wathne 2011; Wathne and Heide 2004). This research extends the study of these factors in a compelling and important industrial context through the use of empirical analyses, resulting in greater understanding of the relationships among the constructs.

The research begins with a discussion of a number of key conceptual topics related to the attributes and implications of the focal multi-dyadic structure, as well as introduces primary constructs for analysis. A component supplier investment allocation model is then provided as the basis for a set of hypotheses articulating the proposed main effects of the component supplier's allocation of marketing investments toward the industrial buyer on value maximizing and claiming, and the proposed moderating effects of the aforementioned factors on the main effect relationships. The research methodology for Study One is presented, providing a description of research context, measures, data collection and validation, model estimation techniques, and results. Another objective of the research is to investigate certain demand-related conditions that may link the value maximizing and claiming outcomes to the component supplier's investment allocation. With that objective, Study Two provides for an experimental design that tests several theorizations of the influence of two demand-related conditions (i.e., increased OEM product demand and component supplier specification) on value maximizing and value claiming. The research methodology for Study Two is presented, providing a description of research context, measures, data collection and validation, and comparative analysis techniques. The findings of both Studies One and Two are discussed in detail, then limitations of the research and possible future research directions are offered.

Conceptual Background

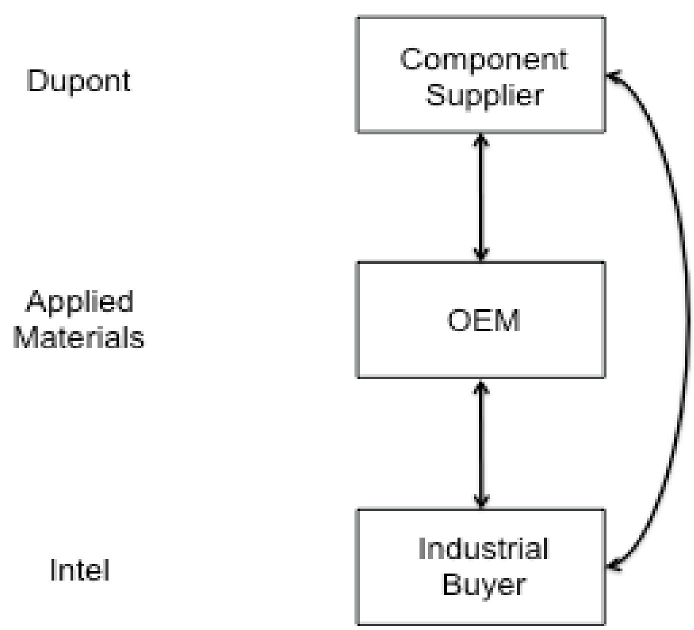
Industrial Multi-Dyadic Supply Chains

To better understand the structure of interest, consider semiconductor manufacturing. Dupont (i.e., a component supplier) manufactures highly engineered and specialized plastics (e.g., fluoropolymers, elastomers) for use in semiconductor fabrication equipment. Fabrication equipment (incorporating numerous plastic components) is manufactured by Applied Materials (i.e., an OEM) and procured by a semiconductor manufacturer such as Intel (i.e., an industrial buyer). Although the procurement transaction vis-à-vis equipment is with Applied Materials, the critical process nature of its products can afford Dupont an opportunity to establish a value-based bond with Intel through the allocation of a portion of its marketing toward Intel. Thus, as indicated in Figure 1.1, this multi-dyadic structure possesses an additional path by which the component supplier and industrial buyer may sustain a value-based relationship.

As referred to previously, a primary motivation for the component supplier to invest in a relationship with the industrial buyer is the opportunity to influence the industrial buyer's perception of the component supplier's product value potential. Similar to "targeted pull" referred to by Gerstner and Hess (1995), the component supplier's objective is for the industrial buyer to express a preference for the integration of the component supplier's product in the OEM's product. As that preference strengthens, potentially to a point where the component supplier's product is "solely specified" as the only acceptable component, the component supplier's competitive position is enhanced. Directing a portion of its marketing investment toward the industrial buyer is thus a beneficial marketing strategy for the component supplier.

Continuing with the earlier example, Intel may determine that a direct relationship with Dupont provides an incremental gain in its product value. Dupont's investment in "pull" may thus prove effective but also lead Applied Materials to consider the bond as a hindrance to its own value maximizing and claiming efforts. In addition, Applied Materials may perceive the bond as an effort by Dupont to gain some control over Applied Material's behavior. The structure therefore may effectively create pull for the component supplier's product, but at the possible cost of systematic differences and non-convergence of behavioral expectations within and between the three dyads (John and Reve 2010). The main effect constructs of the model will now be discussed individually, beginning with the component supplier's allocation of marketing investments toward the industrial buyer.

Figure 1.1: Multi-Dyadic Industrial Supply Chain Example



Allocation of Marketing Investments

In the traditional dyadic serial structure, the focus would typically be on the component supplier's marketing investments directed at maximizing and claiming value with the OEM. The context of a multi-dyadic structure does not eliminate this relationship, and it is reasonable to assume that some marketing investment in the OEM remains necessary regardless of the direct link to the industrial buyer. The question under investigation here, however, is: when considering a multi-dyadic structure, how does the component supplier allocate its marketing investment between the OEM and industrial buyer in order to maximize the business opportunity presented by this OEM and industrial buyer? Wernerfelt's (1994) marketing efficiency model suggests a "zero sum" approach to researching this question may be appropriate. It states that given multiple opportunities to invest in multiple downstream customers, for the purpose of analysis the overall investment made by the supplier does not increase. The current research, therefore assumes that the investment allocation variable may be regarded as a percentage allocation of a fixed level of marketing investments, anchored by 100% allocation toward the OEM and 100% allocation toward the industrial buyer (albeit the later may be arguably impractical). Under this approach, marketing investment directed toward one party is at the expense of investment toward the other party.

Value Maximizing

Value maximizing is defined under GVA as behavior between firms that is aimed at increasing the prospective overall value or joint value available (Ghosh and John 1999). Consider an industrial firm seeking to supply components for use by another industrial firm. Under the scenario that the buyer desires the supplier's standard component, the supplier avoids any investment specific to the buyer and produces the component at standard cost. The buyer's product, containing the supplier's component, in turn results in a net value to the buyer, and collectively the two parties realize some joint value. Alternatively, should the supplier make an investment specific to the buyer's use of the component, it may result in an increase of the buyer's product attractiveness to downstream customers, lower the cost of the product, or both. The investment in maximizing value results in a new joint value that, acknowledging the potential for other strategic motivations, is economically appealing to both firms if the overall profits are increased (Jap 2001). This behavior is consistent with the normative assertion in transaction cost economics that firms should economize on opportunity costs, and thereby pursue investment opportunities with the greatest net potential for value maximization (Ghosh and John 1999; Williamson 1996).

In the context of this study, value maximizing is at the core of the component supplier's investment allocation decision, and the construct is intended to represent an outcome of the component supplier's marketing investments. The component supplier is thus assumed to be engaged in value maximizing activities with the OEM that may (or may not) result in increasing the value of the industrial buyer's product, and concurrently engaged in value maximizing with the industrial buyer with the specific objective of increasing the value of the industrial buyer's product. Because of the "zero sum" approach taken in this research, a greater allocation toward the industrial buyer suggests less investment toward the OEM. The question then becomes: what is the net effect of investing more (less) in the industrial buyer and less (more) in the OEM? An increase in value of the industrial buyer's product potentially increases overall value for all three parties (Ghosh and John 1999), but an increase in value of the OEM's product may potentially increase value for only the OEM. The research thus theorizes that the component supplier must find an appropriate allocation contingent on the value maximizing opportunities it perceives to exist with each party. As previously discussed, the most tangible outcome of the component supplier's value maximizing activities with the industrial buyer is pull or demand for its product through the OEM. As such, the study adopts the component supplier's sales to the OEM as a measure of the results of the component supplier's value maximizing activities. This approach is consistent with recent interfirm literature pointing out that sellers invest in relationships with customers with the expectation that the customer will contribute to the sales of the seller (Palmatier 2008).

Value Claiming

Value claiming is defined under GVA as the share of joint value claimed by each firm participating in joint value maximizing activities (Ghosh and John 1999). Underlying the normative value maximization premise (Williamson 1996) is the implication that in order for each firm to make sufficient investments to realize higher value, each must be satisfied with its "piece" of the overall profits. The question of how firms share the profits of "pie expansion" initiatives has been the subject of dyadic empirical research (e.g., Ghosh and John 2005; Jap 2001). It informs that the complexity of industrial products and iterative nature of their joint development (Ghosh and John 2009) makes it difficult to establish sufficiently comprehensive contractual governance mechanisms to ensure value claiming (Ghosh and John 2005). Further, since organizations are often involved in an array of activities, tying each firm's tasks and resources to outcomes is also difficult (Jap 2001). As such, parties may also make marketing investments with the objective of establishing governance mechanisms (e.g., relational bonds) that will help to manage the claiming of value (Ghosh and John 1999). This study adopts the component supplier's profits related to its sales to the OEM, as a measure of the results of the component supplier's value claiming activities.

Figure 1.2: Allocation Model

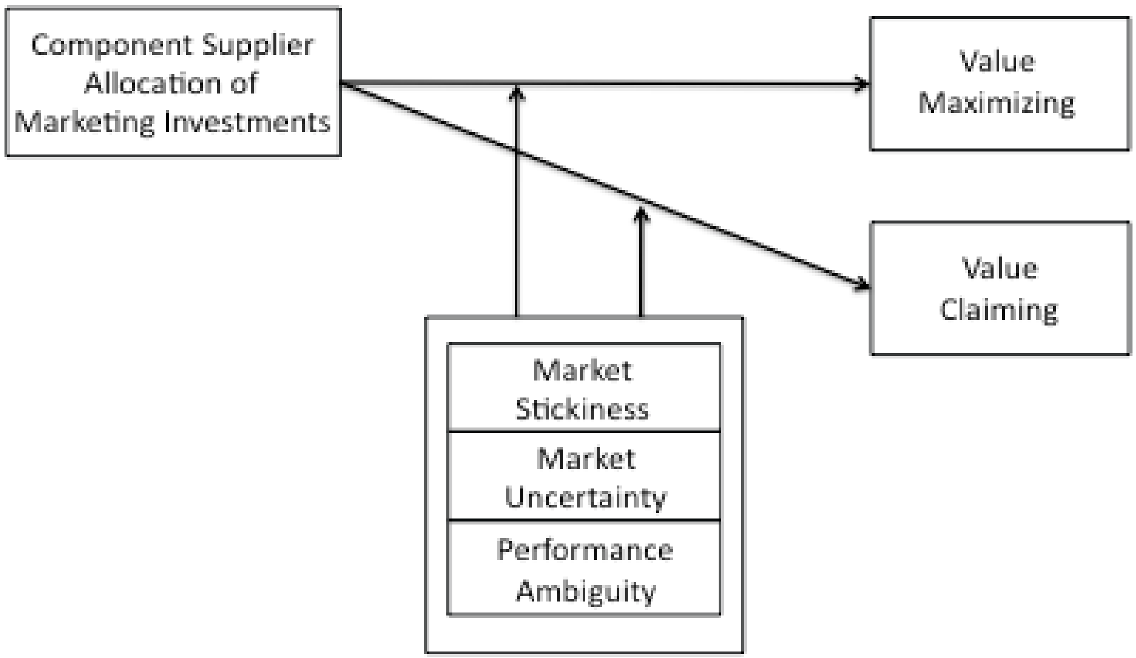


Figure 1.2 depicts the component supplier's marketing investment allocation decision in this multi-dyadic structure and its direct effect on the two value related outcomes (i.e., sales and profits), as well as reflects the moderating market and exchange factors (i.e., market stickiness, market uncertainty, and performance ambiguity). As discussed, an allocation of marketing investments investment toward the industrial buyer may produce pull, but can also introduce challenges in the component supplier's relationship with the OEM. Alternatively, allocating little or no marketing investments toward the industrial buyer may result in a lost opportunity to realize a stronger position as a supplier, and greater sales and profits. These issues become more

complicated when considering the potential contextual effects of 1) market stickiness, 2) market uncertainty, and 3) performance ambiguity.

Hypothesis Development

Allocation of Marketing Investments

It is theorized that increasing the component supplier's allocation of marketing investments toward the industrial buyer positively influences value maximizing. The logic underlying this theorization is that allocation of marketing investment by the component supplier toward the industrial buyer forms a value-based bond (Srivastava, Shervani, and Fahey 1998) that results in a market based asset for the component supplier (i.e., brand equity). The industrial buyer's perception of the value represented by the component supplier's brand equity has a positive influence on the industrial buyer's willingness to specify the use of the component supplier's product in the OEM's product. Thus it is argued that as the component supplier allocates more of its marketing investments toward the industrial buyer, a greater value-based bond develops that leads to greater brand equity for the component supplier, and greater demand for the component supplier's product. More formally:

> H_1: *The component supplier's allocation of marketing investments toward the industrial buyer positively influences value maximizing for the component supplier.*

A challenge for the component supplier is that the OEM may naturally seek to suppress the component supplier's claims of contribution to overall value, suggesting that while the component supplier's investments may result in higher value for the industrial buyer, the component supplier's ability to claim incremental value (i.e., increased profits) may not necessarily follow. Recognizing this potential, the study also theorizes that the component supplier's allocation of marketing investment toward the industrial buyer also positively influences value claiming (i.e., profits) from the OEM transaction. The underlying logic for this theorization is that the added willingness of the industrial buyer to specify the use of the component supplier's product (previously discussed) may be leveraged by the component supplier to distinguish the contribution of its product and attain price premiums (Srivastava, Shervani, and Fahey 1998). Further, the industrial buyer's expressed preference for the component supplier's product also signals to the OEM that the industrial buyer's perception of the OEM's product is enhanced if it contains the component supplier's product. This phenomenon is referred to as differentiation capability by Ghosh and John (2009), and suggests that the OEM will seek to leverage the differentiation capability of the component supplier's product. Recognizing that increased sales for the component supplier may potentially lead to scale economies and lower costs, it is argued that value claiming is increased through the combination of sales volume and (or) pricing of the component supplier's product. More formally:

> H_2: *The component supplier's allocation of marketing investments toward the industrial buyer positively influences value claiming for the component supplier.*

Market Stickiness

It is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and market stickiness (i.e., the degree to which the component supplier's product is difficult to imitate by competitors, or be substituted with alternative technologies or products) interact positively to influence the level of value maximizing. Greater market stickiness of the component supplier suggests a greater ability to offer unique products that can serve to enhance the component supplier's existing value-based bond and brand equity with the industrial buyer. Because higher market stickiness results in higher brand equity for the component supplier, the influence of the component supplier's allocation of marketing investments on value maximizing is increased. More formally:

> H_{3a}: *As the component supplier's market stickiness increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on value maximizing increases.*

In relation to value claiming, it is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and market stickiness interact positively to influence the level of value claiming. Greater market stickiness of the component supplier suggests a greater ability to offer unique products that can serve to enhance the component supplier's existing value-based bond and brand equity with the industrial buyer. The component supplier thus has a greater ability to leverage its brand equity, distinguish the contribution of its product, and attain price premiums (Srivastava, Shervani, and Fahey 1998). Further, the OEM's perception of the component supplier's level of differentiating capability is higher, thereby providing an incentive for the OEM to recognize the component supplier's value contribution. Because higher market stickiness allows the component supplier to better leverage its brand equity and increases its differentiating capability, the influence of the component supplier's allocation of marketing investments on value claiming is increased. More formally:

> H_{3b}: *As the component supplier's market stickiness increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on value claiming increases.*

Market Uncertainty

It is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and market uncertainty (i.e., the component supplier's uncertainty related to its product design, as required by the OEM, industrial buyer, or both) interact positively to influence the level of value maximizing. Increasing market uncertainty for the component supplier suggests a requirement for greater flexibility and responsiveness to the changing needs of the OEM and industrial buyer (Ghosh and John 2009). Increasing need for flexibility and responsiveness creates the opportunity for the component supplier to enhance the existing value-based bond with the industrial buyer, and therefore increase the industrial buyer's positive perception of the component supplier's brand equity and its willingness to express a preference for the use of the component supplier's product. Because higher market uncertainty enhances the component supplier's value-based bond and brand equity with the industrial buyer, the influence of the component supplier's allocation of marketing investments on value maximizing is increased. More formally:

> H_{4a}: *As market uncertainty increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on value maximizing increases.*

In relation to value claiming, H_{4b} theorizes that the component supplier's allocation of marketing investments toward the industrial buyer and market uncertainty interact positively to influence the level of value claiming. Increasing market uncertainty (i.e., uncertainty in product design) for the component supplier suggests a requirement for greater flexibility and responsiveness to the changing needs of the OEM and industrial buyer (Ghosh and John 2009). Increasing need for flexibility and responsiveness creates the opportunity for the component supplier to provide increasing levels of value, and thus increases its ability to leverage the value-based bond with the industrial buyer. Because higher market uncertainty enhances the ability of the component supplier to leverage the value-based bond with the industrial buyer, the influence of the component supplier's allocation of marketing investments on value claiming is increased. More formally:

H_{4b}: As market uncertainty increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on value claiming increases.

Performance Ambiguity

It is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and performance ambiguity (i.e., the difficulty experienced by the component supplier in observing the installation, use, and performance assessment, of its product by the OEM and industrial buyer) interact negatively to influence the level of value maximizing. Increasing performance ambiguity relative to the OEM and industrial buyer exposes the component supplier to increased costs due to misdirected efforts and monitoring (Ghosh and John 2009). These costs diminish the value of the existing value-based bond, therefore decreasing the industrial buyer's positive perception of the component supplier's brand equity. Because higher performance ambiguity diminishes the ability of the component supplier's value-based bond and brand equity with the industrial buyer, the influence of the component supplier's allocation of marketing investments on value maximizing is decreased. More formally:

H_{5a}: As performance ambiguity increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on value maximizing decreases.

In relation to value claiming, H_{5b} theorizes that the component supplier's allocation of marketing investments toward the industrial buyer and performance ambiguity interact negatively to influence the level of value claiming. Increasing performance ambiguity relative to the OEM and industrial buyer exposes the component supplier to increased costs due to misdirected efforts and monitoring (Ghosh and John 2009). These costs diminish the value of the existing value-based bond, therefore decreasing the component supplier's ability to leverage the value-based bond. Because higher performance ambiguity diminishes the ability of the component supplier to leverage its value-based bond with the industrial buyer, the influence of the component supplier's allocation of marketing investments on value claiming is decreased. More formally:

> *H_{5b}: As performance ambiguity increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on value claiming decreases.*

Study One

Method

Sample Characteristics and Data Collection. The empirical context of Study One is the behavior of component suppliers in multi-dyadic supply chain structures. The model was tested using a cross-sectional survey methodology employing a web-based mechanism (Qualtrics) administered to qualified key informants, identified and incentivized through a market research firm, Research Now (e-Rewards). Within the U.S. Census Bureau's North American Industry Classification System (NAICS) the following subcategories of the general manufacturing category (NAIC 33) were selected: Industrial Machinery Manufacturing (NAIC 3332), Semiconductor and Other Electronic Component Manufacturing (NAIC 3344), and Motor Vehicle Parts Manufacturing (3363). These NAICS sectors were chosen for two primary reasons: 1) its breadth of industries possesses a large population of component suppliers and OEMs serving downstream industrial buyers, helping to ensure the sample represents a broad range of component supplier types, and; 2) the end products consist of engineered systems, representing the integration of specialty components and a wide range of technologies. Thus the parties in these industries are likely to be engaged in product markets highly influenced by technological change and global competition, and face value enhancement and claiming challenges associated with their products.

Field interviews were conducted with 10 industry managers, to establish the substantive relevance of the concepts and constructs. From these interviews and previous empirical research, a survey instrument (Appendix 1.A), was generated. It was then pretested online with 40 industry managers (identified through the author's professional network) to verify wording, response formats, structure, and understandability. Based on the feedback provided by these managers, the survey items were finalized and formatted for implementation.

Members of the Research Now national respondent pool were sent an invitation to participate in an online survey regarding business-to-business marketing, resulting in 1,096 potential respondents. Based on two qualifying questions (i.e., industry and firm type), 424 (39%) respondents were determined to be qualified, of which 170 (40%) completed the survey. Of the 170 completed surveys, 14 were determined to be unusable, resulting in a sample size of 156, and effective response rate of 37%. Using most recent year firm sales (USD) as a measure, the following firm distribution was observed in the sample: < $1M (10.9%), $1M to < $10M (14.7%), $10M to < $50M (23.7%), $50M to < $250M (25%), $250 to < $1B (12.2%), and > $1B (13.5%). Following Armstrong and Overton (1977), nonresponse bias was examined by comparing early and late respondents (mean comparisons repeated for the first 25%, 33%, and 50% versus the last 25%, 33%, and 50% of respondents) for key variables under study. No significant differences ($p < 0.05$) were found.

The unit of analysis was a multi-dyadic relationship among firms in which the component supplier has an ongoing relationship with both of the other parties. The respondent was thus asked to anchor his or her responses on an OEM and Industrial Buyer that are both important to the respondent's firm and are known to use the component supplier's products. Marketing investments that the respondent was asked to consider included overall marketing, direct sales calls, product design, targeted participation in industry trade shows, targeted advertising, and other marketing activities. They were also informed that the purpose of the study was to understand the effects of component suppliers' marketing investment allocation decisions on the firm's sales and profits. In order to qualify the respondent's ability to report on these aspects of the firm's behavior, each was asked to report his or her number of years with the firm (M = 12.8 years, SD = 10.6), the extent of agreement with a statement that the respondent was highly knowledgeable of the firm's marketing activities (seven point Likert-type scale (strongly disagree to strongly agree), M = 5.26, SD = 1.3), agreement with a statement that the respondent was highly knowledgeable of the firm's financials (seven point Likert-type scale (strongly disagree to strongly agree), M = 5.6, SD =1.2).

Measures. Measures were based on existing scales when available (see Appendix A). Investment allocation (INVALL) was defined as the component supplier's allocation of marketing investments toward the industrial buyer. Similar to the relationship marketing expenditures construct utilized by Palmatier, Gopalakrishna, and Houston (2006), a forced six-item scale (α = .95) indicating the allocation of marketing investment in terms of percentage allows the respondent to estimate an allocation. The respondent was asked to estimate the percentage of each of the five components (i.e., direct sales, product development, advertising, trade shows, and other) represents in the overall mix of expenditures. The variable was calculated using the weighted average of the investment percentage estimates (in each of five marketing categories) provided by the respondent, and reflects an aggregate estimate of the component supplier's allocation of marketing investment toward the industrial buyer.

Value maximizing (VALMAX) was operationalized as the demand (i.e., sales) for the component supplier's product to the OEM. The use of a three item (α = .87) seven point Likert-type scale (strongly disagree to strongly agree), allowed the respondent to indicate relative agreement with statements indicating unit sales, dollar sales, and overall demand for his or her firm's product as higher with this OEM than with similar OEMs.

Value claiming (VALCLA) was operationalized as the component supplier's profits (i.e., profits) on product sales to the OEM. The use of a three item (α = .89) seven point Likert-type scale (strongly disagree to strongly agree), allowed for the respondent to indicate relative agreement with statements indicating net profits, overall profits, and return on marketing investments for his or her firm's product as higher with this OEM than with similar OEMs.

Market stickiness (MKTSTK) was defined as the degree to which the component supplier's product is difficult to imitate by competitors, or be substituted with alternative technologies or products. Utilizing a modification of Ghosh and John's (2009) measure for "differentiation" and two other new items, the respondent's opinion of his or her firm's product offering is obtained through a three item (α = .83) seven point Likert-type scale (strongly disagree to strongly agree) that allowed the respondent to indicate relative agreement with statements indicating the firm's products as difficult for competitors to imitate, difficult to substitute for, and differentiable from competitive products.

Market uncertainty (MKTUNC) was defined as the component supplier's uncertainty related to its product design, as required by the OEM, industrial buyer, or both. The items selected for market uncertainty are modifications of those employed by Wathne and Heide (2004) and Ghosh and John (2005, 2009). The use of a four item (α = .82) seven point Likert-type scale (strongly disagree to strongly agree), allowed the respondent to indicate relative agreement with statements indicating the predictability and frequency of changes or reengineering required for his or her firm’s product design or specifications, vis-à-vis this OEM and industrial buyer.

Performance ambiguity (PERAMB) is the component supplier’s difficulty in observing the installation, use, and performance assessment of its product by the OEM and industrial buyer. The four items (α = .89) selected for performance ambiguity are modifications of those employed by Ghosh and John (2005, 2009) and use a seven point Likert-type scale (strongly disagree to strongly agree) that allowed the respondent to indicate relative agreement with statements indicating higher levels of inability to observe the installation, use, performance, and performance assessment of the firm’s product.

As discussed, the main premise of the current study’s theoretical argument is that an increasing allocation of the component supplier’s marketing investment toward the industrial buyer increases both value maximizing and claiming, and that a number of market and exchange related factors moderate those relationships. A potential negative outcome of this strategy (i.e., spending less marketing on the OEM and more on the industrial buyer) is that it may strain and endanger the component supplier’s relationship with the OEM. Thus, it is argued that the importance of that relationship with the OEM can affect the component supplier’s governance behavior and must be controlled for in this analysis. As used by Ghosh and John (2005) and Heide and John (1990), a single-item measure of the length of the relationship was adopted, allowing respondents to estimate the length (in years) of their firms’ relationship with the OEM (OEMHIS: M = 15.9, SD = 15.1). Because the component supplier’s investment strategy can result in negative consequences with its direct customer, it is argued that the component supplier is taking a calculated strategic risk. As such, a characterization of strategic importance of the existing or potential relationship with the industrial buyer was also considered as a control factor.

A single-item measure, industrial buyer strategic importance (IBIMP: M = 5.3, SD 1.1), was adopted using a seven point Likert-type scale (strongly disagree to strongly agree) that allowed the respondent to indicate relative agreement that the industrial buyer is of high strategic importance to his or her firm.

Measure Validation: Descriptive indicators for measures appear in Table 1.1. A confirmatory factor analysis for all reflective items was conducted using SPSS Amos 20. The fit was determined reasonable with a root mean square of approximation (RMSEA) = .07, non-normed fit index (NNFI) = .92, and a comparative fit index (CFI) = .91 (Bagozzi and Yi 1988). All composite reliabilities are greater than or equal to .82, exceeding the recommended minimum of .70. All indicators loaded significantly on the intended latent constructs, demonstrating convergent validity and reliability. One reflective indicator for market uncertainty referring to product design predictability (item 1) exhibited a variance extraction of .39, so it was dropped. All other indicators show a variance extraction greater than or equal to .68, exceeding the recommended cut-off of .50 and demonstrated discriminant validity (i.e., the average variance extracted from each construct exceeded the correlation squared between the constructs) (Fornell and Larcker 1981).

Table 1.1
Measure Statistics and Correlation Matrix (Study One)

	M	SD	1	2	3	4	5	6	7	8
1. INVALL	52.46	15.88	(.95)							
2. MKTSTK	4.73	1.44	.26**	(.83)						
3. MKTUNC	3.78	1.44	-.08	.18*	(.82)					
4. PERAMB	3.15	1.44	.15	.11	.24**	(.89)				
5. VALMAX	4.54	1.18	.57**	.39**	.02	.15	(.87)			
6. VALCLA	4.27	1.16	.51**	.42**	-.01	.09	.64**	(.89)		
7. OEMHIS	15.91	15.14	.12	.02	-.13	-.06	.10	.07	N.A.	
8. IBIMP	5.32	1.12	.21**	.09	.02	-.07	.10	.14	.06	N.A.

* $p < .05$; ** $p < .01$; The composite reliability for each measure is on the diagonal. Single-item scales are denoted with N.A.

Common Method Variance Testing. The potential presence of common method variance (CMV) was tested in two ways. First, Harman's one-factor test identified multiple factors with eigenvalues greater than 1 in the unrotated factor structure, which suggests that CMV is not a concern (Podsakoff and Organ 1986). Second, a marker variable (MV) was selected as a proxy for method variance (Lindell and Whitney 2001). The variable selected was "respondent marketing budget responsibility," because it is theoretically unrelated to at least one of the study constructs. A single-item seven point Likert type scale (Strongly Disagree to Strongly Agree) allowed the respondent to indicate relative agreement with a statement indicating that he or she had responsibility for the firm's marketing budget. To estimate for CMV, the lowest positive correlation between the MV and one of the criterion variables ($\rho = 0.03$) was identified. This correlation was then partialled out of all other bivariate correlations to remove the effect of CMV. Because the zero-order correlations of the other variables remained significant, it was determined that CMV was minimal.

Model and Estimation. The model was estimated using ordinary least squares (OLS) regression. This is a generalization of a linear regression model that consists of several regression equations, in this case two, each having its own dependent variable. Each equation can be considered a valid linear regression and estimated separately, because although the error terms may not be assumed uncorrelated across the equations, each equation contains exactly the same set of regressors (Zellner 1962). To construct interactions with the four moderators, mean-centered variables were used. Thus, the coefficients (i.e., β's) reflect the effect of the predictor (i.e., investment allocation) at the mean level of the moderator (e.g., market stickiness). The mean-centering technique was employed for two reasons. First it avoids analyzing individual effects at the zero-level of the moderator, which may be considered outside of the relevant range of interest. Second, it aids in interpretation of the moderation effect of each moderator through its range (i.e., above and below the mean). The model equations are:

(1) $VALMAX = \alpha_1 + \beta_{11} (INVALL) + \beta_{12} (MKTSTK) + \beta_{13} (MKTUNC) + \beta_{14} (PERAMB) + \beta_{15} (MKTSTK)*(INVALL) + \beta_{16} (MKTUNC)*(INVALL) + \beta_{17} (PERAMB)*(INVALL) + \beta_{18} (OEMHIS) + \beta_{19} (IBIMP) + \varepsilon_1$

(2) $VALCLA = \alpha_2 + \beta_{21} (INVALL) + \beta_{22} (MKTSTK) + \beta_{23} (MKTUNC) + \beta_{24} (PERAMB) + \beta_{25} (MKTSTK)*(INVALL) + \beta_{26} (MKTUNC)*(INVALL) + \beta_{27} (PERAMB)*(INVALL) + \beta_{28} (OEMHIS) + \beta_{29} (IBIMP) + \varepsilon_2$.

Results

Table 1.2 contains the results for Models 1 and 2. Beginning with tests of the hypotheses, H_1 theorized a direct positive effect for investment allocation on value maximizing. The result of INVALL on VALMAX ($\beta = .488$, $p < .01$) therefore supports H_1. H_2 theorized a direct positive effect for investment allocation on value claiming. INVALL on VALCLA ($\beta = .404$, $p < .01$) supports H_2. In addition, although not specifically theorized, component supplier market stickiness (MKTSTK) had a significant positive effect on both value maximizing ($\beta = .288$, $p < .01$) and value claiming ($\beta = .353$, $p < .01$). The possible implications of this finding will be explored in the discussion section. No other moderators were determined to have a significant main effect on either dependent variable. In Model 1 (VALMAX as the dependent variable), H_{3a} theorized a positive moderating effect of market stickiness, and was not supported ($\beta = -.001$, n.s.). In the case of market uncertainty, H_{4a} hypothesized positive moderating effect, and was supported by the results ($\beta = .131$, $p < .05$). H_{5a} theorized a negative moderating effect of performance ambiguity, and was also supported by the results ($\beta = -.135$, $p < .05$). In Model 2 (VALCLA as the dependent variable), a positive moderating effect of market stickiness (H_{3b}) was not supported ($\beta = .010$, n.s.). The positive moderating effect of market uncertainty (H_{4b}) was supported ($\beta = .118$, $p < .05$), and a negative moderating effect of performance ambiguity (H_{5b}) was supported ($\beta = -.210$, $p < .01$).

Table 1.2
OLS Estimation Results (Study One)

A. Dependent Variable: Value Maximizing (VALMAX)

		Baseline Model		*Moderating Model*	
Independent Variables	*Effect*	β	*t-value*	β	*t-value*
INVALL	H_1: (pos.)	.503 **	7.282	.488 **	7.084
MKTSTK		.256 **	3.812	.288 **	4.248
MKTUNC		.007	.106	-.003	-.045
PERAMB		.051	.766	.065	.960
OEMHIS		.041	.636	.022	.339
IBIMP		-.032	-.489	-.037	-.566
Moderating Effects					
INVALL x MKTSTK	H_{3a}: (pos.)			-.001	-.022
INVALL x MKTUNC	H_{4a}: (pos.)			.131 *	1.983
INVALL x PERAMB	H_{5a}: (neg.)			-.135 *	-1.935
			R^2 = 37.4%		R^2 = 39.0%

B. Dependent Variable: Value Claiming (VALCLA)

		Baseline Model		*Moderating Model*	
Independent Variables	*Effect*	β	*t-value*	β	*t-value*
INVALL	H_2: (pos.)	.423 **	5.921	.404 **	5.753
MKTSTK		.321 **	4.620	.353 **	5.118
MKTUNC		-.036	-.517	-.040	-.570
PERAMB		.004	.064	.035	.507
OEMHIS		.005	.076	-.023	-.342
IBIMP		.024	.353	.020	.303
Moderating Effects					
INVALL x MKTSTK	H_{3b}: (pos.)			.010	.146
INVALL x MKTUNC	H_{4b}: (pos.)			.118 *	1.750
INVALL x PERAMB	H_{5b}: (neg.)			-.210 **	-2.949
			R^2 = 33.2%		R^2 = 36.6%

* $p < .05$; ** $p < .01$

To gain additional understanding of the possible importance of interaction effects in the relationship between investment allocation and value maximizing and claiming, two supplemental analyses were conducted. First, the incremental contribution of interaction effects on outcomes versus a direct effects-only model was considered. In the case of value maximizing, the adjusted R^2 improved slightly from 37.4% to 39.0% when interaction was added to the model. In the case of value claiming, the adjusted R^2 was improved from 33.2% to 36.6%. These increases suggest that the interactions are meaningful in explaining variation in outcomes from the marketing investment allocation strategies.

The second supplemental analysis further explored the interaction effects that were determined to be significant (H_{4a}, H_{4b}, H_{5a}, and H_{5b}) by applying the approach recommended by Schoonhoven (1981). First, controlling for all other factors generates an equation for the dependent variable based on the interaction factors (Equations 1, 3, 5, and 7). Then, the partial derivative is taken, resulting in an equation for the relationship (i.e., β) between the dependent variable and the direct effect factor, given the moderator (Equations 2, 4, 6, and 8).

H_{4a}: (1) VALMAX = .488 * (INVALL) + .131 * (INVALL) * (MKTUNC)

(2) $$\frac{\partial VALMAX}{\partial INVALL} = .488 + .131 * (MKTUNC)$$

H_{4b}: (3) VALCLA = .404 * (INVALL) + .118 * (INVALL) * (MKTUNC)

(4) $$\frac{\partial VALCLA}{\partial INVALL} = .404 + .118 * (MKTUNC)$$

H_{5a}: (5) VALMAX = .488 * (INVALL) - .135 * (INVALL) * (PERAMB)

(6) $$\frac{\partial VALMAX}{\partial INVALL} = .488 - .135 * (PERAMB)$$

H_{5b}: (7) VALCLA = .404 * (INVALL) - .210 * (INVALL) * (PERAMB)

$$(8)\ \frac{\partial VALCLA}{\partial INVALL} = .404 - .210 * (PERAMB)$$

Figure 1.3.A shows the positive multiplicative effect of market uncertainty on the relationship between investment allocation and value maximizing. Through the range of market uncertainty, higher levels increase the positive effect of investment allocation on value maximizing. Also, note that through the range of market uncertainty the interaction effect shows a monotonic pattern (Schoonhoven 1981), that is to say that the effect of investment allocation on value maximizing remains positive. Figure 1.3.B shows the positive multiplicative effect of market uncertainty on the relationship between investment allocation and value claiming. As with the previous interaction, through the range of market uncertainty the interaction effect shows a monotonic pattern. Figure 1.3.C shows the negative multiplicative effect of performance ambiguity on the relationship between investment allocation and value maximizing. Through the range of performance ambiguity, higher levels decrease the positive effect of investment allocation on value maximizing. Note that through the range of performance ambiguity, the interaction effect shows a non-monotonic pattern, suggesting that at the highest levels of performance ambiguity (controlling for all other factors) the effect of investment allocation on value maximizing changes from positive to negative. Figure 1.3.D shows the negative multiplicative effect of performance ambiguity on the relationship between investment allocation and value claiming. The graph also illustrates a non-monotonic pattern, and that the effect of investment allocation on value claiming is negative through a greater partition of the range of performance ambiguity.

Figure 1.3: Graphic Interpretation of Interaction Effects

A: Investment Allocation x Market Uncertainty on Value Maximizing (H_{4a})

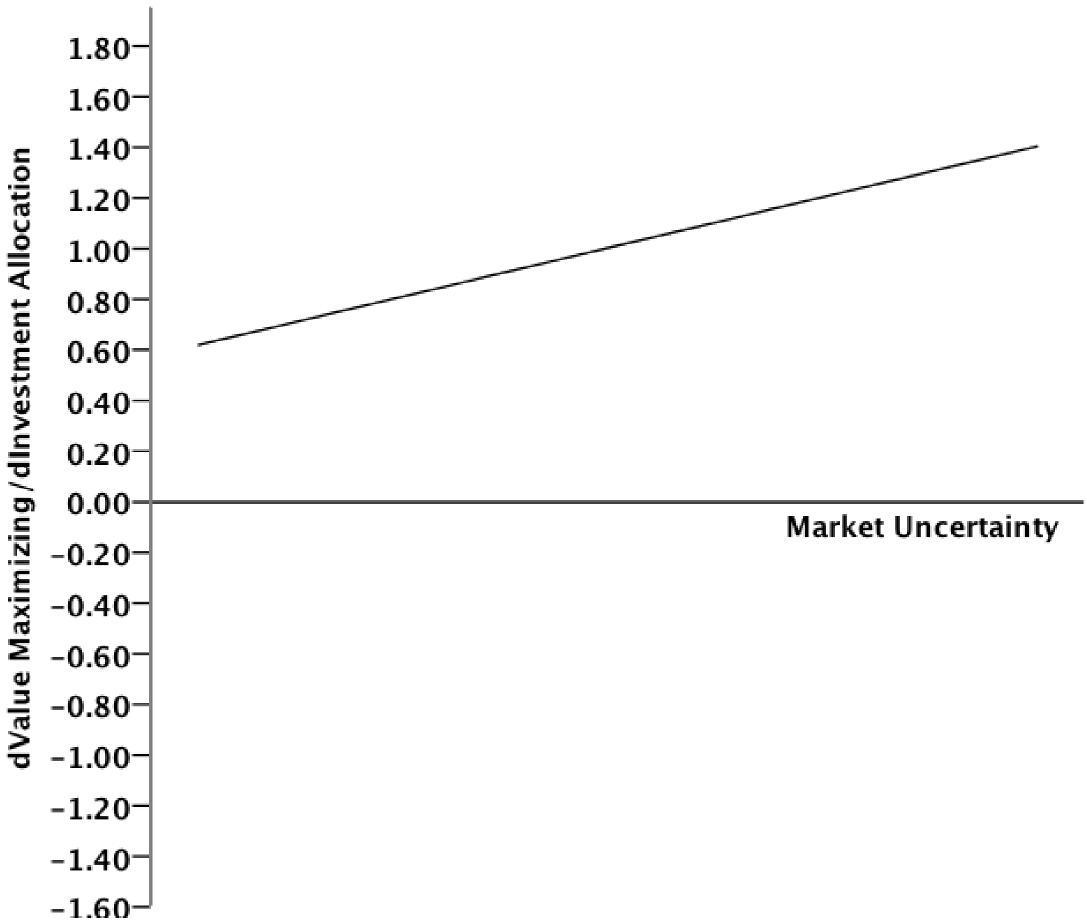


Figure 1.3 (cont'd)

B. Investment Allocation x Market Uncertainty on Value Claiming (H_{4b})

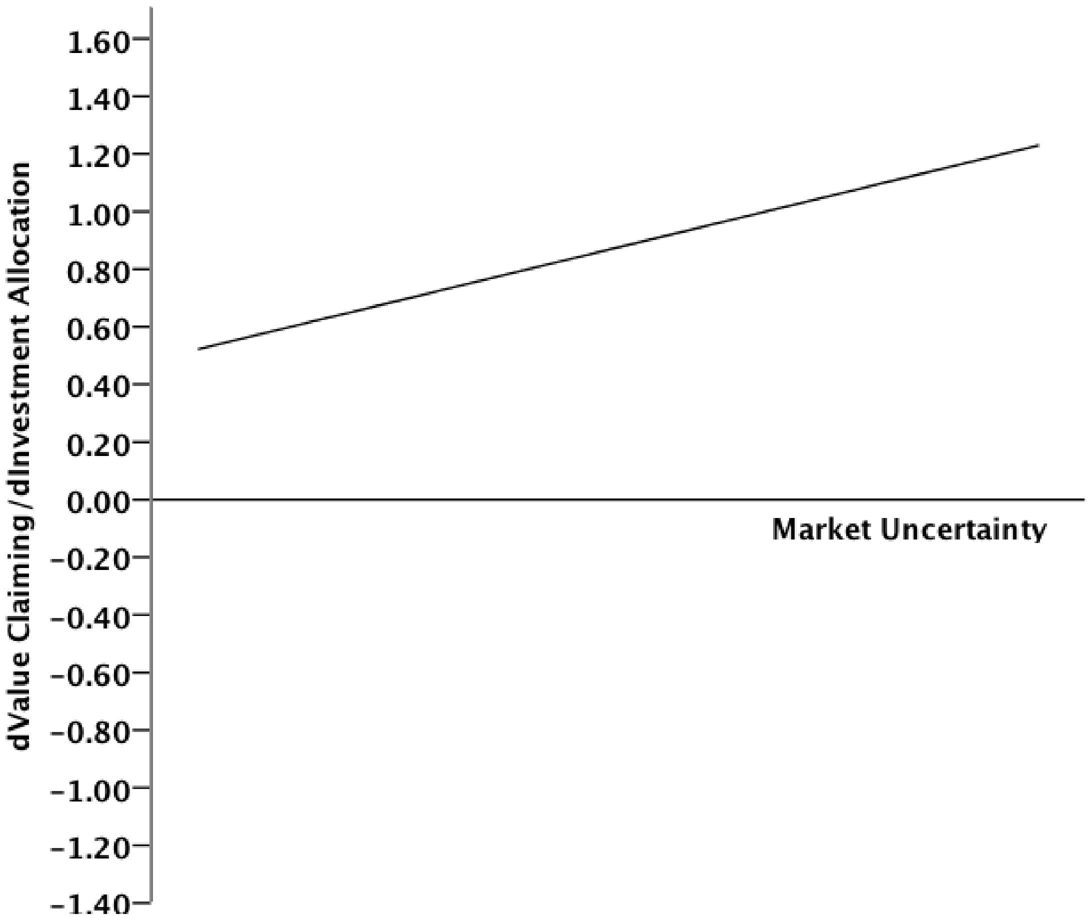


Figure 1.3 (cont'd)

C. Investment Allocation x Performance Ambiguity on Value Maximizing (H_{5a})

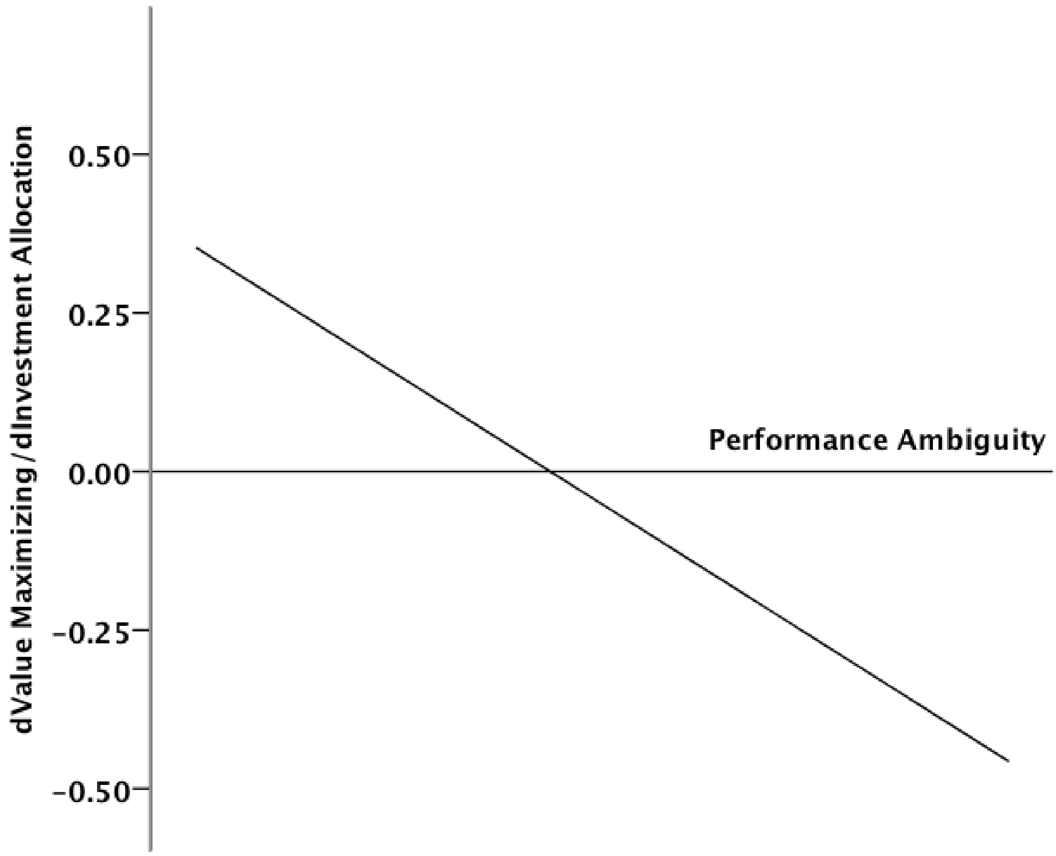
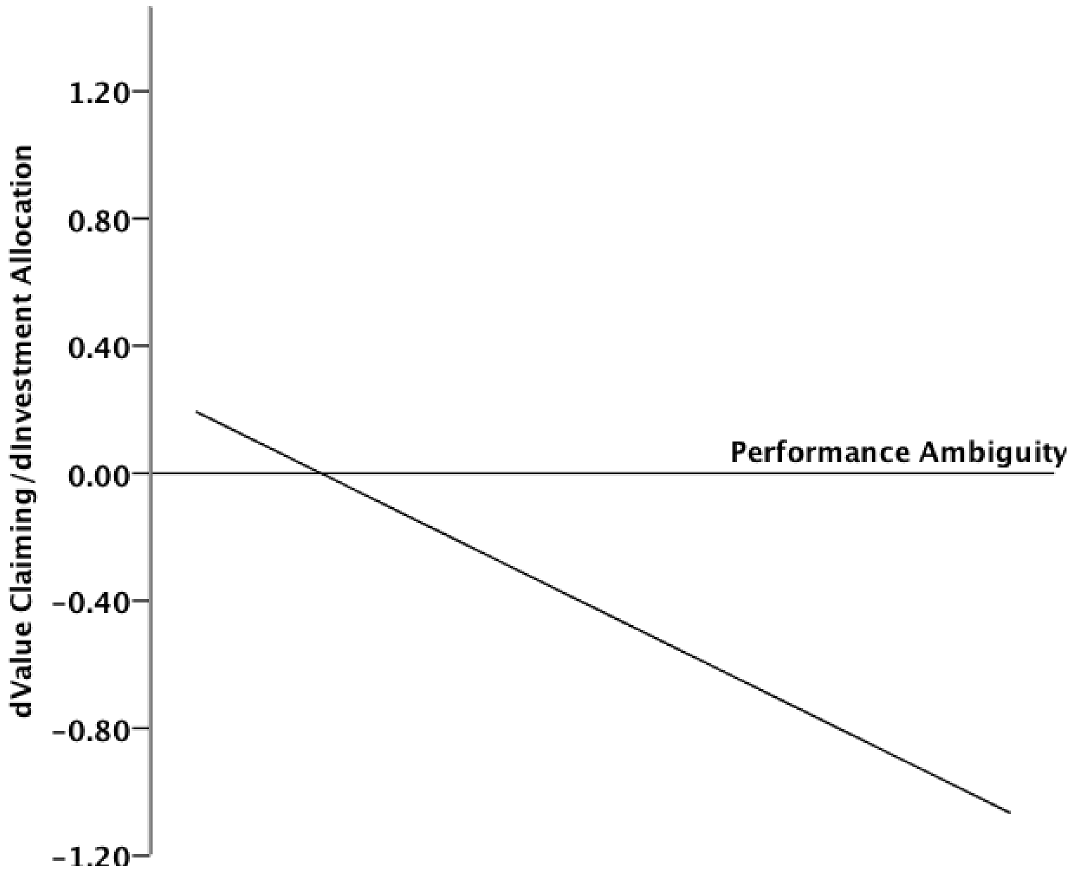


Figure 1.3 (cont'd)

D. Investment Allocation x Performance Ambiguity on Value Claiming (H_{5b})



Study Two

Central to this research is the understanding of the effects of a supplier’s marketing allocation strategy on certain outcomes. Specifically, the study considers the results of value maximizing activity (i.e., sales) and value claiming activity (i.e., profits) for the component supplier. Arguably these outcomes are related to the OEM’s response to the supplier’s allocation strategy, vis-à-vis the industrial buyer’s response to the supplier’s allocation strategy. Results of Study One suggest that as the component supplier increases the allocation of marketing investments toward the industrial buyer (i.e., decreasing the allocation toward the OEM), value maximizing and claiming increase. These findings would seem to confirm the theorization that increasing allocation toward the industrial buyer increases value, affords the component supplier some positional advantage, and therefore increases demand for the component supplier’s product. However, because “value” vis-à-vis the IB is neither quantified nor qualified in the study, beyond confirming the direct effect hypotheses there remain questions as to the causal mechanisms leading to an increase in value maximizing and claiming. Because the OEM is responding not only to the component supplier’s behavior, but also the industrial buyer’s behavior, Study Two investigates the causal effects of two forms of demand that originate with the industrial buyer to better understand the causal mechanisms. Specifically, the study investigates the effects of 1) a positive change in demand for the OEM’s product, and 2) an expressed specification by the industrial buyer for the component supplier’s product. A positive change of demand is of interest because it is not only the OEM’s presumed objective vis-à-vis the industrial buyer, but also because it can be a reflection of the component supplier’s value maximizing efforts with the industrial buyer. The industrial buyer may be placing more demand on the OEM as a result of its market success, because it is diverting sourcing from a competitive

OEM, or arguably both. In any case, the indication for an increased demand reflects a value-based decision by the industrial buyer. The second form of demand, the industrial buyer's specification to use the component supplier's product, is of interest because it may be considered a direct result of the component supplier's marketing objective to build brand equity with the industrial buyer. The specification not only suggests that a value-based bond (Srivastava, Shervani, and Fahey 1998) has been established, but that the component supplier's product possesses differentiation capability for the OEM (i.e., belief that incorporating the component supplier's product enhances the industrial buyer's perception of the OEM's product) (Ghosh and John 2009). The study investigates the four possible conditions represented by the two demand mechanisms (i.e., static demand/demand increase and no specification/component supplier specified).

In the first condition, the industrial buyer advises the OEM that demand will be static and that it does not have a preferred or specified component supplier. Beyond extending the relationship with the OEM, the fact that demand is static is not necessarily a positive or negative indication as to the effects of value maximizing efforts by the OEM or component supplier. Palmatier, Gopalakrishna, and Houston (2006) point out that not all business-to-business relational marketing programs are effective, nor do they produce consistent results. It may also be true that the value maximizing efforts of the OEM or component supplier have had a positive effect on retaining the industrial buyer's business. The lack of specification in this condition suggests that the investment allocation strategy by the component supplier has not led to a value-based bond with the industrial buyer, nor manifests component supplier brand equity. For the purpose of this analysis, this combination of demand mechanisms from the industrial buyer (i.e., status quo), will serve as the baseline for comparison of the OEM's behavior in other demand conditions.

In the next condition, the industrial buyer advises the OEM that it requires an increase in demand, and that it does not have a preferred or specified component supplier. In this case it is unclear if the increased demand is attributable to the component supplier's marketing investment toward the industrial buyer or some other factors. If the marketing investment had led to a value-based bond (Srivastava, Shervani, and Fahey 1998) between the component supplier and industrial buyer, it has apparently not resulted in a market-based asset (e.g., brand equity) that can be leveraged by the component supplier. As such, there is no reason for the OEM to conclude a causal connection between the projected increase in demand for the OEM's product and the relationship between the component supplier and the industrial buyer. Finally, the OEM has no basis to conclude that the component supplier's product possesses "differentiation capability" (Ghosh and John 2009) vis-à-vis the industrial buyer. Because the OEM already incorporates the component supplier's product, there is no apparent motivation for the OEM to source from another component supplier, so it is theorized that it will proportionally increase its unit purchases of the component supplier's product (i.e., increase value maximizing). Because greater product volume may enhance the OEM's negotiating strength with the component supplier, it is theorized that the component supplier may realize lower percent profit on increased sales, and thus value claiming (i.e., profits on sales to the OEM) may not necessarily change. More formally:

> H_6: *In comparison to the static demand/no specification condition, the OEM's response to an increase in demand with no specification for the component supplier results in the component supplier achieving a) a higher level of value maximizing, and b) the same level of value claiming.*

In the third condition, the industrial buyer advises the OEM that it requires no increase in demand, and that it does require the OEM to utilize the component supplier's product. In this case the OEM has a definitive indication that the component supplier has established a level of brand equity with the industrial buyer. In addition, because there is an explicit preference by the industrial buyer for the component supplier's product, the OEM may conclude that the component supplier's product possesses "differentiation capability" (Ghosh and John 2009) vis-à-vis the industrial buyer. Because the industrial buyer's mandate leaves the OEM little choice but to continue using the component supplier's product, it may be argued that the component supplier may leverage it's brand equity to gain more favorable pricing or terms with the OEM (Srivastava, Shervani, and Fahey 1998). Thus, it is theorized that value maximizing will remain unchanged, but value claiming will increase. (Note: More favorable pricing would potentially increase dollar sales, which is one of the measures for value maximizing. For the purpose of these hypotheses, it is not necessarily assumed that pricing is the mechanism for increasing value claiming.) More formally:

> *H_7: In comparison to the static demand/no specification condition, the OEM's response to static demand but a specification for the component supplier results in the component supplier achieving a) the same level of value maximizing, and b) a higher level of value claiming.*

Finally, in the last condition, the industrial buyer advises the OEM that it requires an increase in demand and that it requires the OEM to utilize the component supplier's product. In this condition the OEM again has an indication that the component supplier has established brand equity with the industrial buyer and that the component supplier's product possesses "differentiation capability" (Ghosh and John 2009) vis-à-vis the industrial buyer. In addition, the OEM may speculate that there is a causal connection between the projected increase in demand for the OEM's product and the value-based bond between the component supplier and industrial buyer. Because the OEM already incorporates the component supplier's product, it is theorized that the OEM will proportionally increase its unit purchases of the component supplier's product (i.e., increase value maximizing). In light of the industrial buyer's mandate, any leverage gained by the OEM as a result of greater product volume is arguably offset. Thus, it is theorized that value claiming (i.e., the component supplier's profits) will also increase with increased purchases. More formally:

> H_8: *In comparison to the static demand/no specification condition, the OEM's response to a demand increase and a specification for the component supplier results in the component supplier achieving a) a higher level of value maximizing, and b) a higher level of value claiming.*

Experimental Design

The study was structured as a between-subjects analysis with four cells in a two by two matrix. Each cell represents a combination of the two manipulations of interest, industrial buyer demand for the OEM product (static or 25% increase) and industrial buyer brand preference for the component supplier (no specification or specification for use). Through interviews with practitioners, it was determined to use a 25% increase in demand because it is sufficiently large enough to fall outside of what most would consider a "typical" increase for industrial equipment. The respondent was asked to anchor his or her responses on an existing triad in which the component supplier's product is integrated into the OEM's product and sold to the industrial buyer, and in which the component supplier commits some level of marketing investment toward the industrial buyer. This approach is similar to that used by Ganesan et al. (2010), and is effective for a comparative analysis because it allowed for the manipulation of the demand factors in an actual multi-dyadic context of the respondent's choosing. The respondent was also informed that the purpose of the study was to understand the behavior of OEMs when component suppliers commit marketing investments toward downstream industrial buyers.

In the scenario, after identifying a component supplier and industrial buyer, (see Appendix 1.B for exact wording), the respondent was asked to envision a situation where his or her firm is negotiating a purchase agreement for the upcoming year and the industrial buyer has indicated it will require the same number of units next year [a 25% increase in the number of units] as in the current year. In addition, the customer has indicated no preference for any specific component supplier to be utilized by the respondent's firm [that the respondent's firm must utilize the component supplier previously identified] in relation to its order**.** The respondent was then asked to respond to all measures (i.e., supplier investment allocation, market stickiness, market uncertainty, performance ambiguity, value maximizing and value claiming). Note that the measures for value maximizing and claiming required the respondent to anticipate the behavior of the firm given the information in the scenario.

Method

Sample Characteristics and Data Collection. The empirical context of Study Two is the behavior of OEMs in multi-dyadic supply chain structures. The hypotheses were tested using an experimental design and employed a web-based mechanism (Qualtrics) administered to qualified key informants, identified and incentivized through a market research firm, Research Now (e-Rewards). Field interviews were conducted with 6 industry managers, to establish the substantive relevance of the causal mechanisms. From these interviews and previous empirical research, the experimental design (Appendix 1.B), was generated and then pretested online with 21 industry managers (identified through the author's professional network) to assess wording, response formats, structure, and understandability. Based on the feedback provided by these managers, the scenarios and survey items were finalized and formatted for implementation.

Members of the Research Now national respondent pool were sent an invitation to participate in an online survey regarding business-to-business marketing, resulting in 843 potential respondents. Based on two qualifying questions (i.e., industry and firm type), 320 (38%) respondents were determined to be qualified, of which 143 (45%) completed the survey. To be qualified, the respondent had to be a manager at a firm in one of the industries previously identified (i.e., Study One) and a firm that may be considered an OEM. Each respondent was randomly assigned to one of four cells in the two by two matrix; each cell representing a combination of the two manipulations of interest, industrial buyer demand for the OEM product (i.e., static or a 25% increase) and industrial buyer brand preference for the component supplier (i.e., no specification or specified). This study incorporated the measures employed in Study One, with some modifications for context (Appendix 1.C). Of the 143 completed surveys, 5 were determined to be unusable due to incomplete answers, resulting in a sample size of 138 (Condition 1: 33 responses, Condition 2: 35 responses, Condition 3: 36 responses, Condition 4: 34 responses), an effective response rate of 43%. Because the experiment was taken by respondents online in response to an invitation to do so, the date and time of each response was available and allowed for examination of nonresponse bias. Following Armstrong and Overton (1977), early and late respondents (mean comparisons repeated for the first 25%, 33%, and 50% versus the last 25%, 33%, and 50% of respondents) were compared for all variables. No significant differences ($p < 0.05$) were found.

Table 1.3
Measure Statistics and Correlation Matrix (Study Two)

Cond. 1	M	SD	1	2	3	4	5	6	7	8
1. INVALL	40.61	32.45	(.93)							
2. MKTSTK	4.34	1.46	-.07	(.85)						
3. MKTUNC	3.89	1.15	.24	.28	(.73)					
4. PERAMB	3.11	1.79	.17	.16	.21	(.87)				
5. VALMAX	4.75	0.85	.56**	.39*	.30	.18	(.86)			
6. VALCLA	4.57	1.22	.55**	.45**	.24	.13	.49**	(.82)		
7. SUPHIS	15.90	15.00	-.10	.32	-.14	-.23	.02	.07	N.A.	
8. SUPIMP	5.27	1.07	-.20	.42*	.44**	-.07	.30	.41*	.24	N.A.

Cond. 2	M	SD	1	2	3	4	5	6	7	8
1. INVALL	54.90	29.12	(.93)							
2. MKTSTK	5.01	1.16	-.24	(.84)						
3. MKTUNC	3.75	1.29	-.11	-.16	(.76)					
4. PERAMB	2.79	1.67	.24	-.31	.04	(.85)				
5. VALMAX	5.36	.98	.57**	.41*	.05	.11	(.85)			
6. VALCLA	4.41	.96	.52**	.57**	-.16	.11	.49**	(.80)		
7. SUPHIS	12.50	8.34	.15	-.18	-.18	-.11	.31	.07	N.A.	
8. SUPIMP	5.39	0.93	-.04	-.06	-.33	.06	.36*	.53*	.14	N.A.

Cond. 3	M	SD	1	2	3	4	5	6	7	8
1. INVALL	51.79	32.67	(.95)							
2. MKTSTK	3.80	1.37	-.08	(.82)						
3. MKTUNC	3.67	1.34	-.16	.31	(.78)					
4. PERAMB	3.24	1.43	.02	.23	.20	(.83)				
5. VALMAX	4.76	1.02	.53**	.32*	-.07	-.09	(.82)			
6. VALCLA	5.25	.94	.42*	.45**	-.01	.09	.71**	(.79)		
7. SUPHIS	16.76	12.70	-.17	-.36*	-.16	-.37	.01	.12	N.A.	
8. SUPIMP	5.78	.97	-.03	.18	-.16	-.04	.16	.18	.12	N.A.

Cond. 4	M	SD	1	2	3	4	5	6	7	8
1. INVALL	45.94	27.71	(.91)							
2. MKTSTK	4.63	1.36	.18	(.81)						
3. MKTUNC	4.19	1.30	.11	.36*	(.76)					
4. PERAMB	3.77	1.51	.02	.24	.22	(.82)				
5. VALMAX	5.49	.80	.59**	.35*	-.07	.02	(.82)			
6. VALCLA	5.41	.78	.52**	.41**	.06	-.16	.57**	(.79)		
7. SUPHIS	16.38	16.05	.29	.01	.11	-.18	.10	.02	N.A.	
8. SUPIMP	5.49	.87	.07	.24	.18	-.12	.20	.52*	.27	N.A.

* $p < .05$; ** $p < .01$; The composite reliability for each measure is on the diagonal. Single-item scales are denoted with N.A.

Measure Validation: Descriptive indicators for measures appear in Table 1.3. Convergent validity and reliability were tested; all indicators loaded significantly on the intended latent constructs and all composite reliabilities were greater than or equal to .73, exceeding the recommended minimum of .70. All other indicators show a variance extraction greater than or equal to .65, exceeding the recommended cut-off of .50, and demonstrated discriminant validity (i.e., the average variance extracted from each construct exceeded the correlation squared between the constructs) (Fornell and Larcker 1981).

Common Method Variance Testing. As in Study One, Harman's one-factor test identified multiple factors with eigenvalues greater than 1 in the unrotated factor structure, which suggests that CMV is not a concern (Podsakoff and Organ 1986). In addition, a marker variable was selected as a proxy for method variance (Lindell and Whitney 2001). The variable selected is "respondent marketing budget responsibility," for which the lowest positive correlation between the MV and one of the criterion variables ($\rho = 0.04$) was identified. This correlation was then partialled out of all other bivariate correlations to remove the effect of CMV. Because the correlations of the other variables remained significant, it was determined that CMV was minimal.

Table 1.4
MANCOVA Results (Study Two)

A. *Demand +25% and No Specification* compared *to Static Demand and No Specification*

M.V. Tests	Wilks' Λ	*F*	*df*	Error *df*	Partial η^2	Obs. Power
Covariate	(Sig.)					
INVALL	.792	.229	2	59	.008	.084
MKTSTK	.011 *	4.884	2	59	.146	.783
MKTUNC	.389	.957	2	59	.032	.205
PERAMB	.364	1.036	2	59	.035	.223
SUPIMP	.003 **	6.481	2	59	.185	.891
SUPHIS	.383	.976	2	59	.033	.213
Group	.001 **	7.942	2	59	.218	.946

B.G. Tests	*F*	Sig.	Scheffe	Group	Means	95.0 % C.I. Lower	Upper
VALMAX (H_{6a})	8.074	.006 **	.058 [a]	1	4.728	4.404	5.048
				2	5.397	5.072	5.720
VALCLA (H_{6b})	1.689	.201	.940	1	4.654	4.310	4.994
				2	4.329	3.980	4.668

B. *Static Demand and Supplier Specification* compared *to Static Demand and No Specification*

M.V. Tests	Wilks' Λ	*F*	*df*	Error *df*	Partial η^2	Obs. Power
Covariate	(Sig.)					
INVALL	.087	2.538	2	60	.082	.489
MKTSTK	.190	1.720	2	60	.057	.347
MKTUNC	.364	1.026	2	60	.035	.220
PERAMB	.922	.083	2	60	.003	.061
SUPIMP	.063	2.871	2	60	.091	.543
SUPHIS	.979	.016	2	60	.001	.057
Group	.046 *	3.270	2	60	.103	.600

B.G. Tests	*F*	Sig.	Scheffe	Group	Means	95.0 % C.I. Lower	Upper
VALMAX (H_{7a})	.013	.913	.999	1	4.789	4.440	5.137
				3	4.758	4.410	5.101
VALCLA (H_{7b})	4.161	.044 *	.069 [a]	1	4.610	4.234	4.985
				3	5.180	4.798	5.551

[a] $p < .10$; * $p < .05$; ** $p < .01$

Table 1.4 (cont'd)

C. *Demand +25% and Supplier Specification* compared *to Static Demand and No Specification*

M.V. Tests	Wilks' Λ	*F*	*df*	Error *df*	Partial η^2	Obs. Power
Covariate	(Sig.)					
INVALL	.963	.040	2	58	.005	.057
MKTSTK	.873	.136	2	58	.004	.072
MKTUNC	.999	.001	2	58	.001	.050
PERAMB	.689	.375	2	58	.013	.107
SUPIMP	.007 **	5.245	2	58	.155	.819
SUPHIS	.743	.292	2	58	.010	.093
Group	.003 **	6.161	2	58	.178	.878

B.G. Tests	*F*	Sig.	Scheffe	Group	Means	95.0 % C.I.	
						Lower	Upper
VALMAX (H_{8a})	9.304	.003 **	.025 *	1	4.775	4.477	5.072
				4	5.423	5.127	5.721
VALCLA (H_{8b})	8.928	.003 **	.014 *	1	4.610	4.270	4.950
				4	5.340	5.001	5.680

D. *Four Groups*

M.V. Tests	Wilks' Λ	*F*	*df*	Error *df*	Partial η^2	Obs. Power
Covariate	(Sig.)					
INVALL	.869	.140	2	127	.002	.070
MKTSTK	.208	1.596	2	127	.026	.332
MKTUNC	.504	.683	2	127	.011	.159
PERAMB	.770	.263	2	127	.004	.090
SUPIMP	.001 **	11.195	2	127	.156	.989
SUPHIS	.719	.330	2	127	.006	.105
Group	.001 **	8.965	6	254	.182	.990

B.G. Tests	*F*	Sig.	Scheffe	Group	Means	95.0 % C.I.	
						Lower	Upper
VALMAX	5.461	.001 **	N.A.	1	4.775	4.454	5.093
				2	5.433	5.100	5.766
				3	4.750	4.429	5.078
				4	5.409	5.090	5.735
VALCLA	7.744	.001 **	N.A.	1	4.614	4.294	4.936
				2	4.355	4.019	4.695
				3	5.223	4.896	5.556
				4	5.352	5.026	5.679

[a] $p < .10$; * $p < .05$; ** $p < .01$

Between Groups Testing. In order to determine if a difference between groups exists, multivariate analysis of covariance (MANCOVA) was employed. MANCOVA is a special case of "set" correlation analysis and a realization of the general multivariate linear model (Cohen, Cohen, West, and Aiken 2003, pg. 608). This technique allows for the analysis of differences in a set of dependent variables across a series of groups formed by one or more categorical variables, in this case two variables and four groups (i.e., demand and component supplier specification). As there is more than one categorical group, MANCOVA allows for the analysis of interaction between the treatment variables. Finally, MANCOVA allows for the reduction of effects from covariates that may affect only a portion of the respondents or may vary among respondents. In this case all independent and control variables from Study One were used as covariates in the analysis, and SPSS Statistic v20.0.0 was employed for analysis.

Results

The results of the MANCOVA and post hoc analyses are summarized in Table 1.4. Supportive of H_{6a} and H_{6b}, a comparative difference in the means for value maximizing between an increase in demand/no specification (M = 5.397) and static demand/no specification (M = 4.728) was determined to be significant (Wilks' Λ = .001, F = 8.074, p < .01, Scheffe = .058), and not significant for the means (M = 4.329 and 4.654 respectively) for value claiming (Wilks' Λ = .001, F = 1.689, p = .201, Scheffe = .940). Supportive of H_{7a}, a comparative difference in the means for value maximizing between static demand/component supplier specified (M = 4.758) and static demand/no specification (M = 4.789) was not significant for value maximizing (Wilks' Λ = .045, F = .013, p = .913, Scheffe = .999). Supportive of H_{7b}, a comparative difference in the means (M = 5.180 and 4.610 respectively) was significant for value claiming

(Wilks' Λ = .045, F = 4.161, $p < .05$, Scheffe = .069). Supportive of H_{8a}, a comparative difference in the means for value maximizing between increased demand/component supplier specified (M = 5.423) and static demand/no specification (M = 4.775) was significant (Wilks' Λ = .004, F = 9.304, $p < .01$, Scheffe = .025). Supportive of H_{8b}, a comparative difference in the means (M = 5.340 and 4.610 respectively) was also significant for value claiming (Wilks' Λ = .004, F = 8.928, $p < .01$, Scheffe = .014).

To validate a sufficient sample size for each cell, a power analysis was conducted using Cohen's *d*. For the four findings of significant differences between groups, Cohen's *d* averaged .73, suggesting a "medium" to "large" effect, where medium is consider .50 and large is considered .80 (Rosenthal and Rosnow; 2008, pg. 365). At a power of .80 (p = .05, one-tailed), the recommended sample size per cell is 50 for a medium effect and 20 for a large effect, thus the sample size of 33 to 36 per cell was considered adequate. Observed power, calculated by SPSS, resulted in an average value of .75 for the four significant findings.

Discussion

This research was motivated by a desire to enhance understanding of interfirm behavior and the performance outcomes associated with that behavior. Specifically, the studies were aimed at analyzing how a component supplier's strategy of allocating its marketing investment between direct and downstream customers influenced its value maximizing and claiming. As such, the following research questions were proposed. In an industrial supply chain involving three relational dyads: 1) what are the effects of the component supplier's allocation of marketing investments (between the OEM and industrial buyer) on its ability to maximize and claim value (i.e., sales and profits respectively); and 2) how do market and exchange factors (i.e., supplier market stickiness, market uncertainty, and performance ambiguity) moderate those relationships? The findings offer insights into these issues and provide significant implications for marketing academics and practitioners.

Theoretical Implications

Regarding the first question, the findings in Study One confirm that the allocation of marketing investments toward industrial buyers positively influences both value maximizing and value claiming for the component supplier. The findings also suggest it is a common practice in technology driven industries for component suppliers to employ a strategy of allocating their marketing investments between direct OEM customers and downstream industrial buyers (INVALL: M = 52.46, SD = 15.88). Focusing on the component supplier's allocation of marketing investments between direct and downstream customers, and empirically studying the value related outcomes in this context, enhances GVA's normative suggestion that firms should economize on opportunity costs and thereby pursue investment opportunities with the greatest potential for value maximization (Ghosh and John 1999; Williamson 1996). It also leads to a deeper understanding of the complexity and implications of that decision, and confirms that outcomes in one dyad can also be influenced by behavior in adjacent dyads (e.g., the industrial buyer increasing demand for the OEM's product and specifying component suppliers). Accordingly, while dyadic research has and will provide valuable insights, this research supports the assertion that interfirm behavioral research should consider the implications of multi-dyadic structures in order to gain a more complete understanding of the salient causal mechanisms. In this case, because the behavior was within all three dyads it was possible to draw the broader conclusion that not only does behavior in one dyad influence behavior in an adjacent dyad, but that there are specific causal mechanisms that trigger contingency behavior among all of the triad actors. This was illustrated by findings in Study Two that demand influenced the OEM's behavior toward the component supplier differently, depending on the presence of a specification for the component supplier from the industrial buyer. Demand alone led to higher value maximizing for the component supplier, but not necessarily higher value claiming. Combined with a specification, however, increased demand also led to increased value claiming. This result confirms that the OEM behaves differently toward the component supplier, depending on how it perceives the impact of the component supplier's behavior toward the industrial buyer. These findings in the multi-dyadic context thus allowed for an extension of the GVA paradigm and greater insights than past empirical studies.

The results also confirm that component suppliers' value maximizing and claiming are similarly affected by the level of allocation toward the industrial buyer, and that component suppliers are not only able to influence demand for their product, but are also able to claim profits associated with that value enhancement. This finding confirms the assertion by Srivastava, Shervani, and Fahey (1998) that firms can build a value-based bond with other firms that result in market based assets (e.g., brand equity) that may be leveraged by the firm initiating the bond. Specifically, it was demonstrated in Study Two that the presence of a specification for the component supplier positively influenced the OEM's anticipation of the component supplier's level of value claiming (i.e., profits). The findings also suggest that the presence of a specification for the component supplier, serving as a proxy for what Ghosh and John (2009) refer to as "differentiating capability," can lead to a stronger position for the component supplier that may be leveraged to protect or enhance profits. This causal relationship was demonstrated when it was shown that static demand combined with a specification led to the OEM anticipating higher value claiming for the component supplier, when compared to the static demand combined with no specification for the component supplier. As observed in Study Two results, performance outcomes for the component supplier are not necessarily a direct result of the component supplier's allocation strategy, but rather may be a result of the behavior of the OEM toward the component supplier, relative to the behavior of the industrial buyer toward the OEM. More specifically, Study Two allowed for the determination of two factors that explain why, as determined in Study One, increased allocation toward the industrial buyer led to higher value maximizing and value claiming. Increased allocation toward the industrial buyer can lead to increased value maximizing for the component supplier, if it can be associated with an increase in demand for the OEM's product from the industrial buyer. Further, increased allocation toward the industrial buyer can lead to increased value claiming for the component supplier, if it can be associated with an expressed brand preference by the industrial buyer for the component supplier's product. In summary, the combined studies allowed for the determination of a relationship between an important marketing decision (i.e., allocation of marketing investments) and firm outcomes (i.e., value maximizing and claiming), but also demonstrated the influence of two key underlying demand conditions (i.e., increased demand and brand preference).

The second research question allowed for an extension of the current strategy literature by providing additional empirical analyses of the moderating effects of a key market factor (i.e., market stickiness) and prominent exchange factors (i.e., market uncertainty and performance ambiguity) on value maximizing and claiming behavior between firms. From a theoretical perspective, GVA maintains that strategic positioning, resources, exchange factors, and governance mechanisms are all interdependent and concurrently considered by a firm in the choices it makes and behavior it displays. Further, it is the interaction and alignment of these factors that may determine the performance of a firm at a given time, in a given market, having established a strategic position in that market. Having operationalized value maximizing and claiming as the respondent's perception of sales and profits respectively, the studies allowed for the testing of GVA's contingency framework, and tied it to component suppliers' performance measures. In Study One, market stickiness demonstrated a significant positive effect on both value maximizing and value claiming and showed a lack of significance as a moderator, suggesting (albeit not hypothesized) that the component supplier's market stickiness directly affects value maximizing and claiming. This result affirms the suggestion of Ghosh and John (1999) that a firm's decisions relating to their product offering are strategic and transcend other decision making, such as in this case the firm's allocation of marketing investments. The results suggest that the "stickiness" of the component supplier's product improves its value maximizing and claiming, independent of its allocation strategy. Further, the positive correlation between market stickiness and investment allocation may suggest that the "stickiness" of the component supplier's may influence the component supplier's investment allocation.

Unlike market stickiness, market uncertainty was shown to be a positive moderator as theorized, a finding that suggests that while GVA considers market uncertainty as a potential source of increased costs (i.e., due to maladaptation and product obsolescence) (Ghosh and John 2009, Williamson 1996), it may also be regarded by some firms as an opportunity for value maximizing behavior. That is, a firm's perception and behavior regarding higher levels of market uncertainty may depend on the nature and source of uncertainty. In the context of these studies, the nature of uncertainty was the component supplier's product design and source was either the OEM or industrial buyer, or both. Because the component supplier is selling its product directly to the OEM, while seeking to establish a value-based bond (Srivastava, Shervani, and Fahey 1998) with the industrial buyer, it is plausible it regards market uncertainty as a positive influence on its ability to leverage the bond into higher value maximizing and claiming. In short, market uncertainty in industrial supply chains should not necessarily be regarded as a source of cost to be economized, but rather a factor that may serve to provide for value maximizing and claiming. The studies thus demonstrate that the contingency approach to behavioral analysis provided for by GVA is effective in determining a more in-depth understating of the implications of market uncertainty.

In the case of performance ambiguity, the observed negative moderation effect confirms that the inability to measure value given and received is undermining to value maximizing and claiming, and therefore fundamental to the understanding of interfirm behavior and market governance structures (Ghosh and John 1999; Williamson 1996). Specifically, component suppliers' difficulty in observing the installation, use, and performance assessment of its product by the OEM and industrial buyer was regarded as a threat to their ability to build and leverage value-based bonds with industrial buyers. In fact, the non-monotonic nature of this moderator suggests that at higher levels of performance ambiguity, the effect of the component supplier's investment allocation on value claiming changes from positive to negative. This is a particularly interesting finding because it reinforces the argument that regardless of the potential value that may be generated from value maximizing activities, the ability to claim value is undermined by high levels of performance ambiguity. Thus, the component supplier is sensitive to high levels of performance ambiguity and is not able to take advantage of it, as they may with market uncertainty. Again, this finding extends the GVA literature and demonstrates the importance of contingency analysis vis-à-vis the study of interfirm behavior.

Study Two also provided the opportunity to consider other demand related factors in the context of GVA's contingency framework. The addition of two demand conditions in Study Two, one focused on the OEM (i.e., demand) and one focused on the component supplier (i.e., specification), provided a more in depth analyses of potential triggers underlying contingency behavior. By manipulating combinations of the two conditions, it was demonstrated that in order to better understand contingency behavior and balancing of GVA factors by firms, it is necessary to identify and test the conditions that are manifest in the context of the particular study. In this research it was determined that the OEM's behavior toward the component supplier can be different depending on the combination of demand for its product and a specification for the component supplier's product. As Ghosh and John (1999) point out, GVA is a "middle-range model" that allowed for the investigation of individual marketing strategy choices (e.g., allocation of marketing investments) and the contingent behavior of another firm, that influenced the outcomes (e.g., value maximizing and claiming) of those marketing strategy choices. The analysis of two conditions that may influence behavior in Study Two utilizes the GVA model as suggested by Ghosh and John (1999).

Managerial Implications

Studies One and Two suggest a number of normative implications for component suppliers. First, an allocation of marketing resources toward downstream customers may be effective in generating higher profits if the initiative results in a value-based bond that may also be considered a market-based asset. Firms that invest marketing resources toward an objective of establishing a relational bond must consider what forms the foundation of that bond. As Palmatier, Gopalakrishna, and Houston (2006) point out, relationship marketing programs vary in the bonds that they build and the returns they generate. In the case of this research, the specification for the component supplier served as a clear indicator of a market based asset, brand equity. Without the specification, the component supplier, regardless of the level of demand, did not necessarily realize higher profits. In short, marketing strategists should determine how and if a market based asset can be developed through an allocation strategy, and what that asset will be.

Second, market stickiness also appears to be an important antecedent to value maximizing and claiming, suggesting that it is critical for component suppliers to be capable of accurately assessing their relative market stickiness. As market stickiness is defined in these studies, how imitable and substitutable a firm's product is in comparison to competitors and other technologies may be as much of a determinant of successful value maximizing and claiming activity, as is the firm's marketing investment strategy. More specifically, component suppliers that place a greater emphasis on evaluating their product "stickiness," should see more predictable and better outcomes than component suppliers that place less emphasis that evaluation. It also reinforces that the component supplier's market position (i.e., value offering) must be consistent with the stickiness of its products (Ghosh and John 1999), as well as consistent with the value-based bond it seeks to establish with direct and downstream customers.

Another implication, related to certain forms of market uncertainty, is that component suppliers should not shy away from conditions where direct and downstream customers require frequent and substantive changes in product design and requirements. This approach may be counter intuitive to some firms, but the results suggest that this type of uncertainty may provide an opportunity for the component supplier to build a stronger value-based bond with the industrial buyer that leads to increased brand equity for the component supplier that may be leveraged into higher sales and profits (Srivastava, Shervani, and Fahey 1998). It also suggests that component suppliers should not only consider market uncertainty relative to their marketing allocation strategy, but also to their market stickiness. Specifically, do the products that make the firm "more sticky," align with the prevailing degree of market uncertainty? Further, it suggests that skills that allow for flexibility and adaptability should be considered if the component supplier is to regard conditions of market uncertainty as market opportunities. Finally, component suppliers should consider that OEMs may respond to demand from downstream industrial buyers differently and the combinations of those mechanisms differently. Although in this research there were just two demand conditions studied, it was still shown that the OEM's responses to demand alone, a specification for the component supplier alone, and the two combined, were different. In short, if the component supplier is able to determine what type of demand is occurring between the industrial buyer and OEM, then it may be more likely to correctly anticipate the OEM's future behavior.

Limitations and Research Directions

This study has several limitations, which are addressed in combination with suggested future research directions. First, Study One takes a linear approach to the relationship between the component supplier's allocation of marketing investments toward the industrial buyer and the two outcome measures, value maximizing and value claiming. While this approach provides some significant and important findings, further research in this area may be enhanced by considering the relationships as curvilinear, and therefore seek to establish how component suppliers may optimize, rather than only increase value maximizing and claiming. With an optimizing approach, it may be possible to determine that certain factors not only serve to directly influence or moderate outcomes, but also determine where a point of optimization is realized. For example, it may be determined that an allocation of 40 % toward the industrial buyer is optimal when market uncertainty is low, but an allocation of 55% is optimal when market uncertainty is high. A response model such as the one used by Sridhar et al. (2011) to determine the optimal marketing mix investments in platform firms could be useful in this analysis.

Second, the interaction effects in the study are two-way, and may be improved by a study considering three way interactions among the moderators. For example a study that considers the effect of one moderator (e.g., performance ambiguity) on the direct effect of a marketing strategy (e.g., marketing mix) on an outcome (e.g., sales), in the presence of a third factor (e.g., high demand), could further enhance the understanding of interfirm behavior. This approach would be similar to that taken by Ghosh and John (2009) in their study of factors interacting to influence governance costs under different contract conditions. Further, additional exchange factors drawn from GVA and TCE such as specificity of investments and opportunism are not specifically addressed in these studies and as such the generalizability of the findings is limited.

Finally, one of the strengths of this research is that it considers inter-firm behavior in a multi-dyadic context; however, the data was obtained at only two of the three levels in the supply chain of interest (component supplier and OEM). Further, the data is not nested within each buyer and seller dyad. In other words, the component suppliers represented in the data are not suppliers to the OEMs represented in the data. Further, the behavior of the industrial buyer is used as a factor of manipulation in Study Two, but actual data from the industrial buyer is not considered. A nested study in which the data are associated with the component supplier's OEM customers, and that OEM's industrial buyer customer would provide for a greater opportunity to study causal mechanisms in contingency contexts. As such, while the model may be applicable across inter-firm contexts, the specific findings should not be generalized without serious consideration of the research context.

Essay Two: Exploiting and Countering Behavior by OEMs in Industrial Multi-Dyadic Industrial Supply Chains

Introduction

In order to maintain and strengthen their competitive position with industrial buyers, it is necessary for original equipment manufacturers (OEMs) to continuously identify and assess current and potential suppliers' capabilities (Ghosh and John 2009). Concurrently, with the objective of improving their competitive positions, industrial buyers in global markets increasingly rely on OEMs to assimilate and mobilize resources (e.g., technology, skills, product knowledge) from upstream suppliers (Wuyts et al. 2004). Component suppliers to OEMs have similar competitive objectives and often make substantial marketing investments (e.g., direct selling and advertising) targeted not only at their direct customers (i.e., OEMs), but also at OEMs' customers (i.e., industrial buyers). By doing so, component suppliers can create value-based bonds (Srivastava, Shervani, and Fahey 1998) with industrial buyers that lead to brand equity and demand (i.e., pull) by industrial buyers for their products. Demand for specific component suppliers originating with industrial buyers works to constrain OEMs' sourcing decisions and their ability to manage suppliers. In order to meet their competitive objectives, OEMs are thus confronted with the challenge of determining the most effective governance response (i.e., exploiting or countering) to their suppliers' marketing strategy and their customers' product preferences.

Specifically, this research considers a multi-dyadic industrial governance structure involving a component supplier, original equipment manufacturer (OEM), and an industrial buyer. The relational link connecting the component supplier and industrial buyer, may present both opportunities and problems for the OEM. The OEM may benefit from the strength of the component supplier's position, in that the integration of the supplier's product enhances its own product position (Ghosh and John 2009). Conversely, the OEM's ability to select and manage suppliers may be constrained, but efforts to counter can strain the OEM's relationship with its customer. The OEM must determine if it is more advantageous to exploit (i.e., behavior intended to take advantage of the component supplier's marketing investment), counter (i.e., behavior intended to diminish the influential effects of the component supplier's marketing investments), or pursue both strategies in response to the component supplier's marketing investments toward the industrial buyer. The question of how the OEM best responds to the component supplier's marketing investment toward the industrial buyer motivates the following research questions. In an industrial multi-dyadic structure: (1) how does a component supplier's marketing investment strategy influence the OEM's governance responses; (2) what are the underlying causal mechanisms of those responses; and (3) how do exchange attributes (i.e., market uncertainty and performance ambiguity) and firm resources (i.e., relative technology advantage, relative end-customer advantage, and relative supply network advantage) moderate those responses?

The importance of the effects of business networks or environmental factors on dyadic relationships are alluded to in conceptual frameworks offered by Achrol et al. (1983), Wernerfelt (1994), Ghosh and John (1999), and Anderson, Hakansson, and Johanson (1994). In an effort to more fully understand interfirm dyadic relationships, scholars increasingly consider the effects introduced by other actors in the networks containing the focal dyad (e.g., Kumar, Heide, and Wathne 2011; McFarland, Bloodgood, and Payan 2008; Wathne and Heide 2004; Wuyts et al. 2004). For example, empirical marketing research in a multi-dyadic firm context includes the analysis of upstream governance mechanisms (e.g., supplier qualification and incentive design) on downstream response (e.g., flexibility) to customer uncertainty (Wathne and Heide 2004), the strength of tie effects on buyer preferences in multi-dyadic (supplier, vendor, buyer) vertical marketing of integrated computer networks (Wuyts et al. 2004), the propagation (contagion) of influence strategies from one dyadic relationship to an adjacent dyadic relationship in the supply chain (McFarland, Bloodgood, and Payan 2008), and the effects of internal and external governance alignment with suppliers on manufacturer performance (vis-à-vis customers) (Kumar, Heide, and Wathne 2011). While these studies inform as to how constructs in one dyad influence constructs in the adjacent dyad, they do not consider the effects of a value-based bond (Srivastava, Shervani, and Fahey 1998) between the upstream and downstream parties. The link introduces important challenges and opportunities for the OEM, and a failure to consider it represents a limitation in past research. The current study addresses this limitation by probing further into the effects of this additional link, more specifically considering the OEM's governance response (i.e., exploit, counter, or both) in the context of market and exchange factors. In doing so, the study contributes to the literature in three ways.

First, studying OEM governance response in a multi-dyadic context contributes to the marketing strategy and governance value analysis (GVA) literature by enhancing understanding of interfirm behavior. The study's focal outcome variables, the OEM's exploiting response and countering response, allow for an enhanced understanding of the nature of interfirm behavior, or more specifically, the nature of governance responses employed by OEMs. Ghosh and John (1999) provided for three forms of governance (i.e., market, hierarchical, and relational). In this research, the articulation of response in terms of exploiting and countering provides for a more specific understanding of behavior that occurs within the relational form (i.e., "a host of diverse forms that combine elements of the" ... market and hierarchical forms; Ghosh and John 1999, pg. 134). As past research has demonstrated, behavior in one dyad can influence behavior in adjacent dyads (e.g., Kumar, Heide, and Wathne 2011; McFarland, Bloodgood, and Payan 2008; Wathne and Heide 2004; Wuyts et al. 2004), suggesting that behavior between an OEM and component supplier can influence behavior between the OEM and industrial buyer. In a multi-dyadic context, the implications of behavior in adjacent dyads are more fully illuminated, since the addition of a value-based link expands the analysis to include the influence of behavior between the component supplier and industrial buyer, circumventing the OEM. Thus the study is able to analyze how the OEM's behavior toward the component supplier is influenced by its perception of the potential consequences attributable to the component supplier's behavior toward the industrial buyer. In sum, this study expands understanding of interfirm behavior by not only researching adjacent influences, to also researching adjacent and non-adjacent influences of behavior.

Second, studying the complexity of the OEM's response in a multi-dyadic context also contributes to the GVA literature by expanding understanding of why OEMs may respond to contextual and behavioral influences. Specifically, the analyses of two demand conditions, one focused on demand for the OEM's product and one focused on design constraints placed on the OEM's product, provide further insights about the OEM's behavior. By manipulating combinations of the two conditions, the study reveals how the OEM's behavior toward the component supplier can be different depending on the combination of demand for its product and a specification for the component supplier's product. As Ghosh and John (1999) point out, GVA is a "middle-range model" that allows for the investigation of individual marketing strategy choices, in this case exploiting and countering responses by the OEM, and the implications of those strategy choices in the context of the behavior of other firms. This research utilizes that model to better understand the complexities of the relational influences between important constructs.

Third, the study contributes to the interfirm research and GVA literature by considering the effects of five constructs (i.e., market uncertainty, performance ambiguity, technology resource advantage, end-customer resource advantage, and supply network resource advantage) contained in the GVA framework (Ghosh and John 1999). Consideration of the moderating effects of two important exchange related attributes (i.e., market uncertainty and performance ambiguity) allows for a better understanding of how the prevailing exchange environment can influence the effects of a supplier's behavior on the OEM's decision to exploit and counter that behavior. The analyses of how the OEM's perceived resource advantage relative to the component supplier in the three resource categories (i.e., technology resource advantage, end-customer resource advantage, and supply network resource advantage) influences the effects of the supplier's behavior on the OEM's decision to exploit and counter that behavior, allows for an extended view of the role of resources in determining firm behavior. The analysis of how the OEM aligns interfirm governance responses, multi-dyadic exchange factors, and relative resource advantages thus provides the opportunity for a better understanding of interfirm behavior and governance.

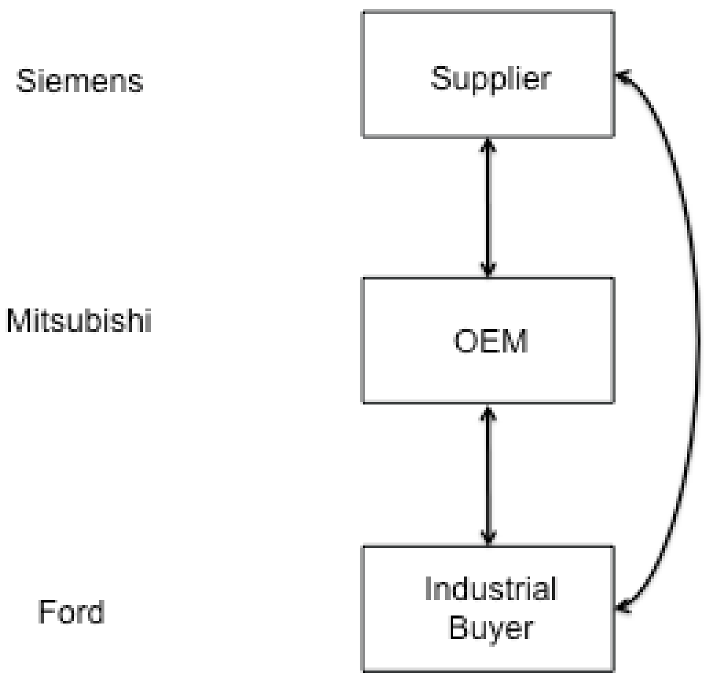
The study begins with a discussion of a number of key conceptual topics related to the multi-dyadic structure, and introduces the primary constructs for analysis. Because one objective of the study is to understand OEM governance response to component supplier behavior (i.e., allocation of marketing investments), an OEM governance response model is provided as the basis for Study One. A set of hypotheses is developed that articulates both the direct effects of the component supplier's allocation of marketing investments on OEM exploiting and countering, and the moderating effects of the aforementioned exchange and resource factors on the direct relationships. The survey research methodology for Study One is presented, providing a description of research context, measures, data collection and validation, model estimation techniques, and results. Another objective of the research is to investigate certain causal mechanisms that may link the OEM's governance responses to the component supplier's investment allocation. With that objective, Study Two provides for an experimental design that tests a set of hypotheses regarding the influence of two demand conditions (i.e., increased demand for the OEM's product and a specification for the use of the component supplier by the industrial buyer) on the OEM's governance responses. The research methodology for Study Two is presented, providing a description of research context, measures, data collection and validation, and comparative analysis techniques. The findings of both Studies One and Two are discussed in detail, and then limitations of the research and possible future research directions are offered.

Conceptual Background

Multi-Dyadic Industrial Supply Chains

A typical multi-dyadic structure in industrial manufacturing is depicted in Figure 2.1. As suggested previously, in such a structure, strategic objectives may lead a component supplier to allocate a portion of its marketing investments toward its direct customer (i.e., the OEM) and a portion to its indirect customer (i.e., the industrial buyer). These investments may include a variety of activities such as direct selling, trade show participation, advertising, and targeted product design, and are assumed to be sufficiently transparent such that the OEM is aware of the component supplier's investment behavior.

Figure 2.1: Multi-Dyadic Industrial Supply Chain Example

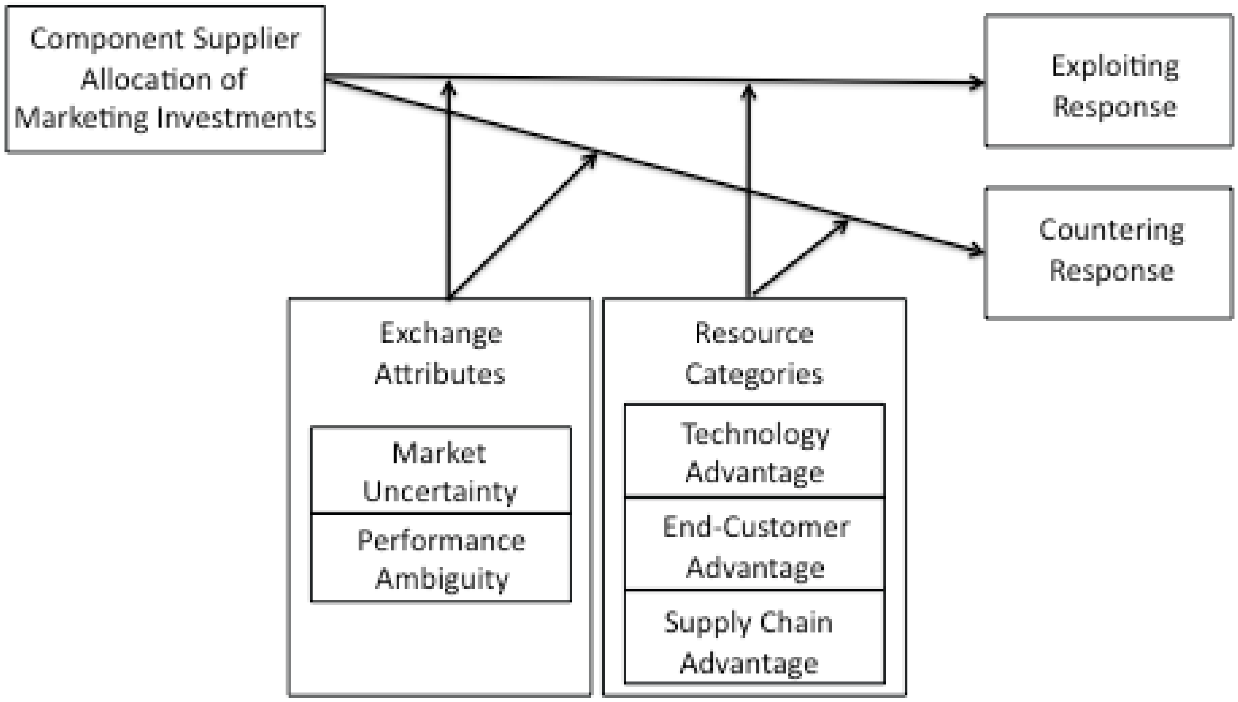


To better understand such structures, consider the case of automotive engines. Siemens manufactures highly engineered electromechanical drives for use in large-scale machine tools, which are used to produce precision metal components such as engine blocks for vehicles. Mitsubishi manufactures machine tools, sometimes incorporating Siemens' electromechanical drives, and is compelled to meet the unique requirements and specifications of its customers, such as Ford. The electromechanical drive and associated controls are essential components in the design and operation of the machine tool, thereby requiring a significant level of value-based interaction between Siemens, Mitsubishi, and Ford. In this example, the component supplier (e.g., Siemens) allocates marketing investments with the objective of establishing a value-based bond with the OEM (e.g., Mitsubishi) and with the industrial buyer (e.g., Ford). That bond is built on the potential value contribution the component supplier can add to the value of each (e.g., Mitsubishi and Ford) firm's product (i.e., increasing product appeal to customers, lowering product cost, or both). The OEM (e.g., Mitsubishi) will also attempt to establish a similar bond with the industrial buyer (e.g., Ford). Empirical research on this value-oriented behavior (e.g., Ghosh and John 2005; Jap 2001) suggests a self-interest expectation that firms will choose to invest in value creation if profits will exceed the costs associated with the activity. In this research, the OEM's assessments of value and profit implications are integral to its governance responses to the component supplier. Specifically, the current research focuses on the OEM's response to its perceived implications of the component supplier's allocation of marketing investments, a decision presumed to be largely influenced by its assessment of the influence the component supplier's marketing investments will have on the OEM's ability to create value and improve profits.

Governance Responses

As depicted in Figure 2.2, this research theorizes that the OEM's response to the component supplier's allocation of marketing investments may include actions characterized as either exploiting or countering. With an objective of contrasting exploiting and countering as distinctive behaviors, the definition of exploiting response adopted in this research (i.e., behavior intended to take advantage of the component supplier's marketing investments) was aligned with Ghosh and John's (2009) characterization as an act of seizing product market opportunities. Specifically, the OEM may determine that its best response to the market opportunity presented by the component supplier's marketing allocation, is to exploit it through leveraging it, building from it, creating synergies, and engaging in complementary activities.

Figure 2.2: OEM Response Model



Countering (i.e., behavior intended to diminish the influential effects of the component supplier's marketing investments) also has a foundation in the marketing strategy literature. It is similar to dependence balancing described by Heide and John (1988), where an independent representative makes offsetting investments (i.e., assets invested in related trading relationships) to safeguard assets it has invested in a focal dyad with a manufacturer. In this context, the OEM may choose to behave in a manner that increases its influence on the industrial buyer or reduces the effectiveness of the component supplier's marketing investments toward the industrial buyer. It may also seek (or threaten to seek) alternate suppliers or invest in alternate technologies in an effort to substitute for the focal supplier's product.

Exchange Attributes

GVA informs that a firm's perceptions of market uncertainty (i.e., the extent to which it is difficult to predict changing customer needs and preferences) and performance ambiguity (i.e., product performance assessment difficulties including both measurement accuracy and the performance of other parties) will influence its behavior (Ghosh and John 1999). A key component of value creation in industrial supply chains is a firm's ability to modify and adapt its product designs (Ghosh and John 2005; 2009). Accordingly, this research focuses on the product design element of market uncertainty; i.e., the OEM's perceived uncertainty related to its product design relative to the needs of the industrial buyer. Because increasing uncertainty with product design exposes the OEM to increasing adaptation costs (Heide and Weiss 1995; Wathne and Heide 2004), the OEM may perceive the value-related implications of the component supplier's allocation of marketing investments toward the industrial buyer differently, at different levels of uncertainty. Similarly, the research focuses on a product-related component of performance ambiguity; i.e., the OEM's difficulty in observing the industrial buyer's installation, use, and performance assessment of its product. Because performance ambiguity may introduce additional costs related to misdirection and monitoring (Ghosh and John 1999), the OEM may perceive the value-related implications of the component supplier's allocation of marketing investments toward the industrial buyer differently, at different levels of ambiguity.

Resource Categories

Ghosh and John (1999, pg. 135) state that resources are "the scarce and imperfectly mobile skills or assets owned by a party to an exchange." This study follows their approach, and considers the influence of resource advantages possessed by the OEM relative to the component supplier in three categories (i.e., technology, end-customer, and supply chain). An advantage in technology resources (i.e., access to superior production and quality, including unique equipment, processes, patents, and skills) suggests that the OEM has greater potential to deliver unique value-related product attributes to the industrial buyer. End-customer resources refer to access to more favorable market positions, and includes brand equity, customer loyalty, market share, and switching costs. An end-customer resource advantage for the OEM suggests that the OEM is more highly desired by the end-user because of the OEM's value offering (Ghosh and John 1999). Supply network resource advantage (i.e., access to superior partners) suggests that the OEM has access to a network of suppliers (other than the focal component supplier) that provides a superior ability to create and deliver customer benefits (Ghosh and John 1999). Because the focal component supplier is in fact a member of the OEM's set of potential channel partners, the comparative network is the set of OEMs other than the focal OEM, accessible to the component supplier.

Hypothesis Development

OEM Responses to Component Supplier Allocation of Marketing Investments

Exploiting Response. First, it is theorized that the component supplier's allocation of marketing investments toward the industrial buyer positively influences the OEM's exploiting response. The logic underlying this theorization is that as the component supplier increases the allocation toward the industrial buyer, a value-based bond between the component supplier and industrial buyer develops and is enhanced (Srivastava, Shervani, and Fahey 1998). This bond leads the OEM to conclude that the component supplier's product possesses differentiation capability, defined as the extent to which the use of the component supplier's product will enhance the industrial buyer's perception of the OEM's product (Gosh and John 2009). The OEM thus perceives the potential for greater value and profits through exploitation of the component supplier's allocation toward the industrial buyer, and responds with greater exploiting behavior. More formally:

> H_1: *The component supplier's allocation of marketing investments toward the industrial buyer positively influences OEM exploiting response.*

Countering. It is theorized that the component supplier's allocation of marketing investment toward the industrial buyer positively influences the OEM's countering response. The underlying logic for this theorization is that as the component supplier increases the percentage allocation toward the industrial buyer, a value-based bond between the component supplier and industrial buyer is enhanced. This bond leads to greater brand equity for the component supplier with the industrial buyer (i.e., pull) that can be leveraged (Srivastava, Shervani, and Fahey 1998) by the component supplier in its relationship with the OEM. The OEM can perceive the value-based bond as detrimental to its profit objectives because its negotiating strength and position as the component supplier's customer may be weakened by the component supplier's brand equity with the industrial buyer. This perception leads the OEM to respond with greater countering actions in an effort to diminish the influential effects of the component supplier's investments. More formally:

> H_2: *The component supplier's allocation of marketing investments toward the industrial buyer positively influences OEM countering response.*

Moderating Effects of Exchange Attributes

Market Uncertainty. It is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and market uncertainty (i.e., the OEM's perceived uncertainty related to its product design relative to the needs of the industrial buyer) interact negatively to influence the level of OEM exploiting response. The logic underlying this theorization is that increasing OEM uncertainty about its product design requirements exposes the OEM to increased costs of maladaptation and product obsolescence (Williamson 1996; Ghosh and John 2009). These costs reduce the OEM's perception of the potential value associated with the industrial buyer, and higher costs further reduce the OEM's perception of the potential value associated with the industrial buyer. Similarly, because the OEM's product incorporates the component supplier's product, the costs associated with uncertainty reduce the OEM's perception of the value associated with the bond between the component supplier and industrial buyer. Because the OEM perceives less potential value associated with the industrial buyer and component supplier, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's exploiting response is reduced. More formally:

> *H_{3a}: As market uncertainty increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on OEM exploiting response decreases.*

In relation to OEM countering, it is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and market uncertainty interact negatively to influence the level of countering response. As previously discussed, the costs associated with market uncertainty reduce the OEM's perception of the potential value associated with the industrial buyer, and of the value associated with the bond between the component supplier and industrial buyer. Because of the reduced value, the bond between the component supplier and industrial buyer is less of a threat to the OEM, and the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's countering response is reduced. More formally:

> *H_{3b}: As market uncertainty increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on OEM countering response decreases.*

Performance Ambiguity. It is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and performance ambiguity (i.e., the OEM's difficulty in observing the industrial buyer's installation, use, and performance assessment of its product) interact negatively to influence the level of exploiting response. The logic underlying this theorization is that increasing difficulty for the OEM to observe the industrial buyer's installation, use, and performance assessment of its product, exposes the OEM to increased costs related to misdirected efforts and monitoring (Ghosh and John 2009). Like market uncertainty, these costs reduce the OEM's perception of the potential value associated with the industrial buyer, and of the value associated with the bond between the component supplier and industrial buyer. Because the OEM perceives less potential value associated with the industrial buyer and component supplier, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's exploiting response is reduced. More formally:

> H_{4a}: *As performance ambiguity increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on OEM exploiting response decreases.*

In relation to OEM countering, it is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and performance ambiguity also interact negatively to influence the level of countering response. As previously discussed, the costs associated with performance ambiguity reduce the OEM's perception of the potential value associated with the industrial buyer, and of the value associated with the bond between the component supplier and industrial buyer. Because of the reduced value, the bond between the component supplier and industrial buyer is less of a threat to the OEM, and the influence of the component supplier's allocation of marketing investments toward the industrial buyer on OEM countering response is reduced. More formally:

> *H_{4b}: As performance ambiguity increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on OEM countering response decreases.*

Moderating Effects of Firm Resource Advantages

Exploiting Response. It is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and OEM relative technology advantage interact positively to influence the level of exploiting response. The logic underlying this theorization is that the OEM believes that a resource advantage may be leveraged in its relationship with the component supplier and enhances the OEM's expectation of benefitting from exploiting behavior. Specifically, greater technology resources (i.e., access to superior production and quality, including unique equipment, processes, patents, and skills) relative to the component supplier increases the OEM's perceived ability to leverage that advantage to enhance the results of its exploiting response, and therefore the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's exploiting response is increased. The same theorization and underlying logic is suggested for end-customer advantage and supply network advantage. That is, with an increasing advantage over the component supplier in each resource category, the OEM perceives an increasing ability to leverage those advantages to enhance the results of its exploiting response. Therefore, with a greater relative advantage in end-customer or supply network resources, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's exploiting response is increased. More formally:

H_{5a}: *As the OEM's relative technology advantage increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's exploiting response increases.*

H_{6a}: *As the OEM's relative end-customer advantage increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's exploiting response increases.*

H_{7a}: *As the OEM's relative supply network advantage increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's exploiting response increases.*

Countering Response. Regarding OEM countering, it is theorized that the component supplier's allocation of marketing investments toward the industrial buyer and OEM relative technology advantage interact positively to influence the level of countering response. The logic underlying this theorization is very similar to that for exploiting response, in that the OEM's belief that a resource advantage may be leveraged in its relationship with the component supplier and enhances the OEM's expectation of benefitting from countering behavior. Specifically, greater technology resources (i.e., access to superior production and quality, including unique equipment, processes, patents, and skills) relative to the component supplier increases the OEM's perceived ability to leverage that advantage to enhance the results of its countering response, and therefore the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's countering response is increased. The same theorization and underlying logic is suggested for end-customer advantage and supply network advantage. That is, with an increasing advantage over the component supplier in each resource category, the OEM perceives an increasing ability to leverage those advantages to enhance the results of its countering response. Therefore, with a greater relative advantage in end-customer or supply network resources, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's countering response is increased. More formally:

> H_{5b}: *As the OEM's relative technology advantage increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's countering response increases.*

> H_{6b}: *As the OEM's relative end-customer advantage increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's countering response increases.*

> H_{7b}: *As the OEM's relative supply network advantage increases, the influence of the component supplier's allocation of marketing investments toward the industrial buyer on the OEM's countering response increases.*

Study One

Method

Sample Characteristics and Data Collection. The empirical context of Study One is the behavior of OEMs in multi-dyadic industrial structures. A cross-sectional survey methodology was used to test the model. Using a web-based mechanism (Qualtrics), the survey was administered to qualified key informants, identified and incentivized through a market research firm, Research Now (e-Rewards). Within the general manufacturing category (NAIC 33) of the North American Industry Classification System (NAICS), the following subcategories were targeted: Motor Vehicle Parts Manufacturing (3363), Semiconductor and Other Electronic Component Manufacturing (NAIC 3344), and Industrial Machinery Manufacturing (NAIC 3332). These NAICS sectors were chosen for two primary reasons. First, the end products consist of engineered systems, representing the integration of specialty components and a wide range of technologies, and firms engaged in these industries are likely to be highly influenced by technological change and global competition. Second, industries in these categories possess a large population of OEMs and suppliers and ensured the sample represented a broad range of OEM types.

A survey instrument (Appendix 2.A) was generated based on previous empirical research (e.g., Ghosh and John 2005; 2009) and field interviews were conducted with 12 industry managers. The survey was then pretested online with 40 industry managers (identified through the author's professional network) to assess wording, response formats, structure, and understandability. Based on the feedback provided by these managers, the survey items were finalized and formatted for implementation. Over a two-week period, members of the Research Now national respondent pool were sent an email invitation to participate in an online survey regarding business-to-business marketing, resulting in 1,173 potential respondents. Five hundred and twenty-five (45%) respondents were determined to be qualified based on two qualifying questions (i.e., industry and firm type), of which 190 (36%) completed the survey. Of the 190 completed surveys, 37 were determined to be unusable do to incomplete answers, resulting in a sample size of 153. This sample size represents an effective response rate of 29%. Following Armstrong and Overton (1977), nonresponse bias was examined by comparing early and late respondents (mean comparisons repeated for the first 25%, 33%, and 50% versus the last 25%, 33%, and 50% of respondents) for key variables under study. No significant differences ($p < 0.05$) were determined. Using most recent year firm sales (USD) as a measure, a firm distribution was observed in the sample that suggests a reasonable level of variance: < \$1M (11%), \$1M to < \$10M (14%), \$10M to < \$50M (14%), \$50M to < \$250M (24%), \$250M to < \$1B (22%), and > \$1B (15%).

The OEM's marketing behavior toward a specific component supplier and industrial buyer, with which the OEM had ongoing relationships, was the unit of analysis. The respondent was asked to anchor his or her responses to a component supplier and industrial buyer that are both important to the respondent's firm, and have a relationship with each other. They were also informed that the purpose of the study was to understand the behavior of OEMs when their suppliers are making increasingly larger marketing investments toward industrial buyers with the objective of increasing demand for their products. Supplier marketing investments that the respondent was asked to consider included overall marketing, direct sales calls, product development, targeted participation in industry trade shows, targeted advertising, and other marketing activities. In order to judge the respondent's expertise in these aspects of the firm behavior, each was asked to report his or her number of years with the firm (M = 12.9 years, SD = 10.61, knowledge of the firm's marketing activities (seven point Likert-type scale (strongly disagree to strongly agree), M = 5.4, SD = 1.3), and knowledge of the firm's procurement activities (seven point Likert-type scale (strongly disagree to strongly agree), M = 5.5, SD =1.3).

Measures. Measures were based on existing scales when available (see the Appendix 2.A). The component supplier's allocation of marketing investments (INVALL) is similar to the relationship marketing expenditures construct utilized by Palmatier, Gopalakrishna, and Houston (2006), in that it was intended to quantify the component supplier's marketing investment strategy in the pursuit of a specific customer. A forced six-item scale required the OEM respondent to estimate the percentage allocation in each of six marketing categories (i.e., overall marketing, direct selling, product development, advertising, trade shows, and other marketing). In addition, the respondent was asked to estimate the percentage each of the five components (i.e., direct sales, product development, advertising, trade shows, and other) represented in the overall mix of investments. The mix estimates were then used to weight the individual allocation estimates, which were then averaged with the initial allocation estimate for overall marketing.

This approach presumes that the OEM respondent is estimating the allocations and is not necessarily accurate. Because the focus of the research was the OEM's response to what they perceive to be the component supplier's behavior (i.e., allocation of marketing investments), it is argued that the accuracy of the estimate was not a concern. Instead, of importance to the research is what the OEM's perceives the allocation to be and how it influences the OEM's response. The approach is consistent with prior research in marketing (e.g., Griffith and Lusch 2007), wherein it is argued that individuals respond to their perceptions of reality. Thus, OEMs' governance responses are influenced by their perceptions of the component supplier's marketing investment allocation, regardless of the accuracy of their perceptions.

Exploiting response (EXPRES) was defined as behavior intended to take advantage of the component supplier's marketing investment. This measure includes modifications of the "coordination effort" measure used by Jap (1999). The use of a four item (α = .89) seven point Likert-type scale (strongly disagree to strongly agree), allowed the respondent to indicate relative agreement with statements characterizing the OEM as leveraging, building on, creating synergy with the component supplier's investment or engaging in complementary activities.

Countering response (COURES) was defined as behavior intended to diminish the influential effects of the component supplier's marketing investments. This measure is largely new, but includes a modified element of the "disengagement" measure utilized by Hibbard, Kumar, and Stern (2001). The use of a four item (α = .81) seven point Likert-type scale (strongly disagree to strongly agree), allowed the respondent to indicate relative agreement with statements characterizing the OEM as seeking ways to reduce, counter, offset the effects of the component supplier's investment, or create alternatives to the component supplier's product.

Market uncertainty (MKTUNC) was defined as the OEM’s perceived uncertainty related to its product design relative to the needs of the industrial buyer. The items selected for market uncertainty are modifications of those employed previously by Wathne and Heide (2004) and Ghosh and John (2005, 2009). The use of a four item (α = .88) seven point Likert-type scale (strongly disagree to strongly agree), allowed for the respondent to indicate relative agreement with statements indicating the frequency of changes, predictability, or reengineering required for his or her firm’s product design or specifications vis-à-vis the industrial buyer.

Performance ambiguity (PERAMB) was defined as the OEM’s difficulty in observing the industrial buyer’s installation, use, and performance assessment of its product. It was measured utilizing modifications of items employed by Ghosh and John (2005, 2009). The use of a four item (α = .92) seven point Likert-type scale (strongly disagree to strongly agree), allowed the respondent to indicate relative agreement with statements indicating higher levels of inability to observe the installation, use, performance, and performance assessment of the OEM’s product.

Technology resource advantage (TECHAD) was defined as the OEM’s advantage relative to the component supplier, in terms of access to superior production and quality, including unique equipment, processes, patents, and skills. The use of a three item (α = .88) seven point Likert-type scale (strongly disagree to strongly agree), allowed the respondent to indicate agreement with statements indicating his or her firm possessing superior business processes, skills, and intellectual property in comparison to the component supplier. The items selected include modifications of the “differentiation” construct employed by Ghosh and John (2009).

End-customer resource advantage (ENDAD) was defined as the OEM’s advantage relative to the component supplier, in terms of access to more favorable market positions, including brand equity, customer loyalty, market share, and switching costs. The use of a three item (α = .79) seven point Likert-type scale (strongly disagree to strongly agree), allowed the respondent to indicate agreement with statements indicating his or her firm possessing higher brand equity, customer loyalty, and a larger installed base of product with the industrial buyer in comparison to the component supplier.

Supply network resource advantage (SUPAD) was defined as the OEM's advantage relative to the component supplier, in terms of access to superior partners. The use of a three item (α = .93) seven point Likert-type scale (strongly disagree to strongly agree), allowed the respondent to indicate relative agreement with statements indicating his or her firm possessing access to a larger network of industry leading firms, a larger network of positive relationships with industry leading firms, and more experience working with a network of industry leading firms in comparison to the component supplier. The items selected are modifications of those used by Wuyts et al. (2004).

Four control variables were adopted to minimize spuriousness of results and capture the overall importance of the specific component supplier and industrial buyer to the respondent's firm. The first two consider the length of the relationship between the firms. Consistent with Ghosh and John (2005) and Heide and John (1990), a single-item measure of the length of the relationship was adopted, allowing the respondent to estimate the length (in years) of their firm's relationship with the supplier (SUPHIS: M = 14.6, SD = 12.2) and industrial buyer (IBHIS: M = 15.6, SD = 13.3). The second two control variables measure the strategic importance of the component supplier and industrial buyer. Two single-item strategic importance measures, component supplier strategic importance (SUPIMP: M = 5.2, SD = 1.2) and industrial buyer strategic importance (IBIMP: M = 5.4, SD 1.2) were adopted. The use of a seven point Likert-type scale (strongly disagree to strongly agree) allowed for the respondent to indicate agreement with a statement that the component supplier (industrial buyer) was of high strategic importance to the respondent's firm, relative to other component suppliers (industrial buyers).

Common Method Variance Testing. Two assessments of the potential presence of common method variance (CMV) were conducted. First, Harman's one-factor test identified multiple factors with eigenvalues greater than 1 in the unrotated factor structure, which suggests that CMV is not a concern (Podsakoff and Organ 1986). Second, a marker variable was selected as a proxy for method variance (Lindell and Whitney 2001). The variable selected is "respondent knowledge of marketing activities," because it was theoretically unrelated to at least one of the study constructs. A single-item seven point Likert type scale (strongly disagree to strongly agree) allowed the respondent to indicate relative agreement with statements indicating higher levels of responsibility for the respondent firm's marketing budget. To estimate for CMV, the lowest positive correlation between the marker variable and one of the criterion variables ($\rho = 0.02$) was identified. This correlation was then partialled out of all other bivariate correlations to remove the effect of CMV. Because the correlations of the other variables remained significant, it was determined that CMV is minimal.

Table 2.1
Measure Statistics and Correlation Matrix (Study One)

	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. INVALL	48.76	16.88	(.92)											
2. MKTUNC	3.62	1.52	.02	(.88)										
3. PERAMB	3.32	1.58	-.12	.17*	(.92)									
4. TECHAD	5.07	1.15	.13	.07	-.17*	(.88)								
5. ENDAD	5.00	1.14	.06	.07	-.21**	.74**	(.79)							
6. SUPAD	4.80	1.34	.21**	.03	-.15	.59**	.71**	(.93)						
7. EXPRES	4.34	1.21	.61**	-.02	-.10	.25**	.12	.26**	(.89)					
8. COURES	3.96	1.14	.41**	.19*	-.01	.24**	.23**	.36**	.35**	(.81)				
9. SUPIMP	5.34	1.19	.17*	-.15	-.01	.28**	.31**	.25**	.19*	.19*	N.A.			
10. IBIMP	5.44	1.17	-.02	-.01	-.07	.38**	.47**	.30**	.12	.07	.58**	N.A.		
11. SUPHIS	14.58	12.25	-.014	-.11	.01	.07	.18*	.22*	.04	.01	.15	.03	N.A.	
12. IBHIS	15.61	13.28	-.05	-.07	.01	.08	.25**	.24**	-.06	-.04	.08	.14	.75**	N.A.

* p < .05; ** p < .01; The composite reliability for each measure is on the diagonal. Single-item scales are denoted with N.A.

Measure Validation: Descriptive indicators for measures appear in Table 2.1. A confirmatory factor analysis (CFA) for all reflective items was conducted using SPSS Amos 20. The fit was determined reasonable (RMSEA = .06, NNFI = .90, and CFI = .93) (Bagozzi and Yi 1988). All composite reliabilities were greater than or equal to .79, exceeding the recommended minimum of .70, and all indicators loaded significantly on the intended latent constructs, demonstrating convergent validity and reliability. All indicators showed a variance extraction greater than or equal to .52, exceeding the recommended cut-off of .50 and demonstrated discriminant validity (i.e., the average variance extracted from each construct exceeded the correlation squared between the constructs) (Fornell and Larcker 1981).

Model and Estimation. The model was estimated using ordinary least squares (OLS) regression. This is a generalization of a linear regression model that consists of several regression equations, in this case two, each having its own dependent variable. Each equation can be considered a valid linear regression and estimated separately, because although the error terms may not be assumed uncorrelated across the equations, each equation contains exactly the same set of regressors (Zellner 1962). The primary predictor variable, supplier investment allocation (INVALL), was calculated using the weighted average of the investment percentage estimates (in each of five marketing categories) provided by the respondent, and reflects an aggregate estimate of the allocation (i.e., percentage) of investment toward the industrial buyer. To construct interactions with the five moderators, mean-centered variables were used. Thus, the coefficient for each individual effect reflects the effect of the predictor (i.e., investment allocation) at the mean level of the moderator (e.g., market uncertainty). The mean-centering technique was employed for two reasons. First it aids in interpretation of the moderation effect of each moderator through its range (i.e., above and below the mean). Second, it avoids analyzing individual effects at the zero-level of the moderator, which may be considered outside of the relevant range of interest. The model equations are:

1. EXPRES = $\alpha_1 + \beta_{11}$ (INVALL) + β_{12} (MKTUNC) + β_{13} (PERAMB) + β_{14} (TECHAD) + β_{15} (ENDAD) + β_{16} (SUPAD) + β_{17} (MKTUNC)(INVALL) + β_{18} (PERAMB)(INVALL) + β_{19} (TECHAD)(INVALL) + β_{110} (ENDAD)(INVALL) + β_{111} (SUPAD)(INVALL) + β_{112} (SUPHIS) + β_{113} (IBHIS) + β_{114} (SUPIMP) + β_{115} (IBIMP) + ε_1

2. COURES = $\alpha_2 + \beta_{21}$ (INVALL) + β_{22} (MKTUNC) + β_{23} (PERAMB) + β_{24} (TECHAD) + β_{25} (ENDAD) + β_{26} (SUPAD) + β_{27} (MKTUNC)(INVALL) + β_{28} (PERAMB)(INVALL) + β_{29} (TECHAD)(INVALL) + β_{210} (ENDAD)(INVALL) + β_{211} (SUPAD)(INVALL) + β_{212} (SUPHIS) + β_{213} (IBHIS) + β_{214} (SUPIMP) + β_{215} (IBIMP) + ε_2

Results

Table 2.2 contains the results for Models 1 and 2. Beginning with tests of the hypotheses in Model 1, H_1 theorized a positive relationship between investment allocation and OEM exploiting behavior. A significant direct positive effect for investment allocation (INVALL) on exploiting response (EXPRES: $\beta = .568$, $p < .01$) was found, supporting H_1. In addition, although not specifically theorized, OEM technical advantage (TECHAD) had a significant positive effect on exploiting behavior ($\beta = .216$, $p < .05$). The possible implications of this finding will be explored in the discussion section. No other hypothesized moderator was found to have a significant main effect on either dependent variable. The theorized negative moderating effect of market uncertainty (H_{3a}) was supported ($\beta = -.114$, $p < .05$).

In the case of performance ambiguity, the hypothesized negative moderating effect (H_{4a}) was supported ($\beta = -.126$, $p < .05$). The positive moderating effect of technology advantage (H_{5a}) was not supported ($\beta = .109$, n.s.). In the case of end-customer resource advantage, the hypothesized positive moderating effect (H_{6a}) was supported ($\beta = .222$, $p < .05$). Finally, the hypothesized positive moderating effect of supply network resource advantage (H_{7a}) was not supported. Instead, contradictory evidence was found, suggesting supply network advantage has a negative moderating effect ($\beta = -.135$, $p < .10$). In Model 2, it was theorized that investment allocation has a direct positive effect on OEM countering response. A significant positive effect was found for investment allocation (INVALL) on countering behavior (COURES: $\beta = .283$, $p < .01$) supporting H_2. Market uncertainty and supplier network advantage each had a significant positive direct effect on countering behavior (MKTUNC: $\beta = .158$, $p < .05$; SUPAD: $\beta = .256$, $p < .01$). No other moderator had a significant effect on countering response. A negative moderation effect of market uncertainty (H_{3b}) was not supported ($\beta = .079$, n.s.), nor was a negative moderation effect of performance ambiguity (H_{4b}) supported ($\beta = .020$, n.s.). A positive moderation effect of OEM technical advantage (H_{5b}) was not supported ($\beta = .079$, n.s.), nor was a positive moderation effect of OEM supply network (H_{7b}) supported ($\beta = .020$, n.s.). In the case of end-customer resource advantage, the hypothesized positive moderating effect (H_{6b}) was supported ($\beta = .235$, $p < .05$).

Table 2.2
OLS Estimation Results (Study One)

A. Dependent Variable: Exploiting Response (EXPRES)

		Baseline Model		*Moderating Model*	
Independent Variables	*Effect*	β	*t-value*	β	*t-value*
INVALL	H_1 (pos.)	.570 **	8.375	.568 **	8.420
MKTUNC		-.033	-.501	-.048	-.735
PERAMB		-.001	-.017	.023	.351
TECHAD		.201 *	2.075	.216 *	2.310
ENDAD		-.186	-1.579	-.112	-.940
SUPAD		.115	1.224	.044	.462
SUPHIS		.156	1.563	.068	.625
IBHIS		-.159	-1.588	-.145 [a]	-1.336
SUPIMP		-.020	-.237	.135 [a]	1.576
IBIMP		.138	1.579	-.096	-1.260
INVALL x MKTUNC	H_{3a}: (neg.)			-.114 *	-1.687
INVALL x PERAMB	H_{4a}: (neg.)			-.126 *	-1.956
INVALL x TECHAD	H_{5a}: (pos.)			.109	1.134
INVALL x ENDAD	H_{6a}: (pos.)			.222 *	1.804
INVALL x SUPAD	H_{7a}: (pos.)			-.135 [a]	-1.361
			R^2 = 39.3%		R^2 = 44.3%

[a] $p < .10$, * $p < .05$, ** $p < .01$

Table 2.2 (cont'd)

B. Dependent Variable: Countering Response (COURES)

		Baseline Model		*Moderating Model*	
Independent Variables	*Effect*	β	*t-value*	β	*t-value*
INVALL	H_2 (pos.)	.317 **	4.183	.283 **	3.716
MKTUNC		.181 *	2.441	.158 *	2.168
PERAMB		.042	.569	.023	.311
TECHAD		.018	.165	.044	.420
ENDAD		.005	.037	.016	.122
SUPAD		.291 **	2.776	.256 **	2.358
SUPHIS		.029	.264	-.191 [a]	-1.548
IBHIS		-.109	-.978	.075	.617
SUPIMP		.134	1.443	.177 *	1.913
IBIMP		-.081	-.832	-.150 [a]	-1.543
INVALL x MKTUNC	H_{3b}: (neg.)			.079	1.034
INVALL x PERAMB	H_{4b}: (neg.)			.020	.276
INVALL x TECHAD	H_{5b}: (pos.)			.049	.456
INVALL x ENDAD	H_{6b}: (pos.)			.235 *	1.686
INVALL x SUPAD	H_{7b}: (pos.)			-.015	-.134
			R^2 = 24.9%		R^2 = 29.2%

[a] $p < .10$, * $p < .05$, ** $p < .01$

To gain additional understanding of the possible importance of interaction effects in the relationships between the supplier's marketing strategy (i.e., investment allocation) and the OEM's governance decisions (i.e., exploiting and countering responses), two supplemental analyses were conducted. First, the incremental contribution of all interaction effects on response versus a direct effects-only model was considered for each dependent variable. In the case of exploiting response, the adjusted R^2 improved from 39.3% to 44.3% when all interactions were added to the model. In the case of countering response, the adjusted R^2 was improved from

24.9% to 29.2%. These increases suggest that the interactions can be meaningful in explaining variation in OEMs' responses to the suppliers' allocation of marketing investments.

The second supplemental analysis further explores the interaction effects that were determined to be significant (H_{3a}, H_{4a}, H_{6a}, and H_{6b}) by applying Schoonhoven (1981). First, controlling for all other factors generates an equation for the dependent variable based on the interaction factors (Equations 1, 3, 5, and 7). Then, the partial derivative is taken, resulting in an equation for the relationship (i.e., β) between the dependent variable and the direct effect factor, given the moderator (Equations 2, 4, 6, and 8).

H_{3a}: (1) EXPRES = .568 * (INVALL) - .114 * (INVALL) * (MKTUNC)

(2) $\frac{\partial EXPRES}{\partial INVALL} = .568 - .114 * (MKTUNC)$

H_{4a}: (3) EXPRES = .568 * (INVALL) - .126 * (INVALL) * (PERAMB)

(4) $\frac{\partial EXPRES}{\partial INVALL} = .568 - .126 * (PERAMB)$

H_{6a}: (5) EXPRES = .568 * (INVALL) + .222 * (INVALL) * (ENDAD)

(6) $\frac{\partial EXPRES}{\partial INVALL} = .568 + .222 * (ENDAD)$

H_{6b}: (7) COURES = .283 * (INVALL) + .235 * (INVALL) * (ENDAD)

(8) $\frac{\partial COURES}{\partial INVALL} = .283 + .235 * (ENDAD)$

Figure 2.3.A shows the negative multiplicative effect of market uncertainty on the relationship between the component supplier's allocation of marketing investments and exploiting response. Through the range of market uncertainty, higher levels decrease the positive effect of the component supplier's allocation of marketing investments toward the industrial buyer on exploiting response. Also, note that through the range of market uncertainty the

interaction effect shows a non-monotonic pattern, suggesting that the effect of the component supplier's allocation of marketing investments toward the industrial buyer on exploiting response changes from positive to negative at the highest levels of market uncertainty. Figure 2.3.B illustrates the negative multiplicative effect of performance ambiguity on the relationship between the component supplier's allocation of marketing investments toward the industrial buyer and exploiting response. Through the range of performance ambiguity, higher levels decrease the positive effect of the component supplier's allocation of marketing investments toward the industrial buyer on exploiting response. Through the range of performance ambiguity the interaction effect also shows a non-monotonic pattern, suggesting that the effect of the component supplier's allocation of marketing investments toward the industrial buyer on exploiting response changes from positive to negative at the highest levels of performance ambiguity. Figure 2.3.C depicts the positive multiplicative effect of end-customer advantage on the relationship between the component supplier's allocation of marketing investments toward the industrial buyer and exploiting response. Through the range of end-customer advantage, higher levels increase the positive effect of the component supplier's allocation of marketing investments toward the industrial buyer on exploiting response. Figure 2.3.D also shows the positive multiplicative effect of end-customer advantage on the relationship between the component supplier's allocation of marketing investments toward the industrial buyer and countering response.

Figure 2.3: Graphic Interpretation of Interaction Effects

A: Investment Allocation x Market Uncertainty on Exploiting Response (H_{3a})

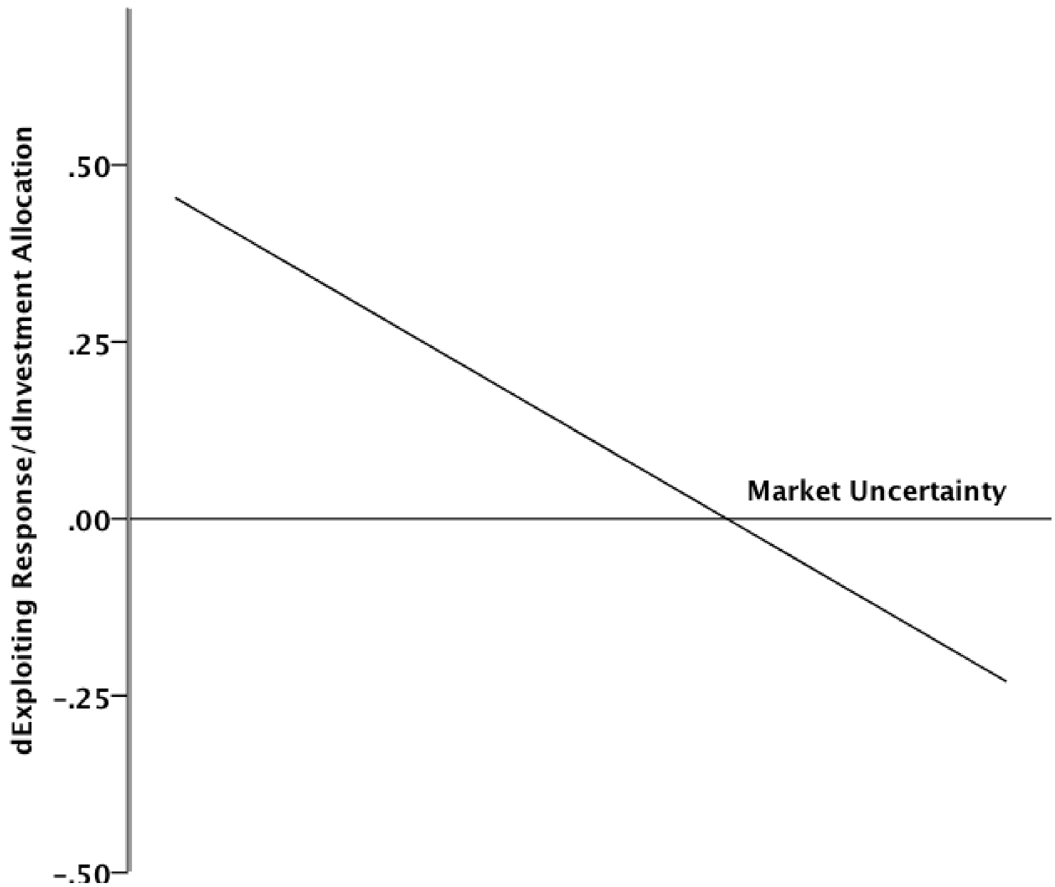


Figure 2.3 (cont'd)

B. Investment Allocation x Performance Ambiguity on Exploiting Response (H_{4a})

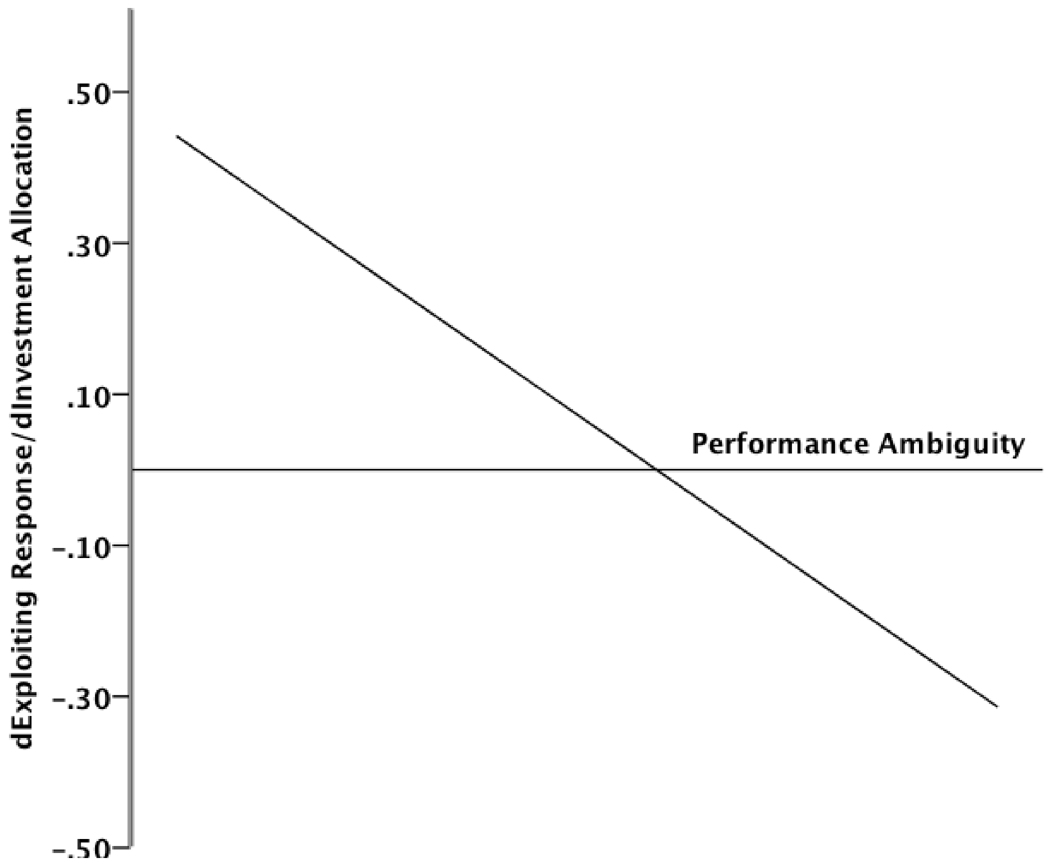


Figure 2.3 (cont'd)

C. Investment Allocation x End-Customer Advantage on Exploiting Response (H_{6a})

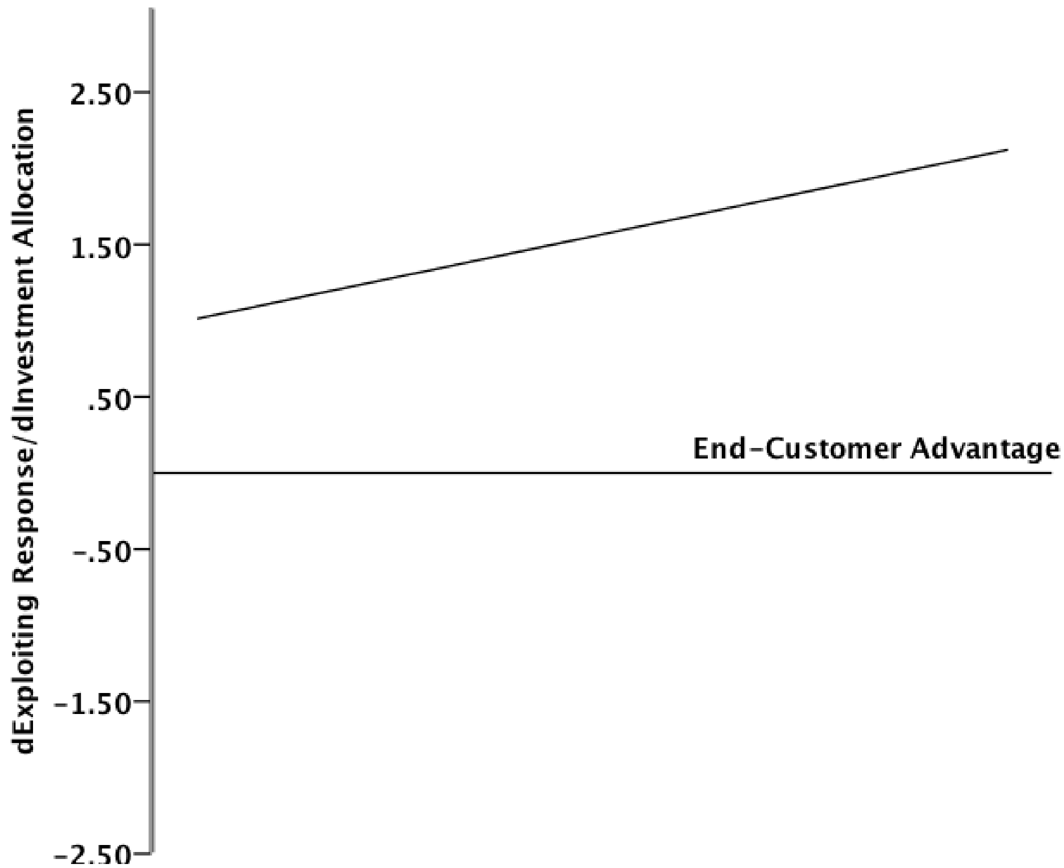
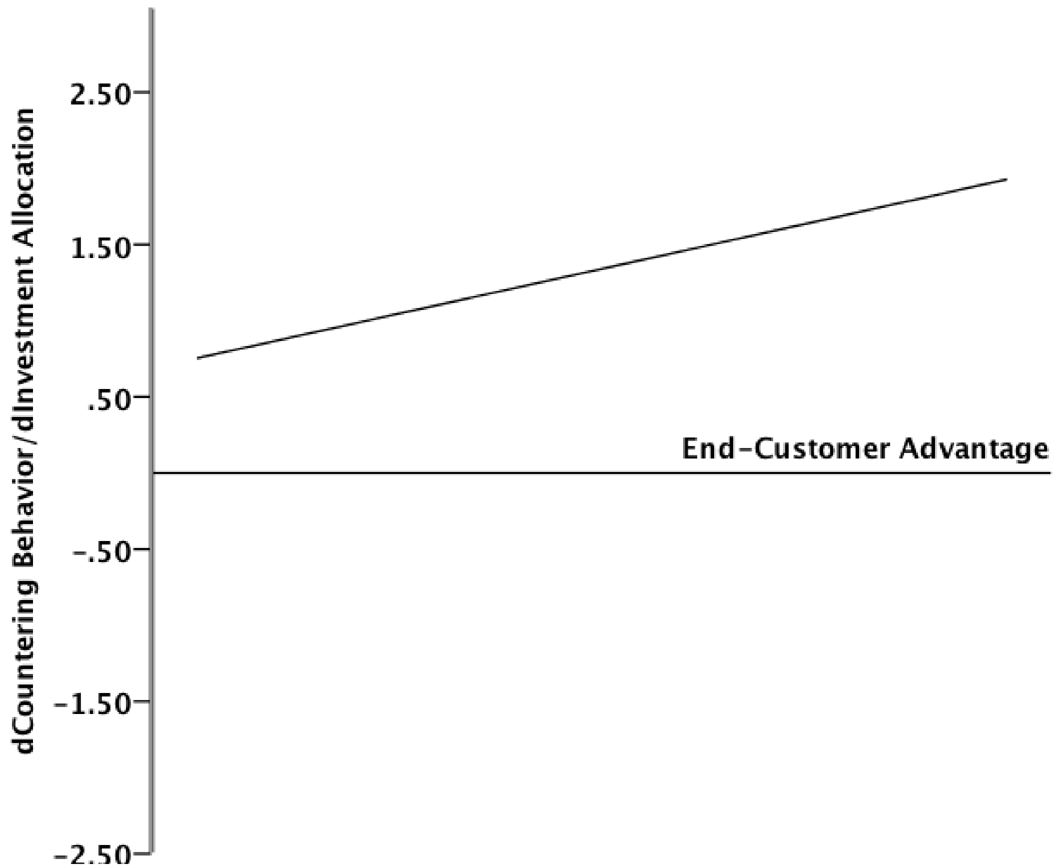


Figure 2.3 (cont'd)
D. Investment Allocation x End-Customer Advantage on Countering Response (H_{6b})



Study Two

Understanding the effects of a supplier's marketing allocation strategy on its direct customer's behavior is the central theme of this research. Specifically, the study considers the resulting exploiting and countering responses of the OEM, behaviors that reflect the OEM's perceived implications of the component supplier's allocation strategy, relative to the industrial buyer's potential response to the component supplier's allocation strategy. Study One results suggest that allocation of marketing investments toward the industrial buyer (i.e., lower allocation toward the OEM) are positively related to both exploiting and countering response by the OEM. This finding appears to confirm the argument that the component supplier's allocation of marketing investments toward the industrial buyer enhances a value-based bond between the component supplier and industrial buyer, that motivates the OEM to both exploit and counter.

Although the results indicate a positive correlation, there remain questions as to the linkage between the OEM's response and the component supplier's behavior. Specifically, is the OEM responding to the component supplier's allocation because of the existence (potential existence) of the value-based bond and an expectation as to the consequences of the bond? Alternatively, is the OEM actually responding to the behavior of the industrial buyer that the OEM may attribute to the existence (potential existence) of the bond? Assuming the OEM is not only responding to the component supplier's behavior, but also the industrial buyer's behavior, a second study was designed to delve into the nature of mechanisms underlying the OEM's responses. Study Two thus investigates the influences of two demand conditions that originate with the industrial buyer and could be the result of the component supplier's investment allocation toward the industrial buyer. Specifically, the study investigates the effects of: (1) a positive change in demand for the OEM's product; and (2) an expressed specification by the industrial buyer for the component supplier's product.

A positive change of demand is of interest because it is not only the OEM's presumed objective to increase demand for its product with the industrial buyer, but it could also reflect the component supplier's value-based activity with the industrial buyer. In addition, the industrial buyer may place more demand on the OEM as a result of its own market success, because it is diverting sourcing from a competitive OEM, or arguably both. In summary, the OEM may not know what the catalyst is for an increase in demand, but is compelled to respond. The second form of demand, the industrial buyer's specification to use the component supplier's product, is of interest because it may be considered a direct result of the component supplier's marketing objective to build brand equity with the industrial buyer. The specification not only suggests that a value-based bond (Srivastava, Shervani, and Fahey 1998) has been established, but that the component supplier's product possesses differentiation capability (i.e., incorporating the component supplier's product enhances the industrial buyer's perception of the OEM's product) for the OEM (Ghosh and John 2009). The study investigates the four possible demand conditions (i.e., static demand/demand increase and no specification/component supplier specified).

In the first condition, the industrial buyer advises the OEM that demand will be static and that it does not have a preferred or specified component supplier. Static demand is not necessarily a positive or a negative indication as to the effects of the allocation of marketing investments by the component supplier. It may indicate that the efforts of the component supplier have had a positive effect on retaining the industrial buyer's business, but there is no overt indication from the industrial buyer of a value-based bond between the component supplier and industrial buyer. As Palmatier, Gopalakrishna, and Houston (2006) point out, that not all business-to-business marketing programs produce consistent results, which may be the case in this context. Thus, the implications of this condition are not clear. For the purpose of comparative analysis, this combination of demand conditions from the industrial buyer (i.e., status quo), will serve as the baseline for comparison of the OEM's behavior under other demand conditions.

In the second condition, the industrial buyer advises the OEM that it requires an increase in demand, and has not specified the use of the component supplier. In this case, the component supplier's allocation of marketing investments toward the industrial buyer has not influenced the industrial buyer to a degree that the OEM would conclude that the component supplier's product possesses "differentiation capability" (Ghosh and John 2009) relative to the industrial buyer (i.e., incorporating the component supplier's product enhances the industrial buyer's perception of the OEM's product). The lack of specification suggests that the industrial buyer is indifferent as to the OEM's behavior toward the component supplier. Similarly, the lack of brand preference further suggests to the OEM that a value-based bond (Srivastava, Shervani, and Fahey 1998) does not exist. Without a value-based bond, there may not be component supplier-based value for the OEM to exploit. Finally, there is no reason for the OEM to conclude a causal connection between the projected increase in demand for the OEM's product, and the relationship between the component supplier and industrial buyer. Given the previous points, there are no incentives for the OEM to alter its level of exploiting the component supplier's marketing investment. Alternatively, the increased volume combined with a lack of specification for the component supplier affords the OEM the opportunity to negotiate higher purchase volumes with the component supplier and (or) seek alternative suppliers (i.e., countering response) in an effort to improve the OEM's profits. More formally:

> H_8: *In comparison to the static demand/no specification condition, the OEM's response to an increase in demand with no specification for the component supplier's product manifests a) the same level of exploiting response, and b) a higher level of countering response.*

In the third condition, the industrial buyer advises the OEM that it requires no increase in demand, however it requires the OEM to utilize the component supplier's product. The OEM is given a definitive indication that the component supplier's allocation of marketing investment toward the industrial buyer has positively influenced the industrial buyer's perception of the component supplier's product. Further, the OEM can conclude that the component supplier's product possesses "differentiation capability" (Ghosh and John 2009) and that the industrial buyer is concerned with the OEM's behavior toward the component supplier. Drawing from the previous literature, brand preference suggests a value-based bond (Srivastava, Shervani, and

Fahey 1998) has been formed between the component supplier and industrial buyer, thereby indicating component supplier-related value exists. An increase in component supplier-related value creates an incentive for the OEM to pursue additional exploiting behavior. Similarly, because a value-based bond exists to such an extent that the industrial buyer specifies the use of the component supplier's product, the OEM may perceive an increased threat to its ability to maximize and claim value, thus motivating it to increase its countering response toward the component supplier. More formally:

> *H_9: In comparison to the static demand/no specification condition, the OEM's response to no increase in demand but a specification for the component supplier's product manifests a) a higher level of exploiting response, and b) a higher level of countering response.*

Finally, in the last condition the industrial buyer advises the OEM that it requires an increase in demand, and specifies that the OEM utilize the component supplier's product. The OEM is given a definitive indication that the component supplier's product possesses "differentiation capability" (Ghosh and John 2009). It is also apparent that a value-based bond (Srivastava, Shervani, and Fahey 1998) has been formed between the component supplier and industrial buyer, thereby indicating component supplier-related value exists. An increase in component supplier-related value creates an incentive for the OEM to pursue additional exploiting behavior. In addition, the OEM may perceive a causal connection between the projected increase in demand for the OEM's product and the value-based bond between the component supplier and the industrial buyer, giving the OEM a disincentive to counter the bond. Similarly, any perceived threat of the bond to the OEM's value and profit objectives is mitigated by an increased demand for its product. The increased demand therefore creates a disincentive to escalate countering response toward the component supplier. More formally:

H_{10}: *In comparison to the static demand/no specification condition, the OEM's response to an increase in demand with a specification for the component supplier's product manifests a) a higher level of exploiting response, and b) the same level of countering response.*

Experimental Design

The study was structured as a between-subjects design with four cells in a two by two matrix; each cell representing a combination of the two manipulations of interest, industrial buyer demand for the OEM product (static or 25% increase) and industrial buyer brand preference for the component supplier (no specification or specification for use). Interviews with practitioners helped to determine an amount to use for a demand increase (25%) that was sufficiently large to exceed what would be considered a "typical" increase for industrial equipment in normal market conditions. The respondent was informed that the purpose of the study was to understand the behavior of OEMs when component suppliers commit marketing investments toward downstream industrial buyers. Similar to the approach by Ganesan et al. (2010) where the respondent was asked to anchor his or her responses on an existing relationship, in this case he or she was asked to anchor them on a multi-dyadic structure. Specifically, the respondent was asked to anchor responses on a multi-dyadic structure in which the component supplier's product is integrated into the OEM's product and sold to the industrial buyer, and in which the component supplier allocates some level of marketing investment toward the industrial buyer. Anchoring allowed for the manipulation of the demand mechanisms in a pre-existing multi-dyadic context of the respondent's choosing.

In the scenario, after identifying a component supplier and industrial buyer, (see Appendix 2.B for exact wording), the respondent was asked to envision a situation where his or her firm was negotiating a purchase agreement for the upcoming year and the industrial buyer indicated it will require <u>the same number of units next year</u> [a 25% increase in the number of units] as in the current year. In addition, the customer indicated no preference for any specific component supplier to be utilized by the respondent's firm [that the respondent's firm must utilize the component supplier previously identified] in relation to its order. The respondent was then asked to respond to all measures (i.e., supplier investment allocation, market uncertainty, performance ambiguity, technology advantage, end-customer advantage, supply network advantage, exploiting response, and countering response). The measures for exploiting and countering response required the respondent to anticipate the behavior of his or her firm given the information in the scenario.

Method

Sample Characteristics and Data Collection. OEMs in a multi-dyadic industrial supply chain structure serve as the empirical context of Study Two. Field interviews were conducted with 6 industry managers, to establish the substantive relevance of the causal mechanisms. Based on the interviews and previous empirical research, the experimental design (Appendix B), was generated and then pretested online with 21 industry managers (identified through the author's professional network) to assess wording, response formats, structure, and understandability. Based on the feedback provided by these managers, the scenario and survey items were finalized and formatted for implementation. The hypotheses were tested via the experimental design, employing a web-based mechanism (Qualtrics) administered to qualified key informants, identified and incentivized through a market research firm, Research Now (e-Rewards).

Over a two-week period, members of the Research Now national respondent pool were sent an invitation to participate in an online survey regarding business-to-business marketing, resulting in 843 potential respondents. Based on two qualifying questions (i.e., industry and firm type), 320 (38%) respondents were determined to be qualified, of which 143 (45%) completed the survey. To be qualified, the respondent had to be a manager at a firm in one of the industries previously identified (i.e., Study One) and a firm that may be considered an OEM. Each respondent was randomly assigned to one of four cells in the two by two matrix; each cell representing a combination of the two manipulations of interest, industrial buyer demand for the OEM product (i.e., static or a 25% increase) and industrial buyer brand preference for the component supplier (i.e., no specification or specified). This study incorporated the measures employed in Study One, with some modifications for context (Appendix 2.C). Of the 143 completed surveys, 5 were determined to be unusable due to incomplete answers, resulting in a sample size of 138 (Condition 1: 33 responses, Condition 2: 35 responses, Condition 3: 36 responses, Condition 4: 34 responses), an effective response rate of 43%. Because the experiment was taken by respondents online in response to an invitation to do so, the date and time of each response was available and allowed for examination of nonresponse bias. Following Armstrong and Overton (1977), early and late respondents (mean comparisons repeated for the first 25%, 33%, and 50% versus the last 25%, 33%, and 50% of respondents) were compared for all variables. No significant differences ($p < 0.05$) were found.

Measure Validation: Descriptive indicators for measures appear in Table 2.3. Convergent validity and reliability were tested; all indicators loaded significantly on the intended latent constructs and all composite reliabilities were greater than or equal to .73, exceeding the recommended cut-off of .50, and demonstrated discriminant validity (i.e., the average variance extracted from each construct exceeded the correlation squared between the constructs) (Fornell and Larcker 1981).

Common Method Variance Testing. As in Study One, Harman's one-factor test identified multiple factors with eigenvalues greater than 1 in the unrotated factor structure, which suggests CMV is not a concern (Podsakoff and Organ 1986). In addition, a marker variable was selected as a proxy for method variance (Lindell and Whitney 2001). The variable selected is “respondent marketing budget responsibility,” for which the lowest positive correlation between the MV and one of the criterion variables ($\rho = 0.04$) was identified. This correlation was then partialled out of all other bivariate correlations to remove the effect of CMV. Because the correlations of the other variables remained significant, it was determined that CMV was minimal.

Table 2.3
Measure Statistics and Correlation Matrix (Study Two)

Cond. 1	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. INVALL	40.61	32.45	(.93)											
2. MKTUNC	3.89	1.15	.24	(.73)										
3. PERAMB	3.11	1.79	.17	.21	(.87)									
4. TECHAD	4.73	1.43	-.15	.19	-.13	(.86)								
5. ENDAD	4.87	0.99	-.13	.33	.29	.63**	(.80)							
6. SUPAD	4.82	1.28	.07	.44**	.25	.57**	.69**	(.92)						
7. EXPRES	5.02	1.09	.49**	.39*	-.19	.59**	.45**	.37*	(.88)					
8. COURES	4.39	1.09	.33**	.54**	.05	.32	.33	.29	.28*	(.80)				
9. SUPIMP	5.27	1.07	-.20	.44**	-.07	.32	.38*	.24	.61**	.24	N.A.			
10. IBIMP	5.27	1.18	-.32	.39*	-.06	.32	.27	.23	.66**	.09	.78**	N.A.		
11. SUPHIS	15.90	15.00	-.10	-.14	-.23	.31	.22	.26	.22	-.20	.24	.22	N.A.	
12. IBHIS	15.21	14.19	.02	-.22	.01	.15	.11	.21	.13	-.26	.07	.19	.69**	N.A.

Cond. 2	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. INVALL	54.90	29.12	(.93)											
2. MKTUNC	3.75	1.29	-.11	(.76)										
3. PERAMB	2.79	1.67	.24	.04	(.85)									
4. TECHAD	5.04	1.16	-.24	-.15	-.31	(.89)								
5. ENDAD	4.78	1.17	-.29	-.15	-.19	.53**	(.79)							
6. SUPAD	4.75	1.23	-.17	-.21	-.28	.77**	.49**	(.92)						
7. EXPRES	4.62	0.95	.52**	.22	-.28	-.34	.03	-.25	(.86)					
8. COURES	5.21	0.78	.34**	.52**	.19	.35*	.43*	.17	.16	(.81)				
9. SUPIMP	5.39	0.93	-.04	-.33	.06	-.04	.11	-.03	.36*	.28	N.A.			
10. IBIMP	5.68	0.93	-.21	.01	-.04	-.18	.17	.09	.28	.09	.24	N.A.		
11. SUPHIS	12.50	8.34	.15	-.18	-.11	-.18	.06	-.15	.53**	.02	.14	.07	N.A.	
12. IBHIS	11.44	8.89	-.03	.03	-.31	-.07	.03	.04	.46**	-.13	.10	.09	.67**	N.A.

* $p < .05$ ** $p < .01$ Notes: The composite reliability for each measure is on the diagonal. Single-item scales are denoted with N.A.

Table 2.3 (cont'd)

Cond. 3	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. INVALL	51.79	32.67	(.95)											
2. MKTUNC	3.67	1.37	-.16	(.78)										
3. PERAMB	3.24	1.43	.02	.20	(.83)									
4. TECHAD	4.74	1.09	-.11	.46**	-.02	(.86)								
5. ENDAD	5.14	1.01	-.20	.20	-.16	.59**	(.79)							
6. SUPAD	4.77	1.06	-.12	.25	-.04	.54**	.70**	(.90)						
7. EXPRES	5.36	1.12	.55**	.22*	-.24	-.14	-.28	-.21	(.89)					
8. COURES	4.97	0.96	.40**	.33**	-.28	.14	-.08	.03	.09	(.84)				
9. SUPIMP	5.78	0.97	-.03	-.16	-.04	.10	.29	.08	.22	.12	N.A.			
10. IBIMP	5.40	1.09	.05	-.38*	-.11	-.04	.28	.02	.17	.02	.83**	N.A.		
11. SUPHIS	16.76	12.70	-.17	-.16	-.37	-.05	.05	.05	.05	.11	.12	-.02	N.A.	
12. IBHIS	17.93	12.80	-.02	.04	-.27	-.17	-.02	-.01	-.10	.04	-.17	-.11	.58**	N.A.

Cond. 4	M	SD	1	2	3	4	5	6	7	8	9	10	11	12
1. INVALL	45.94	27.71	(.91)											
2. MKTUNC	4.19	1.30	.11	(.76)										
3. PERAMB	3.77	1.51	.02	.22	(.82)									
4. TECHAD	5.18	0.93	.23	.44*	.03	(.89)								
5. ENDAD	5.36	0.84	.30	.38*	.05	.66**	(.79)							
6. SUPAD	5.33	1.03	.13	.36*	.06	.64**	.63**	(.92)						
7. EXPRES	5.66	0.74	.57**	.12	-.14	.21	.03	.22	(.86)					
8. COURES	4.51	0.83	.49**	.27*	.11	.45**	.17	.45*	.19	(.83)				
9. SUPIMP	5.49	0.87	.07	.18	-.12	.27	.38*	.37*	.11	.32	N.A.			
10. IBIMP	5.46	0.91	.03	.13	-.08	.23	.30	.31	.05	.28	.85**	N.A.		
11. SUPHIS	16.38	16.05	.29	.11	-.15	.05	.17	.18	.14	.12	.27	.18	N.A.	
12. IBHIS	15.49	14.75	.35*	.01	-.15	.15	.23	.17	.16	.18	.29	.24	.92**	N.A.

* p < .05 ** p < .01 Notes: The composite reliability for each measure is on the diagonal. Single-item scales are denoted with N.A.

Comparative Analysis: To determine if a difference between groups exists, multivariate analysis of covariance (MANCOVA), a special case of "set" correlation analysis and a realization of the general multivariate linear model (Cohen, Cohen, West, and Aiken, 2003, pg. 608), was employed. This technique allowed for the analysis of differences in a set of dependent variables across a series of groups formed by one or more independent categorical variables, in this case two (i.e., demand and component supplier specification). In addition, because there is more than one categorical group, MANCOVA allowed for the analysis of interaction between the treatment variables. Finally, MANCOVA also allows for the reduction of effects from covariates that may influence only a portion of the respondents or may vary among respondents. In this case all independent and control variables from Study One were used as covariates in the analysis, and SPSS Statistic v20.0.0 was employed for analysis.

Results

The results of the MANCOVA and post hoc analyses are summarized in Table 2.4. Not supportive of H_{8a}, a comparative difference in the means (i.e., decrease) for exploiting response between an increased demand/no specification (M = 4.525) and static demand/no specification (M = 5.096) was found to be significant (Wilks' Λ = .001, F = 5.825, $p < .05$). The post hoc testing (Scheffe = .066) also suggested a difference in the means for exploiting response. Supporting H_{8b}, a comparative difference in the means (i.e., increase) for countering response between an increased demand/no specification (M = 5.032) and static demand/no specification (M = 4.370) was found to be significant (Wilks' Λ = .001, F = 8.370, $p < .01$, Scheffe = .072). Not supporting H_{9a}, a comparative difference in the means (i.e., increase) for exploiting response between static demand/component supplier specified (M = 5.305) and static demand/no specification (M = 5.028) was found not significant (Wilks' Λ = .054, F = 1.103, p = .298, Scheffe = .641). Supporting H_{9b}, a comparative difference in the means (i.e., increase) for countering response between static demand/component supplier specified (M = 4.974) and static demand/no specification (M = 4.359) was found significant (Wilks' Λ = .054, F = 5.142, p < .05, Scheffe = .059). A comparative difference (i.e., increase) in exploiting response between increased demand/component supplier specified (M = 5.582) and static demand/no specification (M = 5.115) was found to be significant (Wilks' Λ = .042, F = 4.980, p < .05, Scheffe = .049), supporting H_{10a}. Supporting H_{10b}, a comparative difference in countering response between increased demand/component supplier specified (M = 4.438) and static demand/no specification (M = 4.448) was found to be not significant (Wilks' Λ = .042, F = .002, p = .968, Scheffe = .980).

Multivariate tests found a significant comparative group difference (Wilks' Λ = .001, F = 8.400) between increased demand/no specification and static demand/no specification. Group differences were marginally significant (Wilks' Λ = .064, F = 3.271) between increased demand/component supplier specified and static demand/no specification, and marginally significant (Wilks' Λ = .092, F = 2.502) between increased demand/component supplier specified and static demand/no specification. In the case of independent variables, market uncertainty was found to have a comparative difference (Wilks' Λ = .013, F = 4.719) between increased demand/no specification and static demand/no specification, and technology advantage was significant (Wilks' Λ = .030, F = 3.744) between increased demand/component supplier specified and static demand/no specification. No other independent variables exhibited a comparative difference in the multivariate testing.

Table 2.4
MANCOVA Results (Study Two)

A. *Demand +25% and No Specification* <u>*compared*</u> *to Static Demand and No Specification*

M.V. Tests	Wilks' Λ	*F*	*df*	Error *df*	Partial η^2	Obs. Power
<u>Covariate</u>	(Sig.)					
INVALL	.758	.278	2	55	.010	.092
MKTUNC	.013*	4.719	2	55	.151	.766
PERAMB	.154	1.937	2	55	.068	.384
TECHAD	.350	1.072	2	55	.039	.228
ENDAD	.247	1.435	2	55	.051	.294
SUPAD	.528	.647	2	55	.024	.153
SUPIMP	.042*	3.354	2	55	.112	.609
SUPHIS	.665	.410	2	55	.015	.113
IBIMP	.041*	3.384	2	55	.113	.613
IBHIS	.426	.867	2	55	.032	.191
Group	.001**	8.400	2	55	.241	.955

B.G. Tests	*F*	Sig.	Scheffe	Group	Means	95.0 % C.I. Lower	95.0 % C.I. Upper
EXPRES (H_{8a})	5.825	.019*	.066 [a]	1	5.096	4.781	5.412
				2	4.525	4.209	4.841
COURES (H_{8b})	8.370	.005**	.072 [a]	1	4.370	4.064	4.675
				2	5.032	4.727	5.337

B. *Static Demand and Supplier Specification* <u>*compared*</u> *to Static Demand and No Specification*

M.V. Tests	Wilks' Λ	*F*	*df*	Error *df*	Partial η^2	Obs. Power
<u>Covariate</u>	(Sig.)					
INVALL	.995	.005	2	56	.002	.051
MKTUNC	.300	1.233	2	56	.044	.257
PERAMB	.328	1.139	2	56	.041	.240
TECHAD	.183	1.756	2	56	.062	.352
ENDAD	.384	.974	2	56	.035	.210
SUPAD	.631	.465	2	56	.017	.122
SUPIMP	.311	1.196	2	56	.043	.250
SUPHIS	.964	.037	2	56	.035	.055
IBIMP	.384	.975	2	56	.001	.211
IBHIS	.853	.160	2	56	.006	.073
Group	.064	3.271	2	56	.099	.544

B.G. Tests	*F*	Sig.	Scheffe	Group	Means	95.0 % C.I. Lower	95.0 % C.I. Upper
EXPRES (H_{9a})	1.103	.298	.641	1	5.028	4.665	5.391
				3	5.305	4.942	5.668
COURES (H_{9b})	5.142	.027*	.059 [a]	1	4.359	3.986	4.733
				3	4.974	4.601	5.348

[a] p < .10; * p < .05; ** p < .01

Table 2.4 (cont'd)

C. *Demand +25% and Supplier Specification* compared *to Static Demand and No Specification*

M.V. Tests	Wilks' Λ	*F*	*df*	Error *df*	Partial η^2	Obs. Power
Covariate	(Sig.)					
INVALL	.795	.230	2	54	.009	.084
MKTUNC	.179	1.777	2	54	.063	.356
PERAMB	.755	.283	2	54	.011	.092
TECHAD	.030*	3.744	2	54	.124	.660
ENDAD	.510	.683	2	54	.025	.159
SUPAD	.390	.959	2	54	.035	.208
SUPIMP	.216	1.576	2	54	.056	.319
SUPHIS	.710	.345	2	54	.074	.418
IBIMP	.129	2.129	2	54	.013	.102
IBHIS	.818	.201	2	54	.008	.080
Group	.092	2.502	2	54	.086	.480

B.G. Tests	*F*	Sig.	Scheffe	Group	Means	95.0 % C.I.	
						Lower	Upper
EXPRES (H_{10a})	4.980	.030*	.049 *	1	5.115	4.831	5.399
				4	5.582	5.298	5.866
COURES (H_{10b})	.002	.968	.980	1	4.448	4.123	4.773
				4	4.438	4.113	4.764

[a] p < .10; * p < .05; ** p < .01

Table 2.4 (cont'd)

D. *Four Groups*

M.V. Tests	Wilks' Λ	*F*	*df*	Error *df*	Partial η^2	Obs. Power
Covariate	(Sig.)					
INVALL	.940	.062	2	123	.001	.059
MKTUNC	.083	2.542	2	123	.042	.500
PERAMB	.199	1.637	2	123	.027	.340
TECHAD	.142	1.983	2	123	.033	.403
ENDAD	.643	.444	2	123	.008	.121
SUPAD	.797	.227	2	123	.004	.085
SUPIMP	.035*	3.446	2	123	.056	.636
SUPHIS	.283	1.275	2	123	.021	.272
IBIMP	.656	.424	2	123	007	.117
IBHIS	.834	.182	2	123	003	.078
Group	.001**	6.464	6	246	.138	.990

B.G. Tests	*F*	Sig.	Scheffe	Group	Means	95.0 % C.I.	
						Lower	Upper
EXPRES	9.028	.001**	N.A.	1	5.090	4.760	5.419
				2	4.483	4.141	4.825
				3	5.335	5.006	5.663
				4	5.676	5.341	6.011
COURES	4.380	.006**	N.A.	1	4.445	4.132	4.758
				2	5.009	4.685	5.334
				3	4.982	4.671	5.294
				4	4.347	4.079	4.715

[a] $p < .10$; * $p < .05$; ** $p < .01$

To validate a sufficient sample size for each cell, a power analysis was conducted using Cohen's *d*. For the hypothesized significant differences between groups, Cohen's *d* averaged .72, suggesting a "medium" to "large" effect, where medium is consider .50 and large is considered .80 (Rosenthal and Rosnow 2008, pg. 365). At a power of .80 (p = .05, one-tailed), the recommended sample size per cell is 50 for a medium effect and 20 for a large effect, thus the sample size of 33 to 36 per cell is considered adequate. Observed power, calculated by SPSS, resulted in an average value of .69 for the three significant supported hypotheses.

Discussion

This research was motivated by a desire to more fully understand the governance behavior of OEMs when confronted by the challenges presented by a multi-dyadic industrial structure. Specifically, the OEM must determine if it is more advantageous to exploit, counter, or pursue both strategies in response to the component supplier's allocation of marketing investments toward the industrial buyer. To that end, three research questions were proposed. Specifically, in an industrial multi-dyadic structure: (1) how does a component supplier's marketing investment strategy influence the OEM's governance responses; (2) what are the underlying causal mechanisms of those responses; and (3) how do exchange attributes (i.e., market uncertainty and performance ambiguity) and firm resources (i.e., relative technology advantage, relative end-customer advantage, and relative supply network advantage) moderate those responses? The findings from Studies One and Two offer insights into these issues and provide significant implications for marketing academics and practitioners.

Theoretical Implications

Considering the first question, Study One indicates that the allocation of marketing investment by component suppliers toward industrial buyers positively influences both exploiting and countering responses by OEMs. Further, OEMs appear to pursue both governance responses, however the relative effect sizes of investment allocation on exploiting and countering ($\beta = .568$ and $\beta = .283$ respectively) may suggest that OEMs prefer to characterize their response behavior as exploitive rather than countering. By studying OEM governance response in this context, the findings contribute to the marketing strategy literature because they suggest that OEMs' behavior can be influenced by the behavior of suppliers (i.e., component suppliers) toward their customers (i.e., industrial buyers). The finding confirms the notion that behavior by one firm toward another is not solely influenced by interaction between those firms. A firm's behavior toward another can also be influenced by interaction between the other firm and a third firm, in this case the industrial buyer. Whereas numerous empirical dyadic studies (e.g., Kim et al. 2011; Kumar, Heide, Wathne 2011) have demonstrated that firms employ governance mechanisms in one dyad contingent on behavior in adjacent dyads, this research demonstrates the important implications of behavior “between and across” dyads.

The study’s focal outcome variables, the OEM’s exploiting response and countering response also allowed for an enhanced understanding of the nature of interfirm behavior, or more specifically, the nature of governance responses employed by OEMs. Ghosh and John (1999) provided for three forms of governance (i.e., market, hierarchical, and relational). In this research, the articulation of response in terms of exploiting and countering allowed for a more specific understanding of behavior that occurs within the relational form (i.e., “a host of diverse forms that combine elements of the” ... market and hierarchical forms; Ghosh and John 1999, pg. 134). It was determined that OEMs will both exploit and counter, which may appear to be inconsistent behavior because one act seemingly undermines the other. This finding indicates that while OEMs may be willing to invest in proactive activities to exploit the behavior of their suppliers, they are at the same time unwilling to abdicate their position as the intermediary between the component supplier and industrial buyer. From a theoretical point of view, the finding suggests that conflicting behaviors within a governance structure may be seen as rational, as firms attempt to achieve multiple goals. This point was demonstrated in this research because the OEM is influenced by the exchange context and the behavior of the component supplier to exploit the value-based bond between the component supplier and industrial buyer, as well as counter the value-based bond in order to protect it own interests.

With regard to the second research question, Study Two allowed for an analysis of two causal mechanisms that can underlie OEMs’ governance responses. In the study, OEM respondents were asked to anticipate their firms’ responses to a combination of two demand conditions, increased demand for the OEM’s product and a specification for the component supplier. The findings in the first comparison (increased demand and no specification vs. static demand and no specification) suggest that, contrary to the hypothesis, OEMs reduce their exploiting response rather than maintain it. Whereas it was suggested that an OEM would not have a reason to change its exploiting behavior in response to an increased demand, the finding suggests that the OEM may consider the increase as an opportunity to spend less of its own resources (i.e., exploit less) on the component supplier. In combination with the finding that the OEM's countering response increased, it further suggests that the OEM's response toward its component supplier may be to invest in efforts to mitigate, rather than leverage, the influence of the component supplier's investment.

The findings of the second comparison (static demand and a specification vs. static demand and no specification) were also helpful in understanding of OEM governance decision-making. Although there was a specification for the component supplier, the OEM did not significantly increase exploiting behavior. This outcome suggests that in spite of the evidence of a value-based bond (Srivastava, Shervani, and Fahey 1998), the OEM is not as responsive to a specification as it is to actual demand for its product. The specification alone is not sufficient to convince the OEM that it may be beneficial to exploit the component supplier's bond with the industrial buyer. The increase in countering, as hypothesized, confirms that in spite of the apparent differentiating capability (Ghosh an John 2009) possessed by the component supplier, it alone is not sufficient to overcome the OEM's perception of the threat to its control over selecting its suppliers. Finally, the last comparison (increased demand and a specification vs. static demand and no specification) in Study Two allowed for a determination that an OEM's governance response may be more highly influenced by tangible demand than threats to its control over supplier selection. In this case, because the OEM demonstrated higher exploiting response and no change in countering, it was determined that the OEM will be inclined to exploit the supplier if both increased demand for its product and brand equity for the component supplier are present. In sum, the combinations of Studies One and Two provided for a much richer understanding of interfirm behavior and important causal mechanisms underlying the relationship between the component supplier's investment allocation and the OEM's governance responses.

The third research question addresses exchange attributes and firm resources that are salient to the contingency behavior referred to by Ghosh and John (1999). In the case of exploiting response, the significant positive direct influence of technology advantage on exploiting response (not hypothesized), combined with a insignificant interaction between technology advantage and the component supplier's allocation of marketing investments, suggests that OEMs regard a technology advantage over their suppliers as motivation to exploit those suppliers' investments regardless of the suppliers' allocation of marketing investments. These findings are empirical evidence that OEMs' behavior toward suppliers may be largely influenced by their perception of relative technology advantages. This assertion may be counter intuitive because it could be argued that an OEM would be more likely to exploit the investments of a supplier that possesses relatively more, rather than less business processes, skills, and intellectual property. This study instead suggests that an advantage may empower or enhance the OEM's perceived ability to exploit, and therefore its tendency to exploit.

Market uncertainty and performance ambiguity were each found to have a significant negative moderating effect on the relationship between the component supplier's allocation of marketing investments and exploiting response. This result suggests, as theorized, that OEMs are sensitive to factors that influence their perceptions of a customer's value. In this case, because higher levels of market uncertainty and performance ambiguity result in higher costs for the OEM, the OEM's assessment of the industrial buyer's potential value is diminished, thereby diminishing its motivation to exploit the component supplier's marketing investments. The non-monotonic nature of these moderators suggests that at higher levels of market uncertainty or performance ambiguity the influence of the component supplier's allocation of marketing investments on exploiting response shifts from positive to negative. That is, increasing component supplier allocation of marketing investments toward the industrial buyer actually has a negative influence on exploiting response. Whereas the OEM might be expected to compensate for the added costs of market uncertainty and performance ambiguity through exploitive behavior, they actually respond to the component supplier's increasing allocation toward the industrial buyer with less exploiting response. End-customer resource advantage was found to be significantly positive, suggesting that certain resource advantages may act to enhance an OEM's perception of the potential value of exploiting a component supplier's allocation of marketing investments. The determination that end-customer resource advantage may act as a moderator is consistent with Ghosh and John's (2009) finding that OEMs are more likely to use branded component contracts (with suppliers) when the supplier's brand name adds significant differentiation. In this research, it was determined that a relative advantage in a resource category can also act as a moderator. Like the previous significant moderators, this finding extends understanding of the role of contingency in how OEM's determine the appropriate governance mechanism. In this case, a perceived advantage over the component supplier in its strength with the end-customer enhances the OEM's motivation to invest in exploiting activities.

The results for countering behavior reveal similar theoretical insights. The significant positive direct influence of market uncertainty on countering behavior in combination with a lack of significance as a moderator suggests higher levels of uncertainty related to the industrial buyer motivates OEMs to attempt to reduce the influence of the component supplier on the industrial buyer, without regard to suppliers' marketing investment behaviors. Like market uncertainty, supply network advantage showed a significant positive influence on countering behavior, and a lack of significance as a moderator. Ghosh and John (1999) suggest that supply chain resources impose "path-dependent constraints" on governance choices. The finding in Study One reinforces that assertion, in that it demonstrates that a perceived relative advantage in its supply network over the component supplier implies fewer constraints and a direct motivation for pursuing a countering strategy. Like market uncertainty, the finding suggests that an OEM's perception of a supply network advantage over any particular supplier influences its behavior toward that supplier regardless of the supplier's allocation of marketing investments. The finding that only end-customer resource advantage serves to moderate the relationship between the component supplier's allocation of marketing investments toward the industrial buyer and countering response, is also theoretically important. It was determined that an end-customer resource advantage motivates the OEM to respond to the component supplier's allocation of marketing investments with higher countering than it would otherwise. Presumably, the positive moderating influence of an end-customer resource advantage is because the OEM recognizes an ability to leverage its stronger position with the industrial buyer. This result extends our understanding of GVA because it demonstrates not only the impact of the end-customer resource category, but also indicates the relative importance of the three categories in the GVA model (i.e., technology, end-customer, and supply network) depends on the context of the study. For example, in a fast changing technology context such as software development, the technology resource category may be expected to be of greater importance than the other two categories. Similarly, an industry that is highly dependent on long and complex supply chains may favor the importance of the supply network resource category.

Managerial Implications

The findings in Studies One and Two suggest a number of considerations for OEMs, component suppliers, and industrial buyers in industrial supply chains. First, the findings suggest that OEMs can employ combinations of exploiting and countering behavior in response to component suppliers' allocation of marketing investments. This insight may be useful to OEMs in the context of planning and executing competitive tactics to obtain or protect business. Specifically, the knowledge that competitive OEMs may be responding in exploitive and (or) countering ways to their suppliers' marketing initiatives may allow an OEM to anticipate that behavior and position themselves more favorably with an industrial buyer. For example in the case of capturing new business, if an OEM is aware of an existing or developing value-based bond between a component supplier and industrial buyer, it could anticipate that the incumbent OEM supplier to that industrial buyer will exhibit some countering behavior. Because the countering behavior in effect works against the value-based bond, the OEM seeking to displace the incumbent could take actions to exploit the value-based bond in a way that gives the new OEM an advantage in obtaining future business. These findings are also useful for incumbent OEMs, in that they should be aware that competitors could take advantage of their responses to the behavior of component suppliers. More specifically, in a condition where a component supplier has established a value-based bond with its customer, the OEM may be at greater risk of losing the industrial buyer's business should it concentrate too heavily on countering that bond. Thus, the knowledge of how OEMs can behave in this context may be beneficial to both obtaining and protecting future business, if incumbent and non-incumbent OEMs use the knowledge to anticipate their competitions' actions.

Second, component suppliers should expect exploiting and countering behavior by OEMs in response to their attempts to build brand equity with industrial buyers. The more successful a component supplier is in building a value-based bond and brand equity with an industrial buyer, the greater the level of exploiting and countering response should be expected from the OEM. Component suppliers should also be sensitive to prevailing exchange attributes and firm resource factors, and their potential influence on OEMs' responses to their value-based marketing initiatives. As found in the research, an OEM that appears to face a high level of market uncertainty with the industrial buyer may be inclined to demonstrate countering behavior regardless of the component supplier's allocation of marketing investment toward the industrial buyer. In a situation where the OEM possesses a technology advantage over the component supplier, the component supplier may observe exploiting behavior by the OEM without regard to the component supplier's investment allocation. An end-customer advantage for the OEM, may lead the OEM to exploit more and counter more in response to the component supplier's allocation of marketing investments than they would if there were less end-customer advantage. In sum, component suppliers may expect the degree of exploiting and countering behavior by their direct OEM customers to be influenced by a number of factors, including their allocation of marketing investments, relative resource position vis-à-vis OEMs, and the OEMs' perceptions of the exchange attributes with industrial buyers.

The research also informs industrial buyers. First, industrial buyers should be aware of the potential responses by OEMs to component suppliers' allocation of marketing investments and value-based bonds industrial buyers form with component suppliers. The finding that OEMs can employ combinations of exploiting and countering behavior is useful to industrial buyers because it provides some explanation for seemingly inconsistent behavior by OEMs. Specifically, OEMs may demonstrate support for the value-based bond (i.e., exploiting) and at the same time exhibit disruptive behavior (i.e., countering) that may diminish the value-based bond. Industrial buyers could use this awareness to enhance their competitive positions and better manage their suppliers. For example, they could seek to encourage value-based bonds with certain suppliers in anticipation of how those bonds could influence their negotiating position with OEMs. Conversely, they could avoid value-based bonds with certain suppliers in anticipation of improving their relationship with certain OEMs. Second, the findings provide insights for industrial buyers about how OEMs can respond to changes in demand and (or) requirements to use specific component suppliers. More specifically, an indication by the industrial buyer that it is increasing demand of the OEM's product may result in different behavioral responses by the OEM than an indication of a preferred supplier to that OEM. Similarly, an indication of both increased demand and a specification for a particular supplier may result in yet different behavior by the OEM. In addition, other prevailing exchange attributes and firm resource factors can also influence the behavior of both the OEM in any particular multi-dyadic structure. An ability to anticipate the response of their OEM suppliers to catalysts such as increased demand and supplier specification, can presumably improve industrial buyers' competitive advantage.

Limitations and Further Research

This research makes some important contributions, but is not without limitations. A number of the limitations are offered along with suggested future research directions. First, Study One measures the OEM's exploiting response as the OEM proactively leveraging, building on, creating synergy with the component supplier's investment, and engaging in complementary activities. This approach was effective in analyzing the direct influence of the component supplier's investment allocation, as well as revealing several moderators. It may also be important to probe further into the exploitation response of OEMs by measuring it as a collaborative response (e.g., creating synergies and investing in collaborative investment) and measuring it separately as an opportunistic response (e.g., leveraging, freeloading, and acting with guile). Defining two types of exploiting response could provide insights as to how OEMs regard collaboration versus opportunism, and thereby extend understanding of response typologies by OEMs. Study One was also effective in demonstrating a positive effect of the component supplier's allocation of marketing investments toward the industrial buyer on OEM countering response. In addition to the direct influence of the component supplier's allocation of marketing investments, the study also determined that market uncertainty and supply network advantages had significant positive influences on countering response, but were not significant moderators. A study similar to the one previously discussed for exploitation may also be important in extending the understanding of countering behavior. For example, countering could be separated into responses targeted directly at the component supplier and (or) associated with sourcing from alternative suppliers, or responses targeted toward strengthening the OEM's position with the industrial buyer and offsetting the effects of the relationship between the component supplier and OEM. These forms of countering response could then be studied utilizing market uncertainty and (or) supply network advantage as antecedents to those responses. In sum, understanding of OEM behavior could be extended further by more precise analyses of exploiting or countering response typologies.

The data are cross-sectional and were obtained using a survey and experimental design format. While effective, the question of how responses may change given changes in exchange attributes and (or) firm resources would provide a more meaningful understanding of how OEMs' behavior. Study Two provided for a change of context for the OEM (i.e., increased demand and (or) specification for the component supplier), however was limited by the respondents' abilities to project themselves into the scenario and then assess their firms' responses to those changes. As such, longitudinal data that captures not only the effect of time but also detects changes in the prevailing exchange attributes, changes in the component supplier's allocation of marketing investments, changes in resources, and actual changes in demand for the OEM's product may be more effective in analyzing OEM behavior.

The data in the two studies was not from matched dyads: i.e., not collected from OEMs and their respective component suppliers. Having matched data, similar to that obtained by McFarland, Bloodgood, and Payan (2008) would allow for a direct analysis of the component supplier's allocation of marketing investments and the respective OEM's exploiting and countering responses. Further it would allow for a more in thorough assessment of the relative resource advantages between each respective component supplier and OEM, because each party could have the opportunity to provide its perception of advantage (disadvantage) in each resource category. Having matched data would also allow for the detection of differences between the parties in terms of how they perceive the prevailing exchange attributes and relative firm resources. The difference in perceptions could then be considered as another factor that may influence the behavior of the OEM.

Another limitation of the studies is the lack of secondary data for the analysis of constructs such as component supplier allocation of marketing investments. For example, access to data on the direct sales activities, advertising spending, and trade show participation of the component supplier related to the OEM and industrial buyer would presumably provide an enhanced estimate of the component supplier's allocation of marketing investments. While not flawed, the current data are limited by the fact that they are based on estimates made by the OEM. As discussed previously in the research, the argument made is that the OEM acts on perception regardless of the accuracy of that perception. With secondary data, an analysis of perceived versus actual allocation could be conducted, allowing for an improved understanding of the OEM's responses.

Study Two provided for the analyses of two demand conditions as potential explanations for how a value-based bond between the component supplier and industrial buyer might influence the OEM's exploiting and countering responses. Other factors such as negotiating strength and relative power have also been shown to be important factors in interfirm exchanges (e.g., Dwyer and Walker 1981; Perdue and Summers 1991). These factors, in addition to TCE factors such as specificity, opportunism, and frequency could be evaluated as conditions in the same multi-dyadic context and further extend understanding of governance behavior in industrial supply chains.

Introducing additional factors as moderators and analyzing potential three way interactions may also provide important insights. For example a study that considers the effect of one moderator (e.g., market uncertainty) on the direct influence of a marketing strategy (e.g., supplier allocation of marketing investments) on OEM response behavior (e.g., exploitation), in the presence of a third factor (e.g., OEM negotiating strength), could further extend the understanding of interfirm behavior. This approach would be similar to that taken by Ghosh and John (2009) in their study of factors interacting to influence governance costs under different contract conditions. The addition of more factors provided for in the GVA model would also expand the generalizability of the findings.

APPENDICES

APPENDIX 1.A
Operational Measures of Constructs – Study One

Investment Allocation (INVALL)
Please provide your best estimate in each category of the percentage of your marketing investments that was directed toward the OEM or toward the Industrial Buyer (each row must total 100%) in the last year.

Overall Marketing: __% OEM, __% Industrial Buyer
Direct Selling: __% OEM, __% Industrial Buyer
Advertising: __% OEM, __% Industrial Buyer
Product Design: __% OEM, __% Industrial Buyer
Other Marketing: __% OEM, __% Industrial Buyer

To better understand your firm's allocation of marketing investments toward these firms, please provide your best estimate of the percentage of your overall marketing investments toward the OEM and toward the Industrial Buyer represented by each of the following categories (must total 100%) in the last year.

Direct Selling __%, Advertising __%, Product Design __%, Trade Shows __%, Other Marketing __%

Value Maximizing (VALMAX), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
When considering this OEM...
... the unit sales of our product are higher than with similar OEM customers. (1)
... the $ sales of our product are higher than with similar OEM customers. (2)
... demand for our product is higher than with similar OEM customers. (3)

Value Claiming (VALCLA), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
When considering this OEM...
... the net profits of our product are higher than with similar OEM customers. (1)
... the overall profits of our product are higher than with similar OEM customers. (2)
... the return on our marketing investments is higher than with similar OEM customers. (3)

Market Stickiness (MKTSTK), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
The products we manufacture are...
... difficult for competitors to imitate. (1)
... difficult to replace with substitutes. (2)
... highly differentiable from the competition. (3)

APPENDIX 1.A (cont'd)

Market Uncertainty (MKTUNC), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Due to the needs of this OEM and/or Industrial Buyer...
... our product design is NOT highly predictable. (1)
... our product design changes frequently. (2)
... our product specifications change often. (3)
... our product often requires reengineering. (4)

Performance Ambiguity (PERAMB), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
When considering this OEM and/or Industrial Buyer...
... it is difficult to observe the proper installation of our product. (1)
... it is difficult to observe the proper use of our product. (2)
... it is difficult to observe the performance of our product. (3)
... it is difficult to observe how our product's performance is assessed. (4)

Strategic Importance of Industrial Buyer (IBIMP), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to other Industrial Buyers, this Industrial Buyer is of high strategic importance to our firm. (1)

OEM History (OEMHIS)
To better understand your firm and these customers, please estimate the number of years this OEM has been a customer of your firm. (1)

Marketing Knowledge, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am knowledgeable of my firm's marketing activities. (1)

Financial Knowledge, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am knowledgeable of my firm's financial results. (1)

Marker Variable, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am responsible for my firm's marketing budget. (1)

APPENDIX 1.B
Experimental Manipulations – Study Two

Static Demand/25% Increase in Demand <u>and</u> No Specification/Component Supplier Specified

The purpose of the study is to understand the behavior of OEMs (such as your firm) when component suppliers invest in marketing toward downstream industrial buyers (such as your customers). Please think about a specific component supplier to your firm and an industrial buyer (i.e., customer) that meet <u>both</u> of the following conditions: 1) the component supplier's product is integrated into your product, which is then sold to the industrial buyer, and 2) the component supplier commits some level of marketing investment (e.g., direct sales activity, advertising, trade shows) toward the industrial buyer and is known to the industrial buyer.

With this relationship in mind, imagine that your firm is in the process of negotiating a purchase agreement with this customer for the upcoming year. The customer has indicated it will require <u>the same number of units next year as in the current year</u> [a 25% increase in the number of units next year compared to the current year]. In addition, the customer has <u>not indicated a preference for any specific component supplier to be utilized by your firm</u> [indicated that your firm must utilize the component supplier previously identified] in relation to its order.

APPENDIX 1.C
Operational Measures of Constructs - Study Two

Investment Allocation (INVALL)
Please provide your best estimate in each category of the percentage of the Component Supplier's marketing investments that was directed to your firm (the OEM) or toward the Industrial Buyer (each row must total 100%) in the last year.

Overall Marketing:	__% Your Firm, __% Industrial Buyer
Direct Selling:	__% Your Firm, __% Industrial Buyer
Advertising:	__% Your Firm, __% Industrial Buyer
Product Design:	__% Your Firm, __% Industrial Buyer
Other Marketing:	__% Your Firm, __% Industrial Buyer

To better understand your firm's allocation of marketing investments toward these firms, please provide your best estimate of the percentage of the Component Supplier's marketing investments to your firm (the OEM) or Industrial Buyer, represented by each of the following categories (must total 100%) in the last year.

Direct Selling __%, Advertising __%, Product Design __%, Trade Shows __%, Other Marketing __%

Value Maximizing (VALMAX), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
In light of the Industrial Buyer's communication,
... unit purchases of the Component Supplier's product by our firm will be higher. (1)
... $ sales of the Component Supplier's product to our firm will be higher. (2)
... our demand for the Component Supplier's product will be higher. (3)

Value Claiming (VALCLA), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
In light of the Industrial Buyer's communication, this Component Supplier's
... net profits on sales to us will be higher.
... overall profits on sales to us will be higher.
... returns on marketing investment toward us will be higher.

Market Stickiness (MKTSTK), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
The products this Component Supplier manufactures are
... difficult for competitors to imitate. (1)
... difficult to replace with substitutes. (2)
... highly differentiable from its competition. (3)

APPENDIX 1.C (cont'd)

Market Uncertainty (MKTUNC), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Due to the needs of this Industrial Buyer...
... our product design is NOT highly predictable. (1)
... our product design changes frequently. (2)
... our product specifications change often. (3)
... our product often requires reengineering. (4)

Performance Ambiguity (PERAMB), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
When considering this Industrial Buyer...
... it is difficult to observe the proper installation of our product. (1)
... it is difficult to observe the proper use of our product. (2)
... it is difficult to observe the performance of our product. (3)
... it is difficult to observe how our product's performance is assessed. (4)

Supplier Importance (SUPIMP), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to other suppliers, this component supplier is of high strategic importance to our firm. (1)

Supplier History (SUPHIS)
To better understand your firm and this supplier, please estimate the number of years this supplier has been a supplier to your firm. (1)

Procurement Knowledge, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am knowledgeable of my firm's procurement activities. (1)

Financial Knowledge, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am knowledgeable of my firm's financial results. (1)

Marker Variable, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am responsible for my firm's marketing budget. (1)

Appendix 2.A
Operational Measures of Constructs (Study One)

Investment Allocation (INVALL)
Recognizing that you have no direct knowledge regarding the Supplier's marketing investment behavior, please provide your best estimate (based on your observations) in each category of the percentage of the supplier's marketing investments that it directs to your firm or to the Industrial Buyer (each column must total 100%) in the last year.

Overall Marketing:	__% OEM, __% Industrial Buyer
Direct Selling:	__% OEM, __% Industrial Buyer
Advertising:	__% OEM, __% Industrial Buyer
Product Design:	__% OEM, __% Industrial Buyer
Other Marketing:	__% OEM, __% Industrial Buyer

In order to improve our understanding of this supplier's marketing behavior, please provide your best estimate (based on your observations) of how the supplier allocates their overall marketing investments, in each of the following categories (must total 100%) in the last year.

Direct Selling __%, Advertising __%, Product Design __%, Trade Shows __%, Other Marketing __%

Exploiting Response (EXPRES), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
When considering this Supplier and Industrial Buyer...
... our firm seeks ways to leverage the Supplier's marketing investments in the Industrial Buyer. (1)
... our firm seeks ways to build off the Supplier's marketing investments in the Industrial Buyer. (2)
... our firm seeks ways to create synergies with the Supplier's marketing investments in the Industrial Buyer. (3)
... our firm engages in activities complementary to the Supplier's marketing investments in the Industrial Buyer. (4)

Countering Response (COURES), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
When considering this Supplier and Industrial Buyer...
... our firm seeks ways to reduce the effects of the Supplier's marketing investments in the Industrial Buyer. (1)
... our firm seeks ways to counter the effects of the Supplier's marketing investments in the Industrial Buyer. (2)
... our firm seeks ways to create alternative product solutions to those envisioned by the Supplier. (3)
... our firm seeks ways to offset the Supplier's influence on the Industrial Buyer. (4)

Appendix 2.A (cont'd)

Market Uncertainty (MKTUNC), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Due to the needs of this Industrial Buyer...
... our product design is NOT highly predictable. (1)
... our product design changes frequently. (2)
... our product specifications change often. (3)
... our product often requires reengineering. (4)

Performance Ambiguity (PERAMB), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
When considering this Industrial Buyer...
... it is difficult to observe the proper installation of our product. (1)
... it is difficult to observe the proper use of our product. (2)
... it is difficult to observe the performance of our product. (3)
... it is difficult to observe how our product's performance is assessed. (4)

Technology Resource Advantage (TECHAD), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to this Supplier, our firm possesses...
... superior business processes. (1)
... superior skills. (2)
... superior intellectual property (3)

End-Customer Resource Advantage (ENDAD), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to this Supplier, our firm possesses...
... higher brand equity with this industrial buyer. (1)
... higher customer loyalty with this industrial buyer. (2)
... a larger installed base (equipment and services) with this Industrial Buyer. (3)

Supply Network Resource Advantage (SUPAD), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to this Supplier, our firm possesses...
... access to a larger network of industry leading firms. (1)
... a larger network of positive relationships with industry leading firms. (2)
... more experience working with a network of industry leading firms. (3)

Strategic Importance of Supplier (SUPIMP), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to other suppliers, this supplier is of high strategic importance to our firm. (1)

Strategic Importance of Industrial Buyer (IBIMP), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to other Industrial Buyers, this Industrial Buyer is of high strategic importance to our firm. (1)

Appendix 2.A (cont'd)

Supplier History (OEMHIS)
To better understand your firm and this supplier, please estimate the number of years this component supplier has been a supplier to your firm. (1)

Industrial Buyer History (OEMHIS)
To better understand your firm and this customer, please estimate the number of years this Industrial Buyer has been a customer of your firm. (1)

Marker Variable, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am responsible for my firm's marketing budget. (1)

Marketing Knowledge, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am knowledgeable of my firm's marketing activities. (1)

Procurement Knowledge, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am knowledgeable of my firm's procurement activities. (1)

Appendix 2.B
Experimental Manipulations (Study Two)

Static Demand/25% Increase in Demand <u>and</u> No Specification/Component Supplier Specified

The purpose of the study is to understand the behavior of OEMs (such as your firm) when component suppliers invest in marketing toward downstream industrial buyers (such as your customers). Please think about a specific component supplier to your firm and an industrial buyer (i.e., customer) that meet <u>both</u> of the following conditions: 1) the component supplier's product is integrated into your product, which is then sold to the industrial buyer, and 2) the component supplier commits some level of marketing investment (e.g., direct sales activity, advertising, trade shows) toward the industrial buyer and is known to the industrial buyer.

With this relationship in mind, imagine that your firm is in the process of negotiating a purchase agreement with this customer for the upcoming year. The customer has indicated it will require <u>the same number of units next year as in the current year</u> [a 25% increase in the number of units next year compared to the current year]. In addition, the customer has <u>not indicated a preference for any specific component supplier to be utilized by your firm</u> [indicated that your firm must utilize the component supplier previously identified] in relation to its order.

Appendix 2.C
Operational Measures of Constructs (Study Two)

Investment Allocation (INVALL)
Please provide your best estimate in each category of the percentage of the Component Supplier's marketing investments that is directed to your firm (the OEM) or Industrial Buyer (each row must total 100%) in the last year.

Overall Marketing: __% OEM, __% Industrial Buyer
Direct Selling: __% OEM, __% Industrial Buyer
Advertising: __% OEM, __% Industrial Buyer
Product Design: __% OEM, __% Industrial Buyer
Other Marketing: __% OEM, __% Industrial Buyer

In order to improve our understanding of this supplier's marketing behavior, please provide your best estimate (based on your observations) of how the supplier allocates their overall marketing investments, in each of the following categories (must total 100%) in the last year.

Direct Selling __%, Advertising __%, Product Design __%, Trade Shows __%, Other Marketing __%

Exploiting Response (EXPRES), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
In light of the Industrial Buyer's communication,
... our firm will seek to leverage the Supplier's marketing investments in the Industrial Buyer. (1)
... our firm will build off the Supplier's marketing investments in the Industrial Buyer. (2)
... our firm will create synergies with the Supplier's marketing investments in the Industrial Buyer. (3)
... our firm will engage in activities complementary to the Supplier's marketing investments in the Industrial Buyer. (4)

Countering Response (COURES), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
In light of the Industrial Buyer's communication,
... our firm will attempt to reduce the effects of the Supplier's marketing investments in the Industrial Buyer. (1)
... our firm will attempt to counter the effects of the Supplier's marketing investments in the Industrial Buyer. (2)
... our firm will attempt to create alternative product solutions to those envisioned by the Supplier. (3)
... our firm will attempt to offset the Supplier's influence on the Industrial Buyer. (4)

Appendix 2.C (cont'd)

Market Uncertainty (MKTUNC), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Due to the needs of this Industrial Buyer...
... our product design is NOT highly predictable. (1)
... our product design changes frequently. (2)
... our product specifications change often. (3)
... our product often requires reengineering. (4)

Performance Ambiguity (PERAMB), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
When considering this Industrial Buyer...
... it is difficult to observe the proper installation of our product. (1)
... it is difficult to observe the proper use of our product. (2)
... it is difficult to observe the performance of our product. (3)
... it is difficult to observe how our product's performance is assessed. (4)

Technology Resource Advantage (TECHAD), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to this Supplier, our firm possesses...
... superior business processes. (1)
... superior skills. (2)
... superior intellectual property (3)

End-Customer Resource Advantage (ENDAD), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to this Supplier, our firm possesses...
... higher brand equity with this industrial buyer. (1)
... higher customer loyalty with this industrial buyer. (2)
... a larger installed base (equipment and services) with this Industrial Buyer. (3)

Supply Network Resource Advantage (SUPAD), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to this Supplier, our firm possesses...
... access to a larger network of industry leading firms. (1)
... a larger network of positive relationships with industry leading firms. (2)
... more experience working with a network of industry leading firms. (3)

Strategic Importance of Supplier (SUPIMP), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to other suppliers, this supplier is of high strategic importance to our firm. (1)

Strategic Importance of Industrial Buyer (IBIMP), Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
Relative to other Industrial Buyers, this Industrial Buyer is of high strategic importance to our firm. (1)

Appendix 2.C (cont'd)

Supplier History (OEMHIS)
To better understand your firm and this supplier, please estimate the number of years this component supplier has been a supplier to your firm. (1)

Industrial Buyer History (OEMHIS)
To better understand your firm and this customer, please estimate the number of years this Industrial Buyer has been a customer of your firm. (1)

Marker Variable, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am responsible for my firm's marketing budget. (1)

Marketing Knowledge, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am knowledgeable of my firm's marketing activities. (1)

Procurement Knowledge, Seven-Point Likert-type Scale (1 = strongly disagree to 7 = strongly agree)
I am knowledgeable of my firm's procurement activities. (1)

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