

The Effects of Buyer Specific Investments and Buyer Specific Monitoring Investments on Hierarchical Governance in Business-to-Business Relationships

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Based on transaction costs analysis (TCA), this study examines the association between supplier held specific assets, buyer specific assets, buyer specific monitoring investments and hierarchical governance in industrial buyer-seller relationships and develops three hypotheses specifying these associations. Data from a survey of 159 industrial buyer-seller relationships provide support for the hypotheses, and demonstrates that there is a strong and negative association between buyer specific investments and hierarchical buyer control, while the effect of buyer specific monitoring investments is positively associated to hierarchical governance. Finally, in accordance with TCA predictions, the empirical findings demonstrate that there is a strong and positive association between supplier held specific investments and buyer control in business-to-business relationships.

INTRODUCTION

In the last two decades transaction cost analysis (TCA) has been extensively applied to study governance form of buyer-seller relationships (e.g. Heide & John, 1990; Rokkan et al., 2003; O'Donnell, 2009). Departure from conventional market exchange implies that specific devices are introduced in business-to-business relationships to handle inter-firm co-ordination, enforcement of decisions, monitoring and control of activities and performance.

This corresponds to the hierarchical planning dimension of inter-firm governance, conceptualized as a process which intends to specify tasks, duties and responsibilities of the transacting parties in more details (Heide, 1994). A key feature of hierarchical governance is proactive planning and centralization, where decisions and specifications of inter-firm issues are concentrated within one of the transacting parties. In such asymmetric inter-organizational relationships most empirical TCA studies have assumed that the buying firm has the power in the mutual decision-making process (Kalwani & Narayandas, 1995; Subramani & Venkatraman, 2003). We follow this line of research, and conceptualize buyer control as the extent of the buyer's authority and control over the supplier's decision making in a specific relationship (Heide, 1994).

Asymmetric relationships are often characterized by specific investments made by one of the exchange partners, e.g. the supplier. Such investments are only partly redeployable and are therefore only valuable in the context of a specific exchange (Stump & Heide, 1996). Although such specific investments can be

a source of competitive advantage for both exchange partners, the firm making such investments cannot leave the relationship without incurring substantial economic losses and can thereby be exposed to opportunistic behavior from the exchange partner. TCA maintains that such unilateral specific investments should not be made unless sufficient economic and/or contractual safeguards have been established (Williamson, 1996). One such safeguard for the investing firm (e.g. the supplier) is to require that the exchange partner reciprocates by making relation-specific investments or a mutual hostage (Kim & Mahoney, 2006; Williamson, 1983).

This study investigates how buyer specific investments affect buyer control. We extend previous studies within TCA by categorizing buyer specific investments into buyer specific monitoring investments and other buyer specific investments, and our survey demonstrates that the effect of these two types of specific investments on buyer control differ significantly.

The remaining sections of this article are organized as follows: First, we present a review of the literature on specific investments and furthermore discuss different types of buyer specific investments, and how these may impact buyer's control. The subsequent section describes the research methods for empirical tests of the hypotheses, and then reports the empirical results. We finally close with concluding remarks.

LITERATURE REVIEW AND DEVELOPMENT OF HYPOTHESES

Specific investments have been described as "...specialized investments (in assets) that cannot be redeployed to alternative uses or by alternative users except at a loss of productive value" (Williamson, 1996, p 377). Initially, Williamson (1983, p 526) classified four types of specific assets: 1) site specificity, which are assets located in close proximity to a particular exchange partner, 2) physical assets, whose engineering or physical properties are specifically designed to a particular relationship, 3) human asset specificity, that arises in a learning-by-doing fashion, 4) dedicated assets, which are investments made contingent upon a particular agreement and which would result in significant excessive capacity if the agreement were terminated. Later on Williamson (1985, 1988) added two more types: 5) brand name capital, and 6) temporal specificity, which is akin to technological non-separability and can be thought of as a type of site specificity in which timely responsiveness by on-site human assets is vital. Most empirical studies have reclassified specific investments into physical asset specificity and human asset specificity, of which human asset specificity represents the type most commonly assessed in TCA empirical studies (Lohita et al., 1994; Rindfleisch & Heide, 1997).

Specific investments have the potential to expand the value-creation in a buyer-seller relationship (Ghosh & John, 1999). For instance, if the seller's specific investments in physical assets lead to lower production costs and/or to enhance product quality, this would increase the benefit "pie" in the relationship (Jap, 1999). Problems may, however, arise when it comes to sharing the results of the value-creating specific investments (Jap, 2001). Such specific investments may create a lock-in situation for the investing supplier which, in turn, enables the buyer to act opportunistically in order to expropriate the investments' value (Rokkan et al., 2003). When the supplier makes such unilateral investments, its reliance on the buyer will increase, and the supplier may enter into a subordinate bargaining position (Kang et al., 2009). Accordingly, we propose:

- H1:** There is a positive association between the levels of supplier held specific investments and buyer control in industrial buyer-seller relationships.

Despite the risk, it is commonly observed in business practice that one firm makes unilateral specific investments (Subramani & Venkatraman, 2003). Some researchers have explained this by extending the TCA framework. For instance, Kang et al. (2009) by using a dynamic approach consider the positive economic values (via capability development, learning and inter-project spillovers) that an individual transaction could yield beyond the individual resource exchange between the transaction parties. Other researchers (e.g., Bensaou & Anderson, 1999) have noted that production costs considerations should be

included in order to explain idiosyncratic investments. Relational arguments such as norms and trust (Dyer & Singh, 1998; Gulati, 1995; Heide & Miner, 1992; Heide & John, 1994) have also been used to explain the motivation for employing unilateral specific investments.

Within the original TCA framework, Williamson (1996) notes that unilateral investments should only be made when sufficient economic and/or contractual safeguards have been established. One such safeguard could be explicit or formal contracts, “which detail roles and responsibilities to be performed, determine outcomes to be delivered, and specify adaptive processes for resolving unforeseeable outcomes” (Wuyts & Geyskens, 2005). Current research suggests that such formal contracts often play a relatively limited role in inter-firm relationships (Macaulay, 1963). As noted by Williamson (1996, p 131), complex contracts are invariably incomplete and many are maladaptive. Instead, informal or relational contracts are prevalent in business relationships (Baker et al., 2002; Seshadri & Mishra, 2004), which involve informal agreements and unwritten codes of conduct sustained by the value of future relationships.

While there are many studies on specific investments in business relationships (O'Donnell, 2009), rather few have discussed which types of such investments a buyer will make. Most empirical studies on asset specificity use the same types of specific investments both on the supplier and buyer side (e.g., Heide & John, 1988; Heide, 1994; Wathne & Heide, 2004). According to the classification of Williamson (1983; 1985) it is not obvious that the seller and buyer will face the same types of specific investments. For instance, site specific investments (e.g., specific investments in a new plant located near the exchange partner) is more likely to be done by the supplier than the buyer, while for instance the buyer is more likely to be concerned about the brand name.

Empirical research focusing on decomposing specific assets according to Williamson's (1983; 1985) classification and differentiating between suppliers and buyers specific investments have led to mixed results (De Vita et al., 2010).

We will argue that buying firms have two main motives for employing specific investments: First, specific physical and human investments which may either have the purpose to signal a reciprocal commitment and/or to increase the value added in the relationship. This could include specific investments in the procurement function such as inbound logistics, transportation systems, adjustments of production facilities and communication facilities, and the training and development of the staff linked to these investments. We label these investments as *buyer specific investments*.

In addition, the buyer is likely to be motivated for making specific investments to monitor and control the supplier. If information asymmetry exist in a relationship, it will be possible for one of the exchange partners (i.e., the seller) to act opportunistically. At least to some degree, monitoring the exchange partner's behavior and/or performance can overcome the problem of opportunism (Wathne & Heide, 2000). Examples of this type of specific investments, which we label as *buyer specific monitoring investments*, are specific development and implementation of quality assurance systems, production control routines, training and competence development of personnel in the supplier's plant.

Buyer specific investments refer to the magnitude of the investments and/or adaptations made by the buyer in physical assets, production facilities and tools tailored to the relationship. Based on power-dependence considerations, several empirical studies (e.g. Heide & John, 1992) have demonstrated that employment of buyer specific investments will attenuate the buying firm's ability to exercise influence on terms on trade and the value adding process in purchasing relationships. Based on this reasoning, we propose:

H2: There is a negative association between the level of buyer specific investments and buyer control in industrial buyer-seller relationships.

Buyer specific monitoring investments refer to the buying firm's investments in a specific, administrative infrastructure that helps in enforcing influence and control over the supplier firms. Monitoring offers a buyer control by reducing the information asymmetry between the two parties (Lal, 1990). Generally, monitoring can take place by controlling supplier's output and/or behavior (e.g.,

Anderson & Liver, 1987). Output monitoring will be based on relatively few observable performance indicators such as delivery and quality, and this type of monitoring can in principle be done without consent from the supplier. A behavior-based monitoring system involves considerable control of the seller's activities, with intervention that could embrace the seller's complete production process. As noted by Porter (1991), buyers in some industries use multifunctional teams to conduct audits of supplier sites. Such behavior-based monitoring could be forced upon a seller who is in a lock-in position. Behavior-based monitoring can, however, also be reached by an agreement between the exchange partners.

Even though such unilateral specific monitoring investments would lose at least part of their value if the relationship were terminated, we argue that such investments – in contrast to other buyer specific investments – actually will increase the buyer's control. Buyer specific monitoring investments will increase the coordination between the exchange partners, and decrease the buyer's perceived level of information asymmetry. Furthermore, the seller is more likely to accept the buyer's impact on the decision-making concerning changes in the various aspects of the seller's value chain. Accordingly, we suggest:

- H3:** There is a positive association between buyer specific monitoring investments and buyer control in industrial buyer-seller relationships

EMPIRICAL SETTING, RESEARCH METHODOLOGY AND MEASUREMENTS

The unit of analysis in this study is industrial buyer-seller relationships, and data was collected from manufacturing firms. To capture the domain of the constructs in the hypotheses (Churchill, 1979), an extensive literature review was first carried out. In the next stage, an explorative study was conducted among purchasing professionals in manufacturing firms, consultants, and academics engaged in procurement, logistics, and production planning. An archival study of standard purchasing contracts across four different industries was then undertaken to examine whether our definition of contractual safeguarding corresponded to contractual terms applied in industrial purchasing agreements. Another pilot study among 14 manufacturing firms was later conducted to obtain preliminary tests of scales and to capture relevant issues for prospective measures of asset specificity. Those pilot studies provided valuable information that guided further improvements of ambiguous questions, inappropriate vocabulary, and scaling methods (Hunt, Sparkman, & Wilcox, 1982). Finally, a pretest of the revised questionnaire based on personal interviews was carried out. The pretest revealed no significant problems with any of the remaining measures or scaling formats.

The final questionnaire was mailed to a census of 684 industrial procurement professionals with membership in the National Association of Purchasing and Logistics in a European country. Among these, 114 reported after receiving the questionnaire that they were unable to participate in the study because their firm had left business, or was no longer engaged in manufacturing. Among the remaining 570 informants, 32 % returned the questionnaire after two callbacks. The major part (67 %) of the non-responders reported busy work schedules or lack of time as the main reason for not answering the questionnaire. Non-response bias was measured by comparing early and late responders (Armstrong & Overton, 1977). No significant differences were found between the two groups with respect to length of the relationship, firm size, purchasing volume, or key informants' knowledge and involvement in the firm. Finally, firm size was compared between the responding firms and a sample of 160 non-responders. No significant difference was detected.

Measurements

Buyer control (BUYCON) describes to which extent key decisions in the relationship are concentrated with the buyer (Heide, 2003), and represents the buyer's degree of vertical control (Heide & John, 1992).

Supplier specific assets (SUPPLSPEC) refers to which specific investments and adaptations made by the supplier that are tailored to the specific purchasing relationship (Anderson & Weitz, 1992).

Buyer specific investments (BUYSPEC) refers to the magnitude of the investments and/or adaptations made by the buyer in physical assets, production facilities, tools and knowledge tailored to the relationship (e.g. Heide & John, 1990, 1992).

Buyer specific control investments (MONSPEC) was defined as idiosyncratic employment of resources in quality assurance systems, production control routines, training and competence development of personnel at the supplier's plant.

TABLE 1
MEASURES OF CONSTRUCTS AND VALIDITY STATISTICS

Scales	Sample of items. <i>Response format:</i> 7-point Likert-type scale with end points inaccurate description and accurate description.
Buyer Control: BUYCON: 4 items $\chi^2(2) = 2.90$, p=0.23 CFI=0.99, GFI=0.99 $\alpha = .68$	BUYCON1: Our firm determines all aspects of the implementation of quality assurance at our supplier's plant. BUYCON2: Our firm determines in detail the methods and standards to be used for control of the products we purchase from this supplier. BUYCON3: Our firm determines completely which sub-contractors to employ for the production of products delivered to our firm by this supplier. BUYCON4: Our firm has significant greater influence than our supplier on terms of trade.
Buyer Specific Monitoring Investments: MONSPEC: 3 items CFI=1.00, GFI=0.99 Trivial fit for 3 items $\alpha = .73$	MONSPEC1: Our firm has committed substantial time and resources to the training and competence development of personnel in this supplier's firm. MONSPEC2: We have committed substantial time and resources to develop acceptable quality assurance program at this supplier's plant. MONSPEC3: Our firm has committed a lot of resources to developing special equipment and routines for product control at this supplier's plant.
Supplier Specific investments: SUPPLSPEC: 4 items $\chi^2(2) = 1.24$, p=0.54 CFI=1.00 GFI=1.00 $\alpha = .71$	SUPPLSPEC1: This supplier has committed a lot of time and resources to meet our requirements for specific routines and equipment for product control. SUPPLSPEC2: This supplier has made comprehensive product adjustments in order to meet our requirements. SUPPLSPEC3: This supplier has to a great extent adapted the execution and follow-up orders to the existing ordering routines in our firm. SUPPLSPEC4: Our supplier has carried out extensive investments in storage and transportation equipment in order to deal with deliveries to our company.
Buyer Specific investments: BUYSPEC: 5 items $\chi^2(5) = 4.18$, p=0.53 CFI=1.00 GFI=0.99 $\alpha = .70$	BUYSPEC1: Our firm has completely adjusted our product specifications in accordance with this supplier's production technology and product range. BUYSPEC2: Our firm has committed a lot of time and resources to achieving insight and adaptation to the technical standards of this supplier. BUYSPEC3: Our firm has completely restructured our production in order to improve the efficiency of the further processing of the products that we buy from this supplier. BUYSPEC4: Our firm has to a great extent adapted our ordering routines to this supplier's expediting routines. BUYSPEC5: Our firm has made substantial investments in information technology dedicated to the transactions with this supplier.
Environmental Uncertainty: UNCERT: 1 item	UNCERT1: The demand for the product we buy from this supplier is very unpredictable.
Buyer's manufacturing technology: TECHNO: 1 item	TECHNO1: The work-flow of our firm's manufacturing department is strongly pre-programmed.

The prior length of the relationship (TIME) emphasizes long-term ties in industrial purchasing (Heide & Miner, 1992) and its positive effect on relational norms (Buvik & John, 2000). The IMP-studies carried out by Hakansson and his associates (e.g., Hakansson, 1982) assign primary importance to time as the

enabler of relationship development. Long-term relationships offer better opportunities to reduce waste, and promote quality in business-to-business relationships. Kalwani & Narayandas (1995) in particular demonstrated that supplier relationships with low turnover over a certain period of time reduced inventories more than a matched set of ties with a higher turnover. Their work ties in with the TCA-perspective since it is observed that the threat of opportunism and subsequent transaction costs diminishes over time (Ring & Van de Ven & Ring, 1992).

Environmental Uncertainty (UNCERT) is expected to be a significant antecedent to inter-firm governance. In particular, changing demand conditions call for comprehensive adjustments, communication of new information, realignment of resources and the re-negotiation of terms of trade (Malone 1987; Williamson 1985). To account for this effect, a single item measure focusing on the degree of marked demand unpredictability of the product bought from the focal supplier was incorporated in our research model.

Annual purchasing volume (\$PURCHASE). Most discussions of inter-firm relations find the size of business to business trade to reflect a significant stake and leverage (e.g. Spekman, 1988), and hence effect the governance structure of business relationships. The natural logarithm of the buyer's annual dollar purchases from the focal supplier was used to control for these effects.

Buyer's manufacturing technology (TECHNO). Several inter-organizational studies have examined the effect of the buyer's manufacturing technology (Johanson, 1982, Heide, 1994) and found that the rigidity of buyer's manufacturing technology increased the formalization of purchase contracts in industrial channel dyads. We applied a one-item construct to control for possible effect of the buying firms manufacturing technology (confer Table 1).

Validation of Constructs

First, each of the four multi-item measures (buyer control, supplier specific investments, buyer specific investments and buyer specific control investments) was analyzed by inspecting item-to-total correlations. Then, each of the constructs was examined by a confirmatory factor analysis to verify unidimensionality and assessment of internal consistency. A single-factor representation was used for each of the item-sets representing these constructs and the estimates and the fit statistics for these three models showed an adequate fit to the data set (confer Table 1).

Discriminant validity of the three basic TCA-constructs was then assessed by estimating a three-factor measurement model based on EQS (Bentler, 1989). The overall chi-square statistics indicate a reasonable fit to the four-factor solution ($\chi^2(98) = 60.72$, $p < 0.01$), and several fit indexes confirmed satisfactory fit of the four-factor model, Bentler's Comparative Fit Index, CFI=0.99, the goodness-of-fit index, GFI=0.91 and the root mean square measures, RMSEA=0.04. Table 1 presents the items, reliability measures and fit indexes; Appendix 1 contains the correlation matrix and descriptive statistics.

STATISTICAL ANALYSIS AND EMPIRICAL FINDINGS

In order to test our research hypotheses, the following OLS-regression model was estimated:

$$\begin{aligned} \text{BUYCON} = & b_0 + b_1 \text{SUPPLSPEC} + b_2 \text{BUYSPEC} + b_3 \text{MONSPEC} + b_4 \text{TIME} + b_5 \text{UNCERT} \\ & + b_6 \$\text{PURCHASE} + b_7 \text{TECHNO} + \varepsilon \end{aligned}$$

The overall goodness of fit for the model is good with $F(7,151) = 10.59$ ($p < 0.01$) and $R^2_{\text{Adj}} = 0.30$ which indicates that the model provides an adequate description of our data. Table 2 provides the outcome of the empirical analysis and collinearity statistics.

As suggested by H1, we observe a significant and positive effect of supplier specific assets on buyer control ($b_1 = 0.39$, $p < 0.01$). Furthermore, the empirical analysis supports H2 and verifies a significant and negative association between buyer specific investments and buyer control $b_2 = -0.41$, $p < 0.01$), and we observe a positive and association between buyer specific monitoring investments and buyer control ($b_3 = 0.41$, $p < 0.01$) in accordance with H3.

The effects of the control variables. As expected from relational exchange theory, the prior length of the relationship (TIME) shows a negative association with buyer control, but the association is not significant ($b_4 = -0.12$, $p > 0.05$). Furthermore, environmental uncertainty seems to foster higher hierarchical governance to cope with unpredictable terms of trade and the prospects of frequent renegotiations ($b_5 = 0.14$, $p < 0.05$). Stakes and leverage considerations seem to function as antecedent to hierarchical governance, and the annual purchasing volume absorbed by the buying firm is positively associated to buyer control, but the association is insignificant ($b_6 = 0.10$, $p < 0.10$).

Finally, the rigidity of the buyer's manufacturing technology is positively related to buyer control. The association is however rather modest ($b_7 = 0.07$, $p > 0.05$).

Taken together, the analysis demonstrates that the TCA based predictor variables maintain explanatory power when relevant control variables are accounted for in the model, and indicates a satisfactory robustness of the model.

**TABLE 2
REGRESSION ANALYSIS. DEPENDENT VARIABLE: BUYER CONTROL**

Independent variables:	Unstandardized Coefficients	t-values	Collinearity Measure, VIF
Supplier specific assets (SUPPLSPEC), b_1	0.39	4.10 ^a	0.96
Buyer specific assets (BUYSPEC), b_2	-0.41	-3.94 ^a	0.85
Buyer specific monitoring investments (MONSPEC) b_3	0.41	3.80 ^a	0.94
Relationship Duration (TIME), b_4	-0.12	-0.96	0.82
Environmental Uncertainty (UNCERT) b_5	0.14	2.24 ^b	0.53
Annual purchasing volume (\$PURCHASE), b_6	0.10	1.22	0.61
Manufacturing Technology (TECHNO), b_7	0.07	1.23	0.63
Constant(b_0)	1.40	2.99 ^a	
Model Fit: $F(7, 151) = 10.59^a$ $R^2_{Adj} = 0.20$, a indicates significant at $p < 0.01$ and b indicates significant at $p < 0.05$			

DISCUSSION AND IMPLICATIONS

Theoretical Considerations

Williamson (1996) maintains that asset specificity is the most important dimension in predicting governance form. Actually, he concludes that asset specificity "is the big locomotive to which transaction cost economics owes much of its predictive content" (Williamson, 1998). As the supplier dedicates substantial relation-specific resources in a business relationship, this gives rise to a governance mode that is hypothesized to be unilateral; that is, the powerful partner (e.g., the buyer) has the leverage to formulate rules and instructions and to impose decisions on the weaker partner. Our empirical findings give support to this reasoning and demonstrate that the level of supplier held specific investments is positively associated with the exercise of buyer control. When specific investments are employed by the supplier, this will normally lead to a situation where the buyer has the leverage to formulate specification of routines, procedures and requirements regulating the relationship.

The present study illustrates that it is important to evaluate the nature and function of different kinds of buyer specific investments as antecedents to governance mode in business-to-business relationships. First of all, buyer specific investments (BUYSPEC) refers to the magnitude of the investments and/or adaptations made unilaterally by the buyer in physical assets, production facilities, tools and knowledge tailored to the relationship in his/her own organization. Based on power-dependence considerations, several empirical studies (e.g. Heide & John, 1992) have demonstrated that employment of buyer specific

investments will attenuate the buying firm's ability to exercise influence on terms on trade and value creation at the supplier's plant and the empirical findings of this research provides strong support for this reasoning.

The most significant issue concerns the buyer's employment of specific monitoring investments integrated to the value adding processes at the supplier's plant, like quality assurance systems, production control routines, and training and competence development of personnel in the supplier firm. We will argue that when the buying firm risks unilateral dependence by tailoring administrative routines to operate specifically with one supplier, they will relate such administrative investments to other specific investments already done in order to improve the coordination between the buyer and the seller (Bensaou & Anderson, 1999).

Our empirical findings demonstrate that the establishment of an administrative infrastructure at the supplier plant really helps the buying firm in enforcing influence and control over the supplier firms. This concerns the problem of multiple coordination value adding processes in both the upstream and downstream parts of the supply chain networks (Wathne & Heide, 1994), and specific monitoring investments function as an administrative infrastructure that enhances the buying firm's ability to carry out quality assurance activities in the supplier's plant for the purpose of ensuring that the performance of the supplier firm matches the evaluation criteria of the buying firm's customers.

Limitations and Further Research

Much remains to be done to further elaborate the issue of hierarchical governance in business-to-business relationships. Implicitly, the limitations of this research generate some options for further research. First of all, this study is based on a cross-sectional design, and does not fully capture the dynamics of the inter-firm trading.

From the buying firm's point of view, an interesting issue concerns how the employment of specific investments and the tailoring of specific monitoring investments is dimensioned simultaneously in the initial stage of business relationships and how such inter-firm ties develop over time. As long as substantial specific, monitoring investments are employed on the buyer side in the initial stage of the relationship and accompanied with substantial buyer investments of other kinds, we could argue that that such monitoring efforts function as explicit safeguarding mechanism *ex ante*, completely in line with basic TCA considerations.

On the other hand, if the monitoring investments develop over time, for instance as a response to stronger requirements for stronger control over the supply market and the entire supply chain, the origin of such monitoring investment might be explained by power-dependence considerations or strategic disposition on the buyer side.

Further insight into the process of how specific investments are employed over time and in particular how different kind of specific assets are combined during the history of business-to-business relationships is desirable to explore in further research.

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