

## **Competence, Specificity and Outsourcing: Impact on the Complexity of the Contract**

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### **INTRODUCTION**

With the blurring of the corporation's traditional boundaries, new forms of contracting have progressively emerged. Outsourcing is one of the most prominent ones. In this paper, we focus on outsourcing as an instance of vertical disintegration (i.e. letting suppliers take over activities that were once undertaken in-house) which has been far less researched (Boone and Verbedeke, 1991) than the classical 'make or buy' issue (Williamson, 1985; Shelanski and Klein, 1995).

Outsourcing as an instance of vertical disintegration is currently booming in service and support activities (Quinn, 1992; Outsourcing Institute, 1997). Service outsourcing has recently moved beyond basic activities (e.g., gardening, catering and cleaning) to encompass more elaborate activities of the value chain (e.g., information technology systems, telecommunications, transportation, logistics, R&D). Though outsourcing as an instance of vertical disintegration has received extensive coverage from the managerial literature (Lacity and Hirschheim, 1993; Lacity, Willcocks and Feeny, 1995; Saunders, Gebelt and Hu, 1997; Useem and Harder, 2000), it has been quite neglected in the academic literature (Domberger and Li, 1995; Lei and Hitt, 1995). There have not been a lot of changes since Joskow (1985: 33) made the following comment: "*Most of the empirical work (using TCE) has focused on examining the choice between vertical integration and the market (...) analysis of contracts has been minimal*". Indeed, there is a dearth of fine-grained studies of organizational forms such as outsourcing.

The claim of the present article is that the standard TCE is too loose when it comes to the concept of asset specificity. A more fine-grained differentiation between the different types of specificity is necessary. In this paper, we distinguish between three types of specificity: core specificity, transactional specificity, and relational specificity.

In the case of vertical disintegration, firms have invested in activities that fit with their needs and requirements and contribute to their competitive advantage (i.e., core specificity). These activities rest on dedicated employees and equipment (i.e., transactional specificity). Finally, outsourcing also entails a long-term relationship between the client and the outsourcer. Relational specificity refers to the specific assets developed over the course of this relationship.

In this paper, we focus on the link between the three types of specificity and the complexity of outsourcing contracts because specificity is generally considered as the most important transaction cost attribute. We also integrate external uncertainty in our model. External uncertainty is a multidimensional concept that reflects the lack of knowledge about events that may take place in the environment (Joskow, 1988a, b; Klein, 1988; Sutcliffe and Zaheer, 1998).

In the first section, we introduce the theoretical background for the study and the hypotheses. We then present the methodology. In the third section, we provide the empirical results of our study. We then discuss our results before concluding with the implications and the limitations of the study.

## **TRANSACTION COST ECONOMICS, RESOURCE-BASED VIEW AND OUTSOURCING**

### **Outsourcing as bilateral governance**

Over the last 25 years, Transaction Cost Economics (TCE) (Williamson, 1975, 1985 and

1996) has emerged as the most widely used theoretical explanation of boundary choice. High levels of idiosyncrasy (i.e. asset specificity) generally characterize activities that have been historically internalized generally. Hence, outsourcing may be defined as a hybrid form of governance that rests on complex medium or long-term contracts (Quinn, 2000). With the prominent exception of the literature on long-term contracts however (Crocker and Masten, 1988, 1991; Goldberg and Erickson, 1987; Joskow, 1985, 1987, 1988a, b, 1990; Masten and Crocker, 1985; Mulherin, 1986), most of the empirical research using TCE has focused on the link between transaction attributes and governance structures (i.e., market, firm or hybrid form) (Klein and Shelanski, 1995).

Outsourcing is a strategic decision. After investing in a specific activity (i.e., telecommunications network, information system, and logistic platform...) over a certain period of time, a firm decides to transfer equipment and employees to an outside vendor. As continuity of service is required, a bilateral governance mechanism between the client and outsourcer must be set up. TCE is useful to analyze bilateral governance, there are some limitations about the meaning of 'asset specificity' developed by TCE. The definition of specificity is fully related to the 'make or buy' decision and does not take account previous specific investments. Moreover, TCE does not differentiate between the idiosyncratic investments done before a transaction, during a transaction and after. In case of outsourcing contracts, we show that specificity has different meanings.

### **Core specificity**

*Core specificity* refers to the extent to which resources contribute to the competitive advantage of the firm (Wernerfelt, 1984). This concept is theoretically rooted in the Resource-Based View of the firm (RBV). Firms are seen as repositories of resources and capabilities. According to Penrose (1959), the firm is a heterogeneous bundle of resources and an entity that accumulates knowledge. Those firms that possess superior resources will

earn rents (Teece, 1982, Wernerfelt, 1984; Conner, 1991). For the RBV, the firm's accumulated pool of resources has two significant properties. First, the nature of these resources and capabilities is mainly 'time dependent'. It also has tacit dimension, making it difficult to transfer from one firm to another. Second, it is assumed that the basis of these resources consists of a collection of assets, such as organizational capital.

However, the firm is not a simple collection of resources. Interactions and development of firm-specific combinations is far more important. Prahalad and Hamel's (1988) definition of what constitutes a firm's 'core competencies' as the "*collective learning in the organization, especially how to coordinate diverse production skills and integrate multiple streams of technology*" can also be characterized as 'organizational capital'. These resources meet four criteria: value, rareness, imperfect imitability and absence of substitutes (Barney, 1991: 106).

Commenting on Barney (1991), Monteverde (1997: 100) notices that: "*the concept of a firm's set of exceptional strategic resources as defined by the four considerations above has a parallel in the transaction cost literature as the economic construct "asset specificity"*". We suggest that core specificity must be distinguished from transactional specificity because firms have invested in core resources prior outsourcing them (Nooteboom, 1993; Teece, 1988). According to this view, the firm consists of a bundle of heterogeneous resources. Each firm accumulates very different and idiosyncratic resources. On the one hand, they are the result of an accumulation process throughout the history of the firm. On the other hand, they are complex and are tightly held by the organization.

### **Transactional specificity**

*Transactional specificity* refers to the traditional asset specificity of TCE. Most scholars currently distinguish between six dimensions of asset specificity: site, specific product or service, human resources, dedicated assets, brand and temporal specificity (Williamson, 1989). The TCE concept of specific assets is of crucial importance. If specific assets are

engaged in a transaction, there will be a dependence between transacting partners. This dependence yields transaction costs if there is risk of opportunism and if rationality is bounded (Williamson, 1985). In TCE, the paradigmatic case of a supplier that uses transaction-specific assets to deliver a good or service that is tailored to the demand of a single customer is an important one. As Nooteboom writes: “‘specificity’ means something like this: ‘to achieve a given purpose there is no alternative for a given means’” (1993: 443). Transactional specificity is a sufficient condition for dependence. It also has an impact on contractual environment and devices. Transactional specificity creates dependence and entails a risk of ‘hold-up’.

### **Relational specificity**

*Relational specificity* refers to the extent to which resources must be developed to deal with a particular vendor instead of carrying out an activity internally. Firms engage outsourcing relationships to obtain access to complementary resources while focusing on core competencies. Akin to transactional specificity, relational specificity creates a small number of exchange condition that leads to high transaction costs. Relational specificity refers to the extent to which an outsourcing client adapts to the particular requirements of its vendor (Malone, Yates and Benjamin, 1987). In the context of service outsourcing, relational specificity has both a human and procedural dimension (Zaheer and Venkatraman, 1995). In general, most specific investments lie on the side of the outsourcing vendor. Of course, the client may also make specific investments to adjust to the vendor. In this paper, we show that relational specificity is a mechanism of mutual dependence. Specific investments have two effects. On the one hand, they increase switching costs and the size of damage in case of hold-up. On the other hand, they increase value to the partner, making it more captive and reducing the probability of hold-up.

## **RESEARCH HYPOTHESES**

### **Impact of core specificity on outsourcing contract complexity**

The resources that constitute the core business of a firm must be accumulated during a long-term process (Dierickx and Cool, 1989; Foss, 1994; Quélin, 1996). When such resources are transferred to outside vendors, complex contracts are necessary to avoid disruption. Contrary to the link between transaction specificity and contract complexity, the link between core specificity and contract complexity has nothing to do with the opportunism hypothesis (Conner and Prahalad, 1996). Complex contracts are necessary to make sure the competitive advantage of the firm will not be threatened. Hence, we hypothesize a positive impact of core specificity on the complexity of outsourcing contracts:

*Hypothesis 1: The higher the core specificity, the more complex the contract.*

### **Impact of transactional specificity on outsourcing contract complexity**

As Dyer (1997: 535) very clearly states it: “*The standard (transaction cost) reasoning is that as asset specificity increase, more complex governance structures (i.e., more complex contracts) are required to eliminate or attenuate costly bargaining over profits from specialized assets*”. Most empirical studies using TCE have tested the link between asset specificity and one of the three governance structures (i.e., market, hybrid form and firm). However, the impact of asset specificity on contractual clauses has rarely been empirically explored, except for the link between asset specificity and the “contract duration” clause (Joskow, 1985, 1987). By extending this reasoning to the overall structure of the contract, we suggest that the likelihood of dense contracts and the benefits of contracting increase with the value of asset-specific investments.

*Hypothesis 2: The higher the transactional specificity, the more complex the contract.*

### **Impact of relational specificity on outsourcing contract complexity**

When a firm entrusts an outsourcer with an activity, business process assets dedicated to this particular outsourcer relationship are developed (Zaheer and Venkatraman, 1995). These assets must be protected against the potential opportunism of the vendor. Hence, the development of specific relational assets should also lead to more complex outsourcing contracts.

*Hypothesis 3: The higher the relational specificity, the more complex the contract.*

### **Impact of core specificity on transactional specificity**

Several authors have suggested that “core competencies” rely on highly idiosyncratic assets (Amit and Schoemaker, 1993; Barney, 1997; Monteverde, 1997; Reve, 1990). For instance, Barney (1997: 33) has suggested that “*Resources and capabilities that build up over long periods of time (history) are likely to be characterized by high levels of transaction-specific investments*”. Similarly, Amit and Schoemaker (1993: 35) contend that “*Capabilities ... refer to a firm’s capacity to deploy resources, usually combination using organizational processes, to effect a desired end. They are information-based, tangible and intangible processes that are firm-specific and are developed over time through complex interactions among the firm’s resources*”. Surprisingly, this link has not been empirically tested so far. Hence we posit that resources characterized by core specificity will also be characterized by transactional specificity.

*Hypothesis 4: The higher the core specificity, the higher the transactional specificity*

### **Impact of environmental uncertainty on outsourcing contract complexity**

Most existing empirical studies show that vertical integration is necessary when the

relevant contingencies are numerous or unpredictable. Williamson (1991) suggests that hybrid governance forms such as outsourcing are very sensitive to external uncertainty. As adaptations cannot be made unilaterally (as with market) or by fiat (as with hierarchy), hybrid forms require mutual consent. The costs generated by the contract are manifold. They include: i) the cost of devising optimal responses to future contingencies; ii) the cost of renegotiating the terms of the contract; iii) the costs of failing to adjust the contract to new circumstances. External uncertainty requires specification and verification of performance and efforts done by the outsourcing vendor. When uncertainty is high, outsourcing contracts should be very detailed to make monitoring less difficult and facilitate adjustments (Klein, 1988; MacLeod and Malcomson, 1993). Complex contractual clauses should be built in the contract to permit adjustments as events unfold (Masten, 1984) and avoid constant renegotiations aimed at reaching mutual consent (Walker and Weber, 1984). Hence, we propose that external uncertainty has also a positive impact on contractual complexity.

*Hypothesis 5: In case of long term outsourcing contract, the higher the environmental uncertainty, the more complex the contract.*

## **METHODOLOGY**

### **Sample and data collection**

We collected detailed primary data on outsourcing operations through a survey of European and American firms. As there was no systematic database on “vertical disintegration” operations, we conducted an extensive analysis of the press (i.e., international newspapers and specialized magazines) between 1990 and 1998. In order to spot outsourcing contracts announcements, we made an exhaustive electronic search of two major databases: ABI/INFORM-GLOBAL and REUTERS. The initial sample consisted of 816 “vertical disintegration” outsourcing contracts that were signed between 1992 and 1997. This period

was chosen to exclude older outsourcing contracts for which managerial turnover would have prevented collecting accurate information on the conditions prevailing at the time the contract was signed.

A total of 91 completed questionnaires were returned so that the response rate is slightly higher than 11%. This response rate is consistent with that of other empirical studies on outsourcing (e.g., Ang and Cummins, 1997). Of these 91 questionnaires (i.e. collected from 91 different firms), 9 had to be dropped because of missing data. Hence, we were left with 82 usable questionnaires. We tested for a potential response bias by comparing the respondents and non-respondents on two key organization features: total sales and number of employees.<sup>1</sup> This technique is very usual and has been used in recent outsourcing studies such as Teng, Cheon and Grover (1995) or Ang and Cummings (1997). The data were obtained from *Compact Disclosure* and *Kompass Europe* (i.e., its European equivalent). Consistent with Teng, Cheon and Grover (1995), we randomly selected a subsample of 30 non-respondents and compared their total sales and number of employees with those of the 82 respondents. The results of the t-tests (respectively  $t = 0.346$  for total sales and  $t = 0.625$  for number of employees) showed no difference at the significance level of 0.05. Consequently the results from our study may be generalized to the whole sample.

### **Control for response bias and data heterogeneity**

#### *Industry*

Data were collected in randomly selected industries. Though there is evidence that industry type has no impact on outsourcing strategies (Loh and Venkatraman, 1992; Teng, Cheon and Grover, 1995), we included a binary dummy variable for service and industrial sectors.

### *Country*

Data were collected in Europe and in North America. Hence, we included a binary dummy variable (i.e. European and American outsourcing contracts) to control for the impact of the country of origin.

### *Type of activity outsource*

Most empirical studies on service outsourcing have focused on Information Technology (IT) (Saunders, Gebelt and Hu, 1997; Lacity and Willcocks, 1998) and Research and Development (R&D) activities (Pisano, 1990; Ulset, 1996). Contrary to these studies, we used a sample composed of different service activities. Basically, we believe the TCE framework is robust enough to simultaneously deal with different activities. As IT and telecommunications are the most “pervasive” activities, we included a dummy variable for IT and non-IT activities (Applegate, McFarlan and McKenney, 1999).

## **Measures and Variables**

The constructs were operationalized with a mix of original and adapted scales derived from the conceptual definition of the constructs, the literature and field interviews.

### *Transactional specificity*

Though asset specificity is probably the most important attribute of TCE, there is no commonly accepted operationalization of this concept (Lohtia, Brooks and Krapfel, 1994; Klein and Shelanski, 1995). Generally, assets are considered specific when they are not redeployable to alternative uses (Klein and Leffler, 1981; Williamson, 1985: 53). In the case of outsourcing, dedicated employees and equipment have generally been transferred to the vendor. The “redeployability” criterion does not make much sense in the context of outsourcing because the level of specificity is maintained (at least at the beginning).

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<sup>1</sup> Results are available on request.

Consistent with the literature (Anderson and Weitz, 1986; Poppo and Zenger, 1998), we operationalized asset specificity as (1) the cost to switch vendors; (2) the time to switch vendors; (3) the cost to reintegrate the outsource activity; (4) the time to reintegrate the outsource activity. All four variables were measured on a five-point Likert scale from “very low” to “very high”.

#### *Core specificity*

There is no accepted tool to evaluate the degree of core specificity of an activity. Criteria such as value, rareness, non-imitability and non-substitutability (Barney, 1991) have been developed to spot the “crown’s jewels” of the firm (Montgomery, 1995). They do not seem to be very useful to compare outsourced service activities. Hence, we operationalized core specificity with a mix of criteria from the managerial literature. Four items were used: (1) degree to which the activity contributes to the overall profitability of the firm (Barney, 1997; Quinn and Hilmer, 1994); (2) degree to which the activity enables direct contact with the end customer (Quinn, Doorley and Paquette, 1990; Aersten, 1993, Prahalad and Hamel, 1990); (3) degree to which the activity enables the company to differentiate itself from its competitors in the eyes of the customers (Leonard-Barton, 1992; Stalk, Evans and Schulman, 1992) and (4) degree to which the activity is viewed as strategic (Teng, Cheon and Grover, 1995). All four variables were measured on a five-point Likert scale from “very little” to “very highly”.

#### *Relational specificity*

We operationalized relational specificity using two items: (1) extent to which dealing with the vendor implied changes for the other employees in the client firm; (2) extent to which dealing with the vendor implied changes for the overall functioning of the client firm. Both items were based on Zaheer and Venkatraman (1995).

### *External uncertainty*

We operationalized external uncertainty as the difficulty of evaluating the future needs of the outsourcing clients. Four items were used : (1) uncertainty regarding the expected technology (Balakrishnan and Wernerfelt, 1986; Walker and Weber, 1984, 1987); (2) uncertainty regarding the expected volume and activity levels (Anderson and Schmittlein, 1984; Walker and Weber, 1984; John and Weitz, 1988). (3) uncertainty regarding the expected performance and (4) uncertainty regarding the expected human competencies. The latter two items were suggested by interviews with managers. All four items were measured on a five-point Likert scale from “very easy to assess” to “very hard to assess”.

### *Contract complexity*

We term contractual complexity the extent to which outsourcing contracts are comprised of elaborate clauses. Such clauses are necessary to manage the potential opportunism of the supplier and changes in the environment. The law and economic literature has suggested that several types of clauses are paramount in outsourcing contracts: (1) control clauses; (2) incentive clauses; (3) price clauses (Crocker and Masten, 1991; Joskow, 1988b); (4) evolution clauses (Joskow, 1988a) and (5) end of contract clauses (Masten, 1988; Wiggins, 1991).

For each type of clause, we averaged between three to five items:

- control clauses: (a) service level reports with service level measures; (b) regular client and supplier meetings; (c) internal or external end-user surveys; (d) annual review; (e) cash penalty for non-performance
- incentive clauses: (a) cash bonuses in case of performance superior to that specified in the contract ; (b) escalation procedures; (c) risk and reward sharing
- price clauses: (a) fixed price; (b) indexing of price on a market average cost; (c) indexing on best suppliers' prices through “benchmarking”
- evolution clause : (a) adjustment of charges to changes with a guaranteed minimum

volume for the supplier; (b) adjustment of charges to changes in your business with non-guaranteed minimum volume; (c) evolution of technology towards market standards;

- end of contract clauses: (a) material reversibility with supplier assistance at the end of the contract; (b) human reversibility with supplier assistance at the end of the contract; (c) material reversibility with supplier assistance in case of anticipated contract severance on your behalf; (d) human reversibility with supplier assistance in case of anticipated contract severance on your behalf.

### **Statistical method**

We used two statistical techniques to test our model. First, we resorted to Partial Least Squares (PLS) (Lohmöller, 1989; Hulland, 1999). PLS was preferred over LISREL (Jöreskog and Sörbom, 1989) because it requires less stringent assumptions about the randomness of the sample and the distribution of variables. It is also better suited to deal with small data samples (Fornell, 1982; Wold, 1982, 1985). Second, we also resorted to PLS regression (Umetri, 1996). PLS regression is a statistical method that can deal with multicollinearity issues. Multicollinearity becomes a concern when there are high intercorrelations among the independent variables. Our model has built-in multicollinearity. For instance, we simultaneously expect: (1) core specificity and transactional specificity to impact contract complexity; (2) core specificity to impact transactional specificity. The PLS regression algorithm was initially developed by Wold, Martens and Wold (1983) and Wold, Albano, Dunn, Esbensen, Hellberg, Johansson and Sjöström (1983). It is very frequently used in chemistry but it can be very useful for management as well. Its mathematical properties have been described in Helland (1988) and Höskuldsson (1987).

## ANALYSIS AND RESULTS

The estimation of the model took place in two stages. First, the reliability and validity of the measurement (i.e., links between manifest and latent variables) were assessed using PLS. Second, the causal relationships within the structural model (i.e., links between the latent variables) were assessed using PLS regression (see Table 5).

Hypothesis 1 is supported ( $\beta = 0.14$ ;  $p < 0.05$ ). Core specificity has a positive impact on the complexity of outsourcing contracts. When activities are close to the “core business” of a firm, it is important to have a total control over the vendor.

Hypothesis 2 is supported ( $\beta = 0.26$ ;  $p < 0.01$ ). Transactional specificity has a positive impact on the complexity of outsourcing contracts. Hence our results corroborate those of Joskow (1988a, b and 1990) in the case of service activities outsourcing.

Hypothesis 3 is not supported ( $\beta = 0.08$ ;  $p > 0.10$ ). Relational specificity has no impact on the complexity of outsourcing contracts. When relational assets have been developed, contracts are not necessarily complex.

Hypothesis 4 is supported ( $\beta = 0.25$ ;  $p < 0.01$ ). Core specificity has an impact on transactional specificity. This result suggests that activities that contribute to the competitive advantage of a firm also rest on transaction specific assets.

Hypothesis 5 is also supported ( $\beta = 0.21$ ;  $p < 0.01$ ). External uncertainty has a positive impact on the complexity. The higher the uncertainty about the future needs of the outsourcing client, the more clauses must be included in the contract in order to deal with unexpected contingencies. Thus, the contract must be flexible enough to accommodate them.

### *Control variables*

As the data used in this paper was heterogeneous, we wanted to test whether our findings were robust over different countries, industries and activities. We ran PLS regressions with control variables (see Table 5). Of the three variables, only “activity” turned out to have a

positive and significant impact on the dependent variables. In order to further explore the impact of this variable, we re-ran the model on two sub-samples (i.e. IT activities vs. non-IT activities). Our findings turned out to be robust even when splitting the sample into IT outsourcing vs. non-IT outsourcing operations. Hence, it seems that IT outsourcing operations are characterized by higher core specificity, transactional specificity, relational specificity and external uncertainty than non-IT outsourcing operations. This results in longer contracts (Lacity and Hirschheim, 1993). In sum, the logic of our model is respected irrespective of industry, country and activity characteristics. However, the IT outsourcing contracts are more complex than other contracts.

## **RESULTS AND DISCUSSION**

One of the most critical aspect of outsourcing is the management of the outsourced resources. Recently, several empirical studies have stressed the importance of relationships between outsourcing clients and their vendors especially for services that have direct connections with manufacturing and core businesses (Huber, 1993; Quinn and Hilmer, 1994; Cross, 1995; Quinn, 2000). Basically, we have shown that asset specificity is a multi-dimensional concept. Core and transactional specificity have an impact on the complexity of outsourcing contracts. On the other hand, relational specificity has no impact on the complexity of outsourcing contracts.

This study used constructs from Williamson's works (1979, 1985) to examine outsourcing and contracts between outsourcing clients and their vendors. Although TCE is the main framework to discriminate between transactions that need to be internalized and transactions that do not, the unique characteristics of outsourcing (e.g., transfer of an in-house activity with employees, long term dependency towards the vendor, further need to access to service) may limit the explanatory power of TCE. Outsourcing addresses the paradox of

organizations that invested in-house in the past and decided to enter into a long-term contractual agreement (Walker and Poppo, 1991).

While this study provides important managerial implications, one should note that it has several limitations. First, most of the constructs were represented by personal evaluation of managers involved in the outsourcing decision. Our priority was to avoid crude and imprecise proxies. Since well-informed executives responded to the survey, the quality of their responses could be assured. However, the reliability of our variables was not measured on a very large sample. Second, we have not focused on the outsourcing decision. Hence we have not examined the compared internal and external production costs. Despite these limitations, this study represents one of the first attempts to investigate outsourcing empirically, and hopefully will open avenues for further research.

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Figure 1. Theoretical model

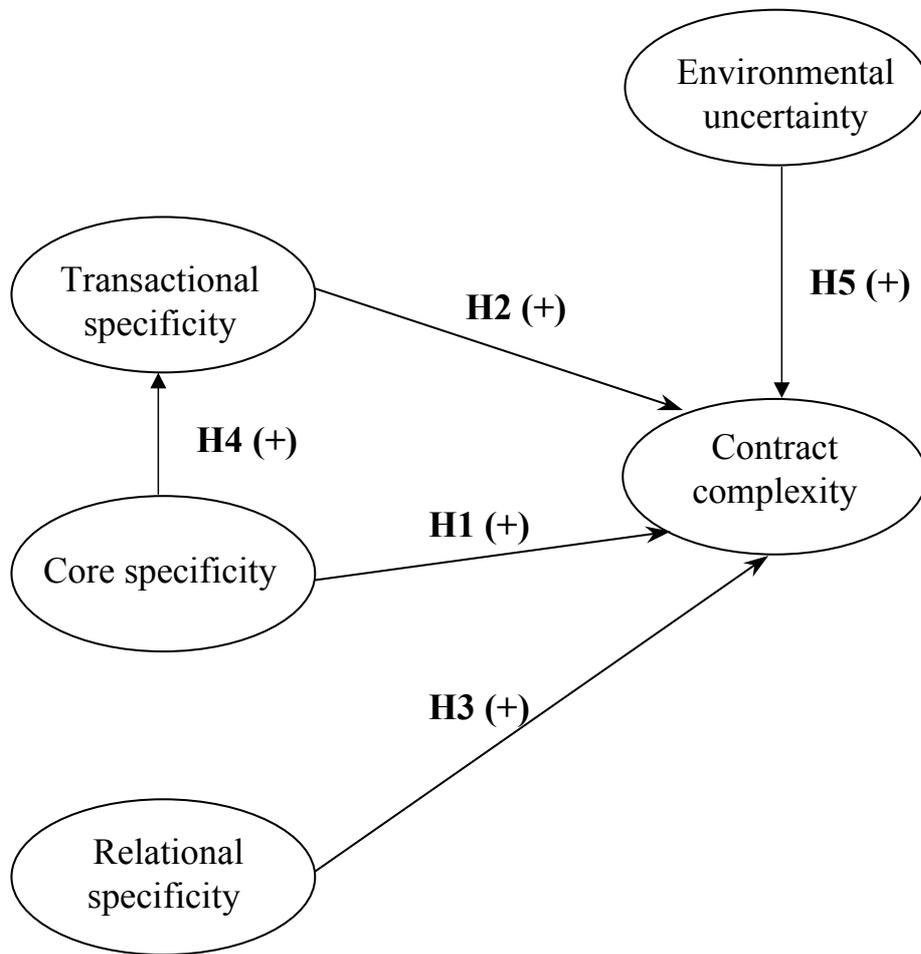


Table 1. Sample description

<b>Industry</b>	<b>N</b>	<b>% of sample</b>
Manufacturing	52	63%
Services	30	27%
<b>Country</b>		
Europe	62	76%
North America	20	24%
<b>Activity</b>		
Information Technology	44	54%
Non-Information Technology	38	46%

Table 2: Loadings by construct

Variables used in the model	Loadings
<b>(ξ1) Transactional specificity</b>	
Time to switch suppliers	0.90
Time to reintegrate the outsourced activity	0.77
Cost to switch suppliers	0.67
<b>(ξ2) Core specificity</b>	
Degree to which the activity contributes to the overall profitability of the firm	0.82
Degree to which the activity enables direct contact with the end customer	0.63
Degree to which the activity enables the company to differentiate itself from its competitors in the eyes of the customers	0.82
Degree to which the activity is viewed as strategic	0.80
<b>(ξ3) Relational specificity</b>	
Extent to which dealing with the vendor implied changes for the employees of the client firm	0.89
Extent to which dealing with the vendor implied changes for the overall functioning of the firm	0.89
<b>(ξ4) External uncertainty</b>	
Difficulty of evaluating the future needs in terms of performance	0.77
Difficulty of evaluating the future needs in terms of volumes and activity level	0.75
Difficulty of evaluating the future needs in terms of technology	0.85
Difficulty of evaluating the future needs in terms of human competencies	0.82
<b>(η1) Contract complexity</b>	
Control clauses	0.77
Incentive clauses	0.77
Price clauses	0.60
Evolution clauses	0.68
End of contract clauses	0.60
Duration	0.66

Table 3: Internal consistency and Average Variance Extracted by construct

<b>Latent variables</b>	<b>Number of items</b>	<b>Internal consistency</b>	<b>Average Variance Extracted</b>
<b>(ξ1) Transactional specificity</b>	3	0.82	0.61
<b>(ξ2) Core specificity</b>	4	0.86	0.55
<b>(ξ3) Relational specificity</b>	2	0.93	0.87
<b>(ξ4) External uncertainty</b>	4	0.87	0.64
<b>(η1) Contract complexity</b>	6	0.79	0.52

Table 4: Correlations between latent variables

Latent variables	( $\xi_1$ )	( $\xi_2$ )	( $\xi_3$ )	( $\xi_4$ )	( $\eta_1$ )
( $\xi_1$ ) Transactional specificity	<b>0.78</b>	0.25	0.21	0.33	0.50
( $\xi_2$ ) Core specificity	0.25	<b>0.74</b>	0.21	0.17	0.37
( $\xi_3$ ) Relational specificity	0.21	0.21	<b>0.93</b>	0.14	0.25
( $\xi_4$ ) External uncertainty	0.33	0.17	0.14	<b>0.80</b>	0.35
( $\eta_1$ ) Contract complexity	0.42	0.22	0.13	0.34	<b>1.00</b>

Table 5: PLS regression parameters with and without control variables

	<b>(ξ1) Transactional specificity</b>	<b>(η1) Contract complexity</b>	<b>(η1) Contract complexity</b>
<b>(ξ1) Transactional specificity</b>	0.25*** (0.00)	0.26*** (0.00)	0.27*** (0.00)
<b>(ξ2) Core specificity</b>	-----	0.14** (0.04)	0.13*** (0.01)
<b>(ξ3) Relational specificity</b>	-----	0.08 (0.25)	0.07** (0.04)
<b>(ξ4) External uncertainty</b>	-----	0.21*** (0.00)	0.19*** (0.00)
<b>(ξ5) Activity</b>	-----	-----	0.25*** (0.00)
<b>(ξ6) Country</b>	-----	-----	-0.02 (0.75)
<b>(ξ7) Industry</b>	-----	-----	-0.05 (0.37)
<b>R<sup>2</sup></b>	<b>0.05</b>	<b>0.22</b>	<b>0.26</b>

\* p < 0.10 , \*\* p < 0.05 , \*\*\* p < 0.01