Governance of IT Sourcing Relationships:

An Empirical Investigation of the Influence of Contract Mechanisms on Contract Behavior

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ABSTRACT

This work is an empirical investigation of IT sourcing contracts and relationships, and on a general level, it is about the relationship between formal contract governance and relational governance of business relationships. It is a study of 'the nature of contract', with an emphasis on how elements of the contract influence on co-operation in business relationships (IT sourcing relationships).

We employed a cross-sectional design, with data on IT contracts and relationships between a Norwegian industrial buyer and its suppliers of IT products and services. Our results suggest that it is relevant to focus on micro analytic elements of formal contracts, here expressed as contract mechanisms. The contract mechanisms show different effect on contract behavior.

Detailed requirement specifications and penalty mechanisms seem to drive competition between the parties. They are extremely powerful discrete mechanisms that could be used in more certain sourcing situations. If, however, the sourcing situation at hand is more complex, then the parties should be very cautious. Measurement and specificity are so powerful that the combination might restrict co-operation. On the other hand, co-operative behavior seems to be promoted by the use of detailed requirement specifications, and by working together in lasting relationships.

Finally, we found that environmental and behavioral uncertainty should be treated differently. Environmental uncertainty promotes competition and discrete contract behavior, while behavioral uncertainty seems to promote lasting and co-operative relationships.

ACKNOWLEDGEMENT

The time has come to finish this journey. I will not complain about sleepless nights and hard work. Instead, I feel lucky to have had the opportunity to invest so much time and efforts into one project. Even more so, because this project more than ever before ‘welcomed’ my natural born habit of asking ‘why?’

It all started with reflections about contracting and relationships in ‘the real life’. As an IT manager I was completely dependent on external sources, always provided through some sort of contracts. Later, I was evaluated on the success of contracts and relationships in my roles as marketing and key account manager. What was going on here?

The puzzle occupied me more and more, and one of my former colleagues and partners has been instrumental for my approach. Bjørn Ove Larsen started out as a potential competitor in a large bidding contest, and we ended up as partners and friends. I would not have missed our many discussions about the subtle difference between competition and co-operation in contract relationships.

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I apologize for not being capable of following the spirit of the poem by Olav H. Hauge.

Stavanger and Ålgård, February 2006

Bjarte Ravndal

Kom ikkje med heile sanningi,
kom ikkje med havet for min torste,
kom ikkje med himmelen når eg bed om ljos,
men kom med ein glimt, ei dogg, eit fjom,
slik fuglane ber med seg vassdropar frå lauget
og vinden eit korn av salt.
***Dikt**: Olav H. Hauge*

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INTRODUCTION

"The firm is defined by its contracts and relationships. Added value is created by its success in putting these contracts and relationships together, so it is the quality and distinctiveness of these contracts that promote added value" (Kay 1993:63)

The objective of this study is to examine how contract mechanisms can function as tools to develop (promote) co-operative IT sourcing relationships.

This introductory chapter provides a background for the study and presents the research question. It further outlines the rest of the dissertation.

1.1 Background

In his resent book “The World is Flat”, Thomas L. Friedman describes the globalization of the world economy (Friedman 2005). He argues that Information Technology (IT), outsourcing, and insourcing are some of the key ‘flatteners’. “Now the real IT revolution is about to begin, as all the complementarities between these tools start to really work together to level the playing field” (Friedman 2005:200).

IT will be used to support, and possibly transform, every aspect of business. At the same time, work will more and more be managed through contracts. Companies in India, China and Russia are already parts of this massive ‘sourcing-movement’, and this development is enabled due to the global IT infrastructure.

To succeed in this ‘flat world’, every company has to utilize the global market for IT products and services. Hence, *IT Sourcing*, which is the organizational arrangement instituted for obtaining IT products and services (Hirschheim and Dibbern 2002), is increasingly important for organizations.

Extant research within IT sourcing reflects this importance, and so does the change in emphasis from the decision and viability of outsourcing, into a focus on contracting and management of IT sourcing relationships (Lee et al. 2002). Early models to analyse the decision (see deLoof 1995), have been replaced (at least updated) with several attempts to understand the complete IT sourcing process (Hui and Beath 2001; Kern and Willcocks 2001; Lacity and Willcocks 2001; Hirschheim and Dibbern 2002; Alborz et al 2004; Cullen and Seddon 2004; Cullen et al. 2005).

There is one striking common factor in all these models: They define the *contract as the foundation for a relationship*. It is assumed that the contract is an artifact that will influence the subsequent behavior in the relationship (Hui and Beath 2001).

This is our point of departure; contracts are important for the creation and functioning of the IT sourcing relationship. However, contracts do not deliver; people do. Contracts can only provide a framework. The critical issue is how people involved in each IT sourcing relationship actually behave.

Consider a large-scale Enterprise Resource Planning project as an example: The complete system is an integration of software from SAP and Oracle, runs on servers from IBM or HP, using PCs from Dell as clients, and the network is a complex infrastructure with technology from Cisco and the global PTTs. The integration efforts, and the tuning of business processes and implementation at large, involve personnel from the focal company and IT suppliers such as the worlds Accentures. The implementation project itself takes several years, and finally, the business value depends on even more years of organized use of the new system. To complicate matters even more, such projects are often combined with outsourcing, where one or more suppliers take over management responsibility for the delivery of a set of services to the client company.

This IT sourcing process is quite typical. Business value is created in a complex process where complementary resources, external forces and IT resources interact (Melville et al. 2004). There is no single supplier that control all the technology involved, and therefore the sourcing process will involve several *contracts and relationships* between the buying company and the suppliers.

The relationships can be classified according to *contract behavior* through an analysis of the manifestation of the common contract norms. I.e. contract behavior in a relationship is

anchored between *co-operative* (relational) or *competitive* (as-if-discrete), based on the manifestation of contract norms (Vincent-Jones 2001).

If the parties adopt co-operative contract behavior, they are inclined to work together to find mutual solutions for unforeseen problems. Co-operative behavior accepts that all parties must create value for themselves, but possible long-term business value from an on-going business relationship is valued higher than the short-term optimization of each individual transaction. The parties view the contract as a framework, and they co-operate to increase the size of the pie.

Alternatively, if the parties adopt competitive contract behavior, they are more inclined to treat each individual transaction as a 'zero-sum-contest'. The contract is a specific fact to be satisfied, and what one party gains, the other party loose (Gadde and Håkansson 2001). Competitive behavior is legitimate and commonly used in competitive bidding, where suppliers are invited to compete for delivery of certain services according to predetermined plans for as little in return as possible.

The challenge is to decide what type of contract relationship and what contract behavior is appropriate, and then to stimulate to actual contract behavior according to this decision. For that task, IT managers routinely use formal contracts. However, studies of the influence of contract on contract behavior are few and far between. Knowledge on how contracts influence contract behavior is still meager.

The dissertation proceeds along these lines of thought; co-operative contract behavior is (more often than not) necessary for value creation in IT sourcing relationships. Contracts should be used deliberately to promote such co-operation, and therefore, managers need to know how different contract mechanisms influence on contract behavior.

1.2 Research Question

Contract behavior is manifested through the contract norms (Macneil 1974, 1978, 1980). These norms are "setting the boundaries within which legitimate negotiation and competition are allowed. Any legitimate competition is bounded by an integral acceptance of co-operation as operative within the contract" (Campbell 2001:16). Thus, the manifestation of contract norms in the IT sourcing relationship indicates whether contract behavior is *co-operative* or *competitive.*

However, contract norms are *informal mechanisms,* and cannot be directly manipulated. We can only manipulate and change the *formal mechanisms*, such as contracts, at will (Zenger et al. 2002). Hence, one way to develop these co-operative IT sourcing relationships is through deliberate use of formal contracts. They routinely specify the length of the contract, the requirements and the performance to be met, and the price to be paid for the contracted IT products and services. We denote these micro-analytic elements as *contract mechanisms,* and they are often specified in several exhibits to the legal contract (Sourcing Interests Group 2002).

We regard the IT sourcing relationship as conscious, deliberate, and purposeful co-operation between two or more parties. The IT sourcing relationship (society) is structured by the contract (formal organization), and the functioning of the IT sourcing relationship (society) depends on the attitudes, habits and social norms (the informal organization) (adapted from Barnard 1968).

Our approach is to look at contracts as intentional mechanisms of co-operation: *"Contracts are fundamentally mechanisms of cooperation, and only mechanisms of conflict when things have gone wrong. Thus, law is not what contract is all about; contracts are about getting things done in the real world" (adapted from Macneil 1969,1980).*

Our current knowledge on *whether - and if so - how* the contract function as a tool to establish co-operative IT sourcing relationships is rather meager. How the contract affects contract behavior, remains partly unresolved (Poppo and Zenger 2002). To further our knowledge, we raise the following research question: ***"what is the impact of contract mechanisms on contract behavior in IT sourcing relationships?"***

1.3 Intended Contribution

Our main intention is to investigate how contract mechanisms influence actual contract behavior in IT sourcing relationships. Theoretically, this will also contribute to further knowledge on the interrelationship between *formal* and *informal governance mechanisms* in general. Through our micro-analytic approach, we investigate the effect of *contract mechanisms* on contract relationships as manifested by the *co-operative norms*. Hence, we will add to current contracting research represented by Poppo and Zenger (2002), and Zenger et al. (2002), as well as IT sourcing research represented by Kern and Willcocks (2001), and Lacity and Willcocks (2001).

Further, in circumstances where co-operative relationships are necessary either to mitigate risk, or to ensure proper economic value, managers need to understand the impact of choosing between available contract mechanisms. They need to understand the effect of using complex and detailed specifications of requirements and performance measures. They need to know the effect of tying performance back to economic consequences. In short, they need to know how the contract impacts on co-operation in the IT sourcing relationship. With such knowledge, managers might stimulate to valuable instead of dysfunctional and counter-productive relationships.

The contribution is achieved through an empirical study where we used a sample of IT contracts between a focal industrial buyer and its suppliers. We associated each of the IT contracts with a unique IT sourcing relationship, and we included different kinds of IT contracts to ensure proper variation in the use of contract mechanisms. Therefore, we also included different kinds of IT suppliers, from the independent IT consultant to the international corporations.

1.4 Organization of the Dissertation

The dissertation is organized as follows: Chapter two and three are devoted to a review of the theoretical foundation and development of research hypotheses. Two theories on contracting and governance mechanisms are central to our study, transaction cost economics (Williamson 1975, 1979, 1985, 1996) and relational contract theory (Macneil 1974, 1978, 1980). This is further 'blended' with research on IT sourcing, and the research model contains constructs that are critical and observable in the IT sourcing context.

Chapter four is devoted to the research design and measurements that are used to test the research hypotheses, and chapter five contains a multivariate examination and validation of the data based on Principal Component Analysis and reliability measures. Chapter six follows this multivariate approach with hypotheses testing based on multiple regression analysis, and then we round off the dissertation with a discussion of the impacts and limitations in chapter seven.

2.

THEORY AND LITERATURE REVIEW

In the previous chapter we provided a background for an investigation of the impact of contract mechanisms on contract behavior in IT sourcing relationships. The purpose of this chapter is to build a theoretical foundation suitable for such an empirical investigation.

2.1 Theoretical Foundation

We are specifically interested in contracts and relationships, and therefore we decided to apply Transaction Cost Economics (TCE) and Relational Contract Theory (RCT). These two contracting theories are occupied with '*contracting in its entirety*' (adapted from Williamson 2002), and both focus on 'contracts as framework for the play of the game' in on-going contractual relations. However, they provide different perspectives that augment each other.

While TCE gives normative prescriptions on how to choose the most efficient governance structure for different transactions, it does not provide a tool to analyze how these governance structures actually work. Therefore, we use RCT to analyze whether contract behavior (actual governance) in a relationship, is co-operative (relational) or competitive (as-if-discrete), based on the manifestation of contract norms.

The two next sections will give a review of the two theories, and we will round off the chapter with a search for commonly used contract mechanisms in the IT sourcing literature. This is the contextual guide that enables our relational analysis with focus on the common contract norms in IT sourcing relationships.

2.2 Transaction Cost Economics

Transaction Cost Economics is a theory of the firm as a governance structure. "Any issue that arises as or can be reformulated as a contracting problem is usefully examined through the lens of transaction cost economizing" (Williamson 1998:23). TCE as we know it has been

developed and extended through the last 30 years. Williamson (1975, 1979, 1983, 1985, 1996, 1998, 2000, 2002) is the key contributor and the one who have made it operational.

TCE takes its place alongside other - partly rival, partly complementary – perspectives of firm and market organization. It is a combination of economics, organization and law, with economics as the first among equals. The general problem of economy is to *adapt* to uncertain future situations, and the TCE's tenet is to economize on bounded rationality while safeguarding against possible opportunistic behavior. This is best done through farsighted contracting using credible commitments. "The wise Prince both gives and accepts credible commitments" (Williamson 1983, 1985, 1996, 1998).

"Transaction cost economics concurs with Friedrich Hayek (1945) and Chester Barnard (1938) that adaptation is the central problem of economic organization." (Williamson 1998:32). Adaptation according to Hayek should be autonomous and regulated through a well functioning price system, while Barnard's form of adaptation is cooperative through administration within the firm. High performing systems need adaptive capacity of both kinds (Williamson 1998).

2.2.1 Human Attributes

The normative predictions of TCE are based on two human behavioral attributes. First, the cognitive capacity of human beings is limited. We are *bounded rational*; behavior is intendedly rational but only limitedly so. No matter how we try, we will not be able to foresee all future contingencies. Nor will we be able to express this in a proper way. Thus *all complex contracts are unavoidably incomplete*. They will be subject to interpretation based on tacit assumptions and expectations (Milgrom and Roberts 1992; Williamson 1996, 2002).

Second, the theory argues that all human beings can behave *opportunistic or self-interest seeking with guile*. All of us can behave strategically, and we can take advantage of a situation to promote our self-interest on the expense of the mutual interests. We can, and (often) will, if circumstances allow, behave individualistic instead of altruistic. The contracting problem occurs because we cannot know in advance who will behave opportunistic. The sum of these two human characteristics is that contracting does introduce hazards. An incomplete contract contains gaps, errors and omissions due to bounded rationality, and contractual promises are not self-enforcing due to opportunism.

A third characteristic, not always included in the basic human assumptions of TCE, is the ability to behave *farsighted*. We can, and will do our best to anticipate and plan for the future, and this directs our attention to governance. We can do our best to mitigate the ex post hazards of opportunism through the ex ante choice of governance.

2.2.2 The Transaction and its Attributes

"The ultimate unit of activity … must contain in itself the three principles of conflict, mutuality and order. This unit is the transaction" (Williamson 1998:36). This moves the study of economic institutions towards the study of contract, and it depends on the ability to distinguish transactions based on critical attributes. TCE advances the *frequency* with which transactions recur, the *uncertainty* (disturbances) to which they are subject, and the condition of *asset specificity* to be the critical attributes.

Asset specificity, which is idiosyncratic investments that loose value outside the transaction, gives rise to bilateral dependency. A large numbers supply gets transformed into a small

numbers exchange relation. Asset specificity is the prime condition for safeguarding. Without specific assets at stake, there would be no need for hazard mitigation and safeguarding.

2.2.3 Governance

"The concept of governance is precisely responsive to the triple to which Commons referred: governance is the means by which *order* is accomplished in a relation in which potential *conflict* threatens to undo or upset opportunities to realize *mutual* gains (Williamson 1998:36).

The governance choice for a single industrial actor is 'make – or buy'? A transaction could be brought under unified governance within the firm, but in this study we focus on transactions that are governed through contracts between legally independent firms. However, it is instructive to look at the differences between the alternative modes of governance.

The general assumption in TCE is that he parties have to choose between feasible and available governance mechanisms that differ in cost and competencies, and some of the important differences are (Williamson 1991, 1996, 1998):

1) Incentive intensity; high powered incentives in markets, low powered in firms

2) Administrative controls; firms are supported by a more extensive array of administrative rules and procedures

3) Adaptation; markets can effect autonomous adaptation through the price system; while firms are better when cooperative adaptation and planned co-operation is needed.

4) Contract law; markets relies on court ordering whereas firms use private ordering and settles dispute by fiat

Between the two poles of market and hierarchical governance, we find hybrid governance that has an average score on all these dimensions. It is a blend of market and hierarchy, and the contract mechanisms are choice variables that can be used to move the governance more towards one of the poles (Williamson 1979, 1996, 2002).

Hazards accrue, and a contract problem occurs when bounded rationality, opportunism and asset specificity are combined. Without bounded rationality, we could work out all contingencies and arrive at several complete contingency contracts expressing everything. Without opportunism, we could rely on promise and expect that all problems would be worked out. And finally, without specific assets, we would not have anything at stake. There would be no significant hazards left for safeguarding.

Efficient governance is to align transactions that differ in their attributes, with governance mechanisms that differ in their cost and competence (Williamson 1985, 1996, 2002). With no specific assets at stake, it will always be most efficient to rely on market governance. There will always be alternative sources available, and we have nothing to loose.

With specific assets employed, there is a contractual hazard and a need to safeguard. This can be achieved in either of two ways, through the use of contracts or through internal organization. Due to the loss of incentive intensity and other bureaucratic costs, the firm is normally the choice of last resort. First, try markets, then safeguard through contracting, then if nothing else function use internal organization (Williamson 1985, 1991, 1996, 1998).

In this study, we only investigate transactions that are governed through contracts, either of a market kind, or a hybrid kind. Market contracts are often taken to be equivalent with

Macneil's discrete contracts that are 'short in, short out', and hybrid contracts resemble relational contracts. This is illustrated with the following figure from Williamson (1985):

		Investments Characteristics		
		Nonspecific	Mixed	Idiosyncratic
Frequency of transaction	Occasional	Market governance (Classical contract)	Trilateral governance (Neoclassical contract)	
	Recurrent		Bilateral or Unified governance (Relational contract)	

Figure 2.1: Efficient Governance

Here, we see that long-term or recurrent transactions where there are (highly) idiosyncratic investments, probably should be governed through the hierarchy. Coordinated adaptive capacity within the firm is normally better than between legally independent parties.

However, the focus in this study is on contracts between independent firms. We do not focus on market governance (classical or discrete contracts) versus bilateral governance (relational contract). We focus on how actual contracts between independent firms (in a market) function as tools to promote proper contract behavior. Hence, this scheme should therefore instruct us on conditions for efficient contracting.

An initial interpretation is: long-term (recurrent) transactions with idiosyncratic investments will demand adaptive actions and will not be efficiently governed through market contracts. Market contracts have to be precise and discrete, and will not provide a tool to promote co-operative contract behavior.

2.2.4 Environmental and Behavioral Uncertainty

"As Hayek maintained, interesting problems of economic organization arise only in conjunction with uncertainty" (Williamson 1985: 57). Uncertainty will influence efficient governance, and it will render any contract to be more or less incomplete. As uncertainty accrue, market governance will not function, and hybrid governance will take over. However, with substantial uncertainty, the efforts to align contracts between two independent parties will be extremely costly. Therefore, contracts will tend to flee to one of the extremes. Either choose to rely on less advanced technology without idiosyncratic investments, and thus use market governance, or move the transaction under internal management altogether (Williamson 1985, 1991, 1996).

TCE treats uncertainty, or disturbances, as originating from different sources. *Environmental uncertainty* refers to "unanticipated changes in circumstances surrounding an exchange" (Noordewier et al. 1990: 82). This variable has been conceptualized in different ways (Rindfleisch and Heide 1997), and we focus on unpredictability associated with the supply market. This includes factors such as rapidly changing technology, frequent price changes, and fluctuations in product availability (Cannon and Perrault 1999; Cannon et al. 2000). It is also argued that availability of alternative suppliers should be viewed as a source of uncertainty (Cannon and Perrault 1999).

One way to mitigate hazards due to environmental uncertainty, is avoiding, i.e. buyers should not go into situations where they are dependent on specific supplies. Hence, we would expect highly dynamic and unpredictable transactions to be associated with market governance (Rindfleish and Heide 1997). Buyers should try to mitigate hazards due to dynamic and uncertain price structure by keeping 'a way out'. This is to rely on autonomous adaptation through the price system.

Even if a close relationship might help safeguard, there will be limits to suppliers' (or clients' for that matter) willingness to give 'more than the market demands'. Because price change is a 'zero-sum-game', the parties will be inclined to keep as much as possible for themselves (Williamson 1985). Dynamic markets should be treated with alternative sources so that dependence is reduced, and this is also the common advice for IT sourcing (Lacity and Willcocks 2001).

Behavioral uncertainty is associated with measurement and performance ambiguity, it occurs when it is complex and difficult to describe and understand 'how things work'. It will render strategic behavior (Williamson 1985), and it creates asymmetric information where one of the parties necessarily knows more about the goods and services than the other. "Several studies conceptualize behavioral uncertainty as fundamentally an issue of performance assessment" (Rindfleish and Heide 1997: 43).

Greater complexity of supply increases purchase decision ambiguity and risk, and a buying firm is likely to seek closer relationships that help reduce this (Cannon and Perrault 1999). When it is difficult to express exact requirements in a contract, cooperative adaptation and planned co-operation is needed. This should lead to closer relationships.

Such behavior should be associated with complex IT outsourcing that takes months and years to implement properly. If there are substantial problems associated with specification of IT products and services, and verification of the deliveries, then the associated *IT contracts are unavoidably incomplete* (Willcocks et al. 1997; Kern and Willcocks 2001). Hence, the parties will be confronted with the need to adapt to unanticipated disturbances due to gaps, errors, and omissions in the original contract. Costly contractual breakdowns (refusals of cooperation, mal-adaptation, demands for renegotiation) may be posed, and the parties need to develop a *relationship* (Williamson 2002).

2.3 Relational Contract Theory

"*By contract I mean no more and no less than the relations among parties to the process of projecting exchange into the future*" Macneil (1980: 5).

Relational Contract Theory is closely linked to the work of Ian Macneil, and "in 30 or so of the more than 50 books and articles he has published since 1960 he has set out the principal formulation of what has come to be known as 'the relational theory' of the law of contract" (Campbell 2001:4). "There is a sharp contrast between the profundity of Macneil's work and the, as he himself recognizes, still disappointing reception of that work. So far as this is an intellectual matter, it can largely be put down to the widespread interpretation of Macneil that he claims there is a separate 'relational' category of contracts. This is, at best, thought to be a claim about a perhaps interesting but certainly marginal category of contracts other than classical or discrete contracts… the main intended thrust of his work is not so much to distinguish the relational from the discrete contract but to reveal the relational constitution of all contracts" (Campbell 2001:5).

The strength of this work is the depth of the descriptions of *efficient contract behavior* and values. It informs us on the way exchange are embedded in the society, how exchange in practice is conducted, and on the inevitable incompleteness of real life contracts. However, the strength is also its weakness. Macneil's work is so rich and complex, that it can easily be misinterpreted. To avoid some of the most common misinterpretations, Macneil has given the following summary of the essential elements of relational contract theory (Macneil 1987):

- The world encompassed by relational contract theory is the world of contract, defined as relations among people who have exchanged, are exchanging, or expect to be exchanging in the future.

- All exchange occurs in relations.
- A number of categories of behavior are required for such relations to exist, two of which, maintaining reciprocity and solidarity, are first among equals.
- The behavior pattern give rise to norms, a case of an "is" creating an "ought".
- Underlying this structure … is the proposition that man is both an entirely selfish and an entirely social creature… Reciprocity and solidarity are two principles of behavior that are essential for the survival of such a creature.
- Exchange occurs in various patterns along a spectrum ranging from highly discrete to highly relational.

In this dissertation, we follow the recommendation to use relational contract theory as a methodology focusing on the common contract norms (Vincent-Jones 2001). Thus, we analyze whether the *IT sourcing relationship* (exchange) is *competitive* (discrete) or *co-operative* (relational) based on the manifestation of the contract norms.

2.3.1 Contracts as Co-operative Social Behavior

Macneil began to develop his rival account of contract around 'co-operation', and this has remained central to his work: "The first thing to note about contract is the fact that it concerns social behavior… The next thing to note is that this kind of social behavior involved is co-operative social behavior; behavior characterized by a willingness and ability to work with others… contract involves people affirmatively working together (Macneil 1968:14)" (Campbell 2001:9-10).

Co-operation is further advanced as the most important common characteristic, one of the 'five basic elements': "There are … five basic elements of contracts: 1) co-operation; 2) economic exchange; 3) planning for the future; 4) potential external sanctions; and 5) social control and manipulation" (Macneil 1969:407)" (Campbell 2001:10). These common characteristics have been treated as four 'primal roots' (Macneil 1974, 1980), and as 'contract essence' (Macneil 2000):

1) Contracts are based on *society*. It is not possible to understand contract without looking into the particular society where the contract resides. The IT sourcing relationship is our particular society. 2) Contract is a result of *specialization of labor and exchange*. The contract is a result of the contractor's ability to specialize on some services. 3) There is a sense of *choice*. The parties are free to choose among several alternative behaviors, they are free to contract, and they are free to choose with whom to contract. The client (often) has a choice between internal production and external sourcing (make-or-buy), and he deliberately chooses the external option. The parties are also free to choose the form of contract, and like Macaulay (1963) showed, the parties are free to use "non-contracting" practices. 4) There is an *awareness of the future*. If contract is to specify future exchange, than the parties will have to anticipate this future. They must know what they want to achieve in the exchange process.

As a result, the parties enter a contract and creates an IT sourcing relationship because the supplier specializes in the required services, and the client expect to create more value by entering a contract than by producing the services internally. Both parties have a choice to enter or not, and both parties have an awareness of the future. This is what they will try to specify in the contract documents.

2.3.2 Contract Norms as Manifestation of Contract Behavior

Co-operation and co-operative contract behavior will be manifested through the social norms that operate in contracts. A norm is "a principle of right action binding upon the members of a group and serving to guide, control, or regulate proper and acceptable behavior" (Macneil 1980:38). Thus: " in the process of projecting exchange into the future … people specialize and exchange, exercise choice, plan to exercise power, and fit all these things together in the society of which they are members. This behavior gives rise to prescriptive norms, to standards of proper conduct" (Macneil 1980:36).

Complex contracts can only be governed efficiently if the parties adopt a consciously co-operative attitude manifested through these contract norms (Campbell 2001:16). "Relatively discrete and relatively relational forms of contract can be devised within the common contract norms in particular contracts. *Discrete contract* emphasizes the common contract norm of a *competitive character* (Macneil 1983: 360), such as the attempt closely to specify (and impose strict liability for) performance, which Macneil calls the 'implementation of planning'. *Relational contract* emphasizes the common contract norms of a *co-operative character* (Macneil 1983:363-4), such as preservation of the relation in 'contractual solidarity' (even to the point of adjusting obligations and waiving strict liabilities)" (Campbell 2001:21, emphasis added).

It is important to realize that both competition and co-operation, both discrete and relational contracts, have a coherent place within Macneil's theory. A competitive approach based on competitive bidding makes sense in some circumstances, but the parties need to choose carefully when the circumstances demand a more co-operative approach. "Macneil offers an account of contract which allow us to place the various forms of contract action, ranging from

the *highly competitive to the highly co-operative*, within one integrated framework based on the common contract norms" (Campbell 2001:26, emphasis added).

At one end of the continuum is the discrete transaction, where the future exchange is brought completely into the present through perfect specification of terms and contingencies. There is no relationship between the parties beyond that expressed in the agreement (Kaufmann 1987). A discrete exchange will be a 'zero-sum-game', where one party loose what the other party gains. We denote this as a *competitive relationship*.

At the other end of the continuum is the pure relational exchange, where the individual transactions hold no real importance compared to the overall relationship. The marriage is normally used as an example (Kaufmann 1987). While exhibiting a constant flow of individual negotiations and transactions, the marriage relationship is not merely the sum of these parts. Rather, it is a highly complex, constantly changing, overriding commitment in which each individual transaction is only a minor event. We denote this as a *co-operative relationship*.

Although both of these extremes are abstractions, the essential point of Macneil's work is that *relations underpin all exchanges*.

2.3.3 Relational Analysis Based on Contract Norms

"According to Macneil, any adequate relational analysis must be founded on an understanding of the ways in which social exchange behavior both give rise to and is supported by the ten 'common contract norms'… These basic patterns of behavior and associated contract norms supply the framework for relational analysis of transactions in the context of all their essential elements and enveloping relations" (Vincent-Jones 2001: 67-8).

Macneil's relational theory implies analysis based on the common contract norms in conjunction with the spectrum of discrete and relational contracts: "The common contract behavior and norms are the end of neither the descriptive nor the theoretical story. I also combined these behavioral patterns with something else, namely the idea of the two polar types of contracts, discrete and relational (Macneil 2000:894)" (Vincent-Jones 2001: 72). Macneil envisages these analytical elements working in conjunction, rather than one being subordinated to the other. Thus, the common contract norms should be used as a 'checklist' to analyze whether a particular contract relationship is discrete (competitive) or relational (co-operative) (Vincent-Jones 2001:75).

Macneil first defined 5 norms (1978), then 9 (1980) and finally 10 (1983): "Macneil describes ten common contract norms which underpin all contracting by generating a (to various degrees) *co-operative attitude* which respects 'solidarity and reciprocity' (Macneil 1983:348): 1) role integrity, 2) reciprocity (simply stated as the principle of getting something back for something given), 3) implementation of planning, 4) effectuation of consent, 5) flexibility, 6) contractual solidarity, 7) the restitution, reliance and expectation interests (the 'linking norms'), 8) creation and restraint of power, 9) propriety of means, and 10) harmonization with the social matrix" (Campbell 2001:15, emphasis added).

Unfortunately, Macneil has not developed his methodology into an empirical tool. Instead we have to rely on empirical studies, such as Kaufmann and Stern (1988), Kaufmann and Dant (1992), Heide and John (1990), Heide (1994), Rokkan (1995), Rokkan and Haugland (2002), Gundlach and Achrol (1993), Cannon et al. (2000) and Paulin et al. (1997). It is a particular challenge that the empirical studies have been selective in the use of contract norms. There is no agreement upon the norms to include, nor how the included norms should be measured (Blois and Ivens 2004).

Some researchers have used multiple items that are intended to tap the ‘relational syndrome’ directly into one construct, while others have preferred to measure individual contract norms that are expected to originate from one common second order factor. Although we are primarily interested in the relational syndrome, we decided to base our classification of contract behavior on the seven dimensions specified by Kaufmann and Dant (1992):

Relational focus reflects the extent to which the exchange relationship is perceived as relatively more important to the parties than the individual transactions.

Solidarity refers to the process by which an exchange relationship is created and sustained. In the more discrete forms of governance, the parties rely on arms-length bargaining and legal enforcement to create and sustain each transaction. More complex and indefinite contractual relations are based on trust and other internal processes.

Mutuality implies the requirement of a positive incentive to exchange for both parties. Under discrete governance, the parties require positive outcomes from each discrete transaction. They monitor each transaction as if it were the last and the only event. Under relational exchange, the parties expect generalized reciprocity.

Flexibility: If change is to incur in contracts so that they conform to changes in the environment, it must either be envisioned and permitted within the exchange relationship (relational exchange) or it must be possible for the outdated transactional specifications to be terminated and new, appropriate ones created (discrete transacting).

Role integrity: To provide the necessary predictability for contracting relationships, the roles of the parties must remain relatively stable. The more discrete the transaction, the more simplistic becomes the roles maintained by the parties. By contrast, relational exchange requires the parties to maintain highly complex and multi-dimensional roles.

Restraint of power: Contracts can be seen as mutual creation of rights and obligations limited only by their specification. Under discrete governance structures those rights will be exercised subject only to limitation by the law. This is the natural corollary to the arms-length bargaining that produce those rights. While recognizing that such legitimate power exists, more relational governance structures create expectations that its use will be voluntarily limited. This dimension reflects the degree to which the parties restrain their use of power.

Conflict resolution: Contracts reflect the social context in which they are created and executed. The more relational exchange becomes, the more separate and distinct social order is created within the relationship itself. In discrete exchange, conflict resolution is a formal external process of litigation. In relational exchange, conflict resolution is informal and internal.

The dimensions have been summarized as follows by Rokkan and Haugland (2002):

Table 2.1: Co-operative and competitive relationships

Dimension	Competitive relationship (Discrete exchange)	Co-operative relationship (Relational exchange)
Focus	Individual transaction	Ongoing exchange relationship
Solidarity	Arm's length bargaining and legal enforcement	Trust and related social mechanisms
Mutuality	Positive outcome from each discrete transaction	Positive outcome from the exchange relation over time
Flexibility	By the (potential) use of "exit"	By renegotiations and the use of "voice"
Role integrity / complexity	Clearly separated and defined divisions of functions and tasks	Overlapping roles; each party may be responsible for functions traditionally undertaken by the other party
Restraint of power	Individual rights exercised only subject to limitations by the law	The parties voluntarily restrain their use of power
Conflict resolution	Formal, external processes (e.g. litigation)	Informal and internal processes

Adapted from Rokkan and Haugland (2002)

In our further treatment, a *competitive relationship* denotes an exchange relationship based on discrete contract norms, while a *co-operative relationship* denotes an exchange relationship based on relational contract norms. Hence, we have added competitive and co-operative relationship as our labels in table 2.1, while the characteristics remain the same as in Rokkan and Haugland (2002).

Remember that one of the key insights in relational contract theory is that all relationships will show both relational and discrete properties. They will only differ in degree, where one relationship could be relatively relational while another could be relatively discrete. Therefore, we do not expect to find pure competitive or pure co-operative IT sourcing relationships, but we will use this classification to analyze the extent of co-operative or competitive contract behavior in the IT sourcing relationships.

2.4 IT Sourcing

Our research context is IT sourcing relationships, and the previous sections provide the theoretical lenses to analyze 'how contract mechanisms influence contract behavior in IT sourcing relationships'. However, we need a contextual guide, and we need to focus our attention on contracts and IT sourcing relationships. This section will provide such a contextual guide, and we start by a brief overview of research on the IT sourcing process (see also introduction in section 1.1).

Most IT sourcing research to date has focused on the sourcing decision, and several efforts have been made to develop a framework for IT sourcing (Ang 1994; Aubert et al. 1996; Cheon et al. 1995; Clark et al. 1995; Cronk and Sharp 1995; deLoof 1995; Lacity and Willcocks 1995, 2001; Lacity et al. 1996; Willcocks et al. 1997).

The interest has gradually shifted from the decision and viability of outsourcing, into a focus on contracting and management of the IT sourcing relationship (Lee et al. 2002). The models to analyse the decision has been replaced (at least updated) with several attempts to understand the complete IT sourcing process (Hui and Beath 2001; Kern and Willcocks 2001; Lacity and Willcocks 2001; Hirschheim and Dibbern 2002; Alborz et al 2004; Cullen and Seddon 2004; Cullen et al. 2005).

Hui and Beath (2001) propose a framework for research on the IT sourcing process. This contains decision, negotiation and contract-execution processes. These processes are separate from the contract itself, which is defined as an artifact. The contract is directly linked with behavior in the contract management and service delivery processes.

The framework proposed by Kern and Willcocks (2001) is built around configuration and process, with contract, structure, interactions and behavior as critical elements.

Cullen and Seddon (2004) have introduced seven key attributes of IT outsourcing configurations: scope grouping, supplier grouping, financial scale, pricing framework, duration, resource ownership, and commercial relationship. The same researchers have recently published a life cycle approach based on nine building blocks (Cullen et al. 2005). Two of the central elements are the contract as a result of negotiation, and management of the relationship.

These elements are also part of the model proposed by Alborz et al. (2003), but the process is depicted in three stages: pre-contract, contract, and post-contract. The contract stage is concentrated on contract development, while post-contract includes governance, performance management, contract management, working relationship management, and knowledge management.

Finally, a basic IS outsourcing life cycle model with three phases is presented by Hirschheim and Dibbern (2002). They include outsourcing decision, outsourcing relationship, and outsourcing experiences and outcome. Outsourcing relationship has a focus on the arrangement and management.

There is one striking common factor in all these models: They all define the *contract as the foundation for a relationship*. The contract is an artifact that will influence the subsequent behavior in the relationship (Hui and Beath 2001).

Although there has been a shift in research interest, from sourcing decision to ongoing co-operative IT sourcing relationships, the lack of research on contract *and* relationships (Kern and Willcocks 2001) is striking. Hence, we will add to the growing interest in *management (governance) of the IT sourcing relationship* (Kern 1997, Kern and Willcocks 1999, 2000, 2001, 2002).

The essence in this research is that the *relationship is based on contract*, and we need to understand the dimensions or the *Gestalt* of the relationship. "The *Gestalt* consists of two key parts: the contract and its operationalization" (Kern 1997). The relationship operates within the "spirit of the contract". The relationship consists of exchange episodes, and it "depends largely on the initial *contractual* stage, since it greatly influences the quality of the relationship" (Kern 1997).

The remaining part of this section on IT sourcing will be used specifically to identify important contract mechanisms. Hence, we commence our search for contract mechanisms with two practical descriptions of IT sourcing contracts: 1) "The *contract and the integrated service level agreements* specify *in detail* the exchanges of services and/or products, financial matters, service enforcement and monitoring methods, communication and/or information

exchanges, and key personnel and dispute resolution procedures“ (Kern and Willcocks 2000; Halvey and Melby-Murphy 1996).

2) Key contract documents are: The legal agreement specifying contract length and termination, and so forth; the services exhibit describing the services to be delivered; the pricing exhibit describing what the customer will pay; and the Service Level Agreement that defines measurement and reporting obligations that bridges the services and the pricing exhibits (Sourcing Interests Group 2002).

We define *contract mechanisms* as the ‘nuts and bolts, cogs and wheels’ that are used to express a contract between the two parties (adopted from Elster 1989). Hence, it includes the written terms, clauses and descriptions found in the formal contract and contract exhibits.

2.4.1 Contracts and Relationships

Different types of outsourcing contracts were studied and classified by Lacity and Willcocks (2001). 116 IT sourcing decisions made in 76 organizations were investigated, classified and evaluated as successes or failures. 85 outsourcing contracts were categorized:

- *Fee-for service* contract (81 of 85): A customer pays a fee to a supplier in exchange for the management and delivery of specified IT products or services. These contracts were further categorized as standard contracts (4), detailed contracts (60), loose contracts (7) or mixed contracts (11).

- *Strategic alliance* (4 of 85): Collaborative inter-organizational relationships created to maximize joint value.

- *Buy-in* contract (0 of 85): A customer buys in supplier resources to supplement in-house capabilities, kept under in-house business and IT management. This does not give management responsibility to the supplier, and it is classified as insourcing.

Detailed Fee-for service contracts of short duration achieved expectations with greater relative frequency (75%) than other types of contract, and the parties spent significant time on negotiating details. Loose contracts were “disasters”, and management often mislabeled them as strategic alliance contracts. Loose contracts created conflicting goals.

Fee-for service contracts should be detailed contracts that fully specify the requirements, service levels, performance metrics, penalties for non-performance and price. They should be short-term, with a duration for which requirements are known. Poorly defined service levels drove contract disputes.

Fee-for service contracts were not suited for IT activities in which the technology was ill defined, immature or unstable. Several fee-for service contracts were signed but mislabeled as strategic alliances. Buy-in contracts are best suited for the development of applications dependent upon new technologies. In these cases the client whished to access the supplier’s technical expertise but could neither negotiate a detailed contract nor afford to miss a learning opportunity.

Another study of contracts and relationship is Fitzgerald and Willcocks (1994). 226 contracts in the UK were classified according to the pricing mechanisms (descriptions added by deLoof, 1995):

- *Time and materials*: Payment is based on the actual use of personnel and materials.

- *Fixed fee*: Payment is based on a lump sum for a defined workload or service.

- *Fixed fee plus variable elements*: Payment is based on predicted changes in workload or business circumstances.

- *Cost plus management fee*: Payment is based on the real cost incurred by the vendor plus a percentage.

- *Fee plus incentive scheme*: Payment is based on some benefits that accrue to the client company or performance over and above an agreed baseline.

- *Share of risk and reward*: Payment is based on how well the client company or a joint venture performs.

The categories were not found to be mutually exclusive and were often combined. The contracts were mostly short-term, with a vast majority less than five years and nearly half less than two years. IT sourcing was found to be a dynamic process, and several contracts were terminated. Tightly defined service contracts were mostly used, and if partnerships were sought, they were based on a formal contract. The study revealed a clear move away from partnership-based relationships toward contractually based relationships. Further, it was a clear trend toward more tightly defined contracts, rigorously defined and specified, and of short-term duration.

2.4.2 Specificity, Measurement Systems, and Flexibility

Tightly specified contracts are further highlighted in Saunders et al. (1997). They found strong correlation between the use of tight contracts and success. The measures were based on the 14 recommended practices and clauses from Lacity and Hirschheim (1993a,b), and there were high correlation between inclusions of these clauses and the perceived completeness of

contract. Tight contracts were an important ingredient for outsourcing success, and even if full specification is elusive, every effort should be made to develop a complete contract.

Further, it is contended that – "if a contract is to be the dominant form of governance, than service requirements must be clearly understood and explicitly specified in measurable form" (Clark et al. 1995).

The 14 contract clauses and negotiation practices have also been used to define building blocks for a *measurement system* (Willcocks et al. 1995; Kern and Willcocks 2001):

- *Measure everything during the baseline period*: The customer's current IT services are documented during the baseline period, and this becomes the yardstick for the services delivered by the supplier. A six months baseline period is recommended, and it should not be neglected.

- *Develop service level measures*: For every service the supplier is expected to provide, a service level measure should unequivocally express the level of required service.

- *Develop service level reports*: Service level reports should document the agreed-on service level, the service performance for the current time period, exception reporting for missed measures, and a trend analysis of the performance from previous reporting periods.

- *Specify escalation procedures*: For critical services, the customer may require immediate reporting, problem resolution within a specified period of time, and perhaps a cash penalty.

- *Include cash penalties for nonperformance*: In case of severe service degradation, the customer may insist on cash compensation. The purpose of penalty clauses is to ensure that the supplier's senior management will attend to service level problems.

- *Determine growth rates*: The costs of IT units decrease every year, and the customer should share the benefits of price performance improvements. The supplier may underestimate growth so that it can charge excess fees in the future.

- *Adjust charges to changes in business*: How to handle severe volume fluctuations should be described in the contract.

A total of 40 contracts were studied in the USA and UK (Willcocks et al. 1995). It is claimed that the contract should be used to create the necessary measurement system to monitor the supplier's performance. It was found that even if these aspects are brought into the contracts, there are specific challenges to address. The parties need to develop proper and productive measures, the user involvement is particularly important, and it may require a culture change to measurement. Wrong measures might drive the attention and service in a completely unproductive direction.

However, the very same studies also argue for the need to be *flexible.* It is necessary to build a renegotiation option into the contract (Saunders et al. 1997), and flexibility is key to a successful vendor relationship (Clark et al 1995).

2.4.3 Contract as Control Mechanism

One interesting study on contract and contract enforcement, is reported in Kern and Willcocks (1999). IT contracts are viewed necessary to secure the client *control* over the IT supplier's

behavior and performance, and they studied contracts and control mechanisms in several cases in the UK. *Seven precedent contract elements* where identified:

- *Service exchanges* are described and specified. This is the most important part of the sourcing contract, and the service requirements have to be as detailed as possible, and are normally described in a series of exhibits and schedules.

- *Service enforcement and monitoring* according to performance standards and service levels have to be established and agreed for each service, often in a Service Level Agreement (SLA). The vendors' non-performance of service levels is often directly tied to liquidate damage provisions.

- *Financial exchanges* for the provision of services according to the agreement are often based on a base fee. Any additional services will be charged according to agreed price rates.

- *Financial control and monitoring* are established to ensure the client some level of control over the costs, and appropriate means to monitor the fees charged by the vendor need to be agreed.

- *Key Vendor Personnel* are specified to secure the client. The precedent contracts suggest that the key vendor employees will be explicitly listed in the contract.

- *Dispute Resolution* mechanisms should be described in the contract.

- *Change Control and Management* procedures should be described to ensure that the contract allows for flexibility.

The study suggested that post-contract management concerned with *enforcing the contract* and achieving the stipulated terms, normally has focus on five contractual dimensions:

Financial control and monitoring, Penalty payments, Monitoring of service levels and/or products, Performance measures, and Interface and/or contact points. Further, it is argued that contracts were used as 'bare bones' and that post-contract management was the starting point of the relationship.

With enforcement, a number of control issues arise, and it was found that these control concerns pervaded the management agenda, and that these *control dimensions defined enforcement of the contract*. This seems to encourage a *transactional focus*, not a relational focus. However, the study does not test for specific effects, but they remark: "the use of mechanisms like penalty payments is found to damage the relationship" (Kern and Willcocks 1999).

2.4.4 Hierarchical Elements

Market contracts are often signed for complex and uncertain transactions, which according to a transaction cost analysis should have been brought under hierarchical management (Williamson 1985, 1996; see also section 2.2.3). These transactions could survive if the parties plan more flexibility into the contracts by incorporating elements common to hierarchical governance (Stinchcombe 1985). These *hierarchical elements* are often used in software contracts, and Ang and Beath (1993) conceptualized them based on six contracts in two firms. Ang and Toh (1998) have further used the framework to analyze a failing contract relation. The hierarchical elements with examples are:

- *Command structures and authority systems*: The contract contains clauses that authorize certain parties (usually the client) to the contract the right to issue orders or to demand performance, the right to audit work-in-progress, to choose and change

contractor personnel, and to change project scope or to cancel the project at pre-specified points.

- *Rule-based incentive systems*: This refers to systems of reward and punishments tied to behavior or outcomes and not to the market. If timely delivery is important, penalties for delay in delivery and rewards for early completion can be incorporated.

- *Standard operating procedures*: This refers to routines describing specific well-understood actions to be followed. SOP's constrain opportunistic behavior, and facilitate monitoring. Formal progress reports and regular meetings with client management could be prescribed.

- *Non-market based pricing systems*: This works on the principle of cost-recovery or a combination of cost-recovery and market prices. When development cost is difficult to estimate, a cost recovery system removes risks of uncertainty from the contractor. Clauses that mix fixed pricing together with cost recovery attempt to strike a reasonable balance between the price risk for the client and compensation risk for the contractor.

- *Informal or alternative dispute resolution mechanisms*: This refers to procedures used in resolving conflicts without having recourse to direct court sanctions. This usually involves escalation procedures in which higher management of either parties or a third party tries to resolve the dispute.

2.4.5 Uncertainty

Uncertainty is the key antecedent condition for efficient IT sourcing and contracting. The degree, to which the requirements of the client can be fully defined and specified, was found to be the most important antecedent criteria for sound contracts (Fitzgerald and Willcocks 1994). In case of uncertainty, standard fixed fee contracts are problematic, and the parties should use a contract that shares the risk and rewards arising from uncertainty. A tight contract may constrain the vendor and is likely to be counter-productive. In situations of relative certainty, very tightly defined contracts should be used for best results (Fitzgerald and Willcocks 1994).

Uncertainty introduces a risk, and the risk should be minimized by the use of risk/reward type of contractual arrangement. In situations of increasing uncertainty, companies should not strive for tighter and tighter contractual and service level definitions, as this is unrealistic. To minimize the risk, they should construct their contracts in a way that addresses uncertainty. That means to build in some flexibility, which might imply a basic fee plus incentive scheme, or in situations of high uncertainty, a full risk/reward-sharing contract.

Uncertainty and asset specificity also had a high influence on the variations in software contracts, and as relationships evolve one should expect corresponding changes in the contract (Ang and Beath 1993). Contract failure in complex sourcing can be attributed to lack of attention to hierarchical elements (Ang and Toh 1998). Particularly important was lack of authority over sanctioning changes, lack of client authority for selection and changes in personnel, lack of punitive sanctions for delay, lack of communication of SOP's importance, and unrealistic market-based pricing.

The theoretical reasoning in section 2.2.4 anticipated different effects of *environmental uncertainty* such as market dynamism, and *behavioral uncertainty* such as measurement

problems. This is also supported in the IT sourcing literature. Difficulty in measuring performance gives the parties two alternatives: They can realize lower performance, or they can spend more resources to improve performance measurement (Poppo and Lacity 2002). The latter can be achieved by more complex contracts that specify delivered service levels or monitoring. It is expected that as measurement becomes more difficult, managers will develop more relational contracts.

However, the market better handles external uncertainty, because “markets marvel at autonomous adaptation, in which price serves as sufficient statistic” (Williamson 1991:287; Poppo and Lacity 2002:257).

The IT sourcing literature is replete with practical advice on contracting, and many of those turn on interpretation of uncertainty. It is argued that short-term contracts realize expectations more frequently than long-term contracts. They involve less uncertainty because requirements are stable, and the market prices do not change dramatically during the course of the contract (Lacity and Willcocks 2001). The common advice for specific and detailed contracts could also be interpreted the same way. Unless they are ill specified, they would obviously help reduce uncertainty. The critical question though, is under what conditions is it possible to use such specific and detailed contracts.

2.4.6 Contract Mechanisms Identified in the IT Sourcing Literature

We can now summarize the identified contract mechanisms and antecedents as follows:

Table 2.2: Contract mechanisms and antecedents in the IT sourcing literature

Identified Contract mechanisms and antecedents	**Representative literature**
Contract length: short-term vs. long-term	Lacity and Willcocks (2001), Fitzgerald and Willcocks (1994), Domberger et al. (2000)
Specification of IT services and products: loosely and flexible vs. tightly and specific	Lacity and Willcocks (2001), Fitzgerald and Willcocks (1994), Lacity and Hirschheim (1993), Saunders et al. (1997), Clark et al. (1995), Willcocks et al. (1995), Kern and Willcocks (2001), Kern and Willcocks (1999)
Measurement and monitoring: Service Level Agreements, tied to penalty clauses, reporting	Lacity and Hirschheim (1993), Willcocks et al. (1995), Kern and Willcocks (2001), Kern and Willcocks (1999), Poppo and Lacity (2002)
Pricing: risk allocation, shared risk/reward	Lacity and Willcocks (2001), Fitzgerald and Willcocks (1994), Willcocks et al. (1995), Kern and Willcocks (2001),
Hierarchical elements:	
Command structures and authority systems, Key people provisions	Kern and Willcocks (1999), Ang and Beath (1993), Ang and Toh (1998)
Standard Operating Procedures	Willcocks et al. (1995), Kern and Willcocks (2001), Ang and Beath (1993), Ang and Toh (1998)
Dispute resolution mechanisms, escalation procedures	Kern and Willcocks (1999), Ang and Beath (1993), Ang and Toh (1998)
Change control and management, flexibility, resilience to change	Fitzgerald and Willcocks (1994), Lacity and Hirschheim (1993), Saunders et al. (1997), Clark et al. (1995), Willcocks et al. (1995), Kern and Willcocks (2001), Kern and Willcocks (1999), DiRomualdo and Gurbaxani (1998)
Uncertainty, Transaction Specific Investments	Lacity and Willcocks (2001), Fitzgerald and Willcocks (1994), Ang and Beath (1993), Ang and Toh (1998), Poppo and Lacity (2002)

Table 2.2 provide a summary of the identified contract mechanisms according to our definition of *contract mechanisms* as the 'nuts and bolts, cogs and wheels' that can be used to express a contract between the two parties. It further includes antecedents such as uncertainty,

and examples of IT sourcing literature that have used the constructs are listed as representative.

The next chapter will continue with a research model based on the highlighted (italic) contract mechanisms, and we will make hypotheses on the effect of each on contract behavior. We decided to focus on contract length, requirement specifications, performance specifications, and pricing. These mechanisms are choice *variables that have to be specified in all IT contracts*.

Because uncertainty has played such an important role in other studies, we also decided to investigate both direct effects, and the possible effect of uncertainty as moderator for the effect of contract mechanisms on contract behavior.

Some of the other available mechanisms and antecedents are used as control variables or included as part of our measurements.

While earlier research has identified various mechanisms and advanced the contract as one of the most important issues, there are few to none empirical tests of the impact of contract mechanisms on the contract relationship. Therefore, this study should be able to fill a gap in the literature. I.e. the effect of our study should be that we further our knowledge on how contract mechanisms actually work.

3.

RESEARCH MODEL AND HYPOTHESES

In the previous chapter we presented the theoretical foundation and identified elements to be included in a research model. This chapter will develop the research model further with a focus on testable hypotheses for the impact of contract mechanisms and uncertainty on contract behavior.

3.1 The Research Model

The main premise of our study is that *actual contract behavior* is manifested through norms and attitudes. These are informal mechanisms that cannot be directly manipulated, but they can be stimulated by deliberate choice of formal contract mechanisms. Hence, we formulated the research question as: "what is the impact of contract mechanisms on contract behavior in IT sourcing relationships?"

In addition to the contract mechanisms, we have also identified uncertainty as the prime antecedent for 'contracts and relationships'. Although specific assets are regarded as the key parameter for choice of governance structures (Williamson 1985, 1996), our review showed that uncertainty is the key factor to consider in our context. Hence, we have the following model:

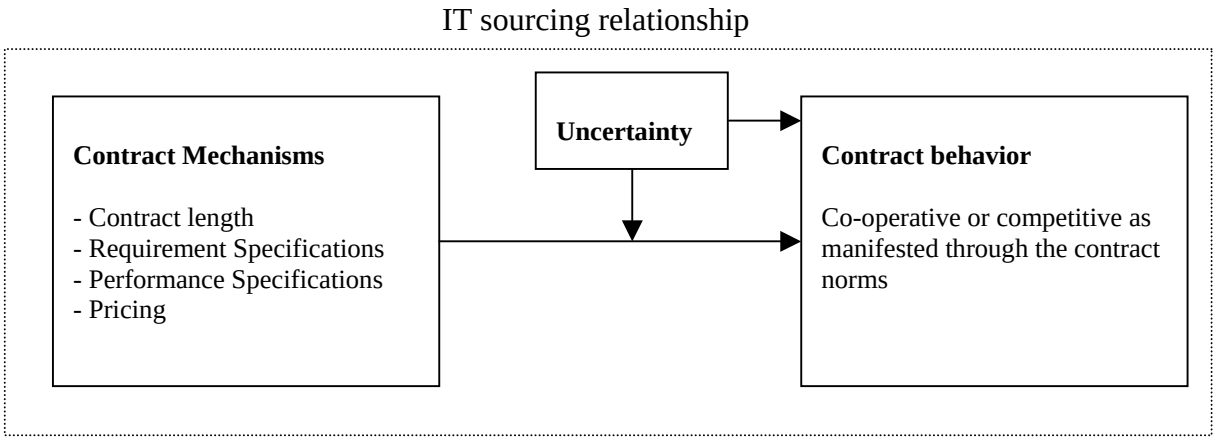

Figure 3.1 The Research Model

The model reflects an anticipated functional relationship that can be expressed as: *Contract behavior in the IT sourcing relationship = f (contract mechanisms and uncertainty).*

The parties will naturally seek to enhance their individual value, and contract behavior should be stimulated to contribute to value creation for both parties to a contract. In most complex sourcing processes this should be co-operative, but in some cases competitive contract behavior is legitimate. However, the challenge is to stimulate to proper contract behavior. Hence, contract behavior should be the result, the effect, of 'something'. Contract behavior is a dependent variable.

Even though 'something' could be nearly impossible to delimit, we have identified contracts and contract mechanisms as necessary elements. They are choice variables that are readily observable through written documents. In this study we will not include relationships without a written contract. Hence, we are expressively concerned about the effects these contract mechanisms have on contract behavior in IT sourcing relationships.

While contract mechanisms are formal, contract behavior is based on informal governance mechanisms and implicit understandings, such as attitudes and norms (adapted from Zenger et al. 2002). These attitudes and norms are taken as manifestation of contract behavior.

Highly co-operative IT sourcing relationships will manifest relatively high levels of co-operative (relational) contract norms, while highly competitive IT sourcing relationships will manifest relatively low levels of co-operative contract norms.

Our approach is to combine a relational analysis of contractual behavior with transaction cost reasoning. We analyze the configuration of the common contractual norms (manifested contract behavior) in the IT sourcing relationship (our particular research context), where we treat the (micro analytic) *contract mechanisms as independent choice variables.*

Now, let us take each contract mechanism in turn, and derive at the research hypotheses. We focus our attention on the identified contract mechanisms from table 2.2, however, with

slightly adjusted wordings: *contract length (agreed contract duration)*, *requirement specifications*, *performance specifications*, and *pricing*. These four contract mechanisms correspond to the key areas in the two practical contract frameworks and will show variations in real life IT sourcing.

We will also introduce specific hypotheses for the effect of *uncertainty*, both direct and moderating effects.

3.2 Contract Length

Contract length (agreed contract duration) is one of the obvious choices the parties have to take. On a macro level, the length of the contract identifies stability. A long contract period will indicate an intention for a stable relationship, while a shorter contract period might indicate less priority on the relation (Kern and Willcocks 2001).

Further, it is generally agreed that expectation and commitment are two key elements in building a relation. If the parties commit resources and if they expect the relation to continue into the future, we will observe a "shadow of the future" effect (Heide and Miner 1992; Axelrod 1984). This will normally lead to a long-term focus on the relation instead of a short-term focus on the current transaction. The contract length will signal intentions to sustain the relationship, and could also signal an initial level of commitment.

If the parties expect the relation to go on "forever", they are inclined to make relation specific investments (Joskow 1987), and particularly balanced investments will promote co-operation and trust. It has also been shown that in short-term relations, the effect of relation specific

investments are less likely to promote the relational level (Lambe et al. 2000). Both parties will invest less if the time allowed to recover investments is considered to be too short.

The duration of safeguards, and the volume of transactions are important (Dyer and Singh 1998). Longer duration and more transactions will lead to more interactions and a willingness to invest in relation-specific assets. Further, it is claimed that a reasonable contract length is necessary for the supplier to gain experience in servicing the client (Domberger et al. 2000).

Relationships and contract behavior is defined and created by people working together; relationships are created through human interactions. In a short-term relation the number of people involved is less and the level or intensity of interaction is less than in a long-term relation. Even if time does not ensure relationship building interactions, "it does limit, or bound, the number of interactions that can occur" (Lambe et al. 2000:213).

Now, there is obviously a critical distinction between agreed contract length, and the actual duration of the relationship. Because relationships are created (partly) by human interactions, the actual duration is probably most important. However, we will expect the specified length of the contract to indicate the level of commitment, to promote expectations and a possible "shadow of the future", to promote relation specific investments, and to promote human interactions.

And, more importantly for the study, contract length is a choice variable to be determined and specified in the contract. The parties should choose such variables for a purpose, and hence, it is important to investigate whether it matters for the creation of a co-operative relationship.

In summary, we assume that a short-term contract will promote competition in a 'zero-sum-contest', while a long-term contract will promote co-operation to 'increase the size of the pie'. A discrete competitive contract is 'short-in-short-out' (Macneil 1974, 1980, 1981). Thus:

H1: There is a positive correlation between contract length (agreed contract duration) and co-operative contract behavior in IT sourcing relationships.

3.3 Requirement Specifications

The parties have to specify what service or products to contract for. We denote this contract mechanism as *Requirement Specifications.* The reviewed literature had a focus on the specification level of the whole contract. Contracts were either loose or tight (Fitzgerald and Willcocks 1994; Saunders et al. 1997; Lacity and Willcocks 2001). "A loose contract is one where only the fundamental elements of the service requirements are outlined in the contract, and where other elements such as what happens when circumstances change, are absent or not fully defined. A tight contract is the opposite where all aspects of the service requirements are very specifically defined in considerable detail. Somewhere in the middle are contracts which are relatively well defined but also address aspects concerned with flexibility and changing business and technical circumstances" (Fitzgerald and Willcocks 1994).

We analyse contracts with a more micro-analytic lens on contract mechanisms. This prescribes to the transaction cost focus on 'the critical details' (Williamson 1996, 2002). Thus, we will use the distinction between loose and tight with regards the specifications, not the whole contract. We will also touch upon this distinction in the next section on performance specification.

The primary purpose of a contract is to plan and organize an exchange of goods and services. This planning should be mutual, where both parties have to agree specified plans and actions. The result is a specification of what and potentially how the service provider shall deliver to

the client organizations. This is normally documented in a ‘Services exhibit, which describes the services to be delivered’ (Sourcing Interests Group 2002).

There are different ways to describe the services. A functional description is to concentrate on the ‘what’ aspects. Here the client describes in business terms what the sought result of the services should be. Alternatively, a technical description could be used. This focuses on the ‘how’ aspect, i.e. the exact procedures and techniques used to produce the result.

Managing sourcing relationships means managing the ‘what’, while managing internal staff means managing the ‘how’ (Sourcing Interests Group 2002). When a company decides to source externally, it should restrict itself to express the required results. It should focus on the ‘what’, and let the provider take care of ‘how’ to produce these results. If the client expresses technical requirements, it may restrict the provider from using their best processes and their best products.

According to Aalders (2001), the parties must toe a line between overly specific contracts and contracts that allow for flexibility. “An outsourcing contract that is a technical specification is doomed to failure” (Aalders 2001:142). Put differently, overly use of technical specification on ‘how’ the contracted IT services should be produced will indicate distrust, and it can decrease flexibility and hamper co-operation.

Kern And Willcocks (1999) found that it was nearly impossible to ‘presentiate’ future requirements due to the volatility of IT and likely changes in user requirements. To strive for tighter and tighter contractual and service level definitions is regarded as unrealistic (Fitzgerald and Willcocks 1994). However, a detailed specification will demand that the parties spend a considerable time to negotiate and agree. This can lead to the necessary ‘gap-filling’ and can initiate a good relationship (Lacity and Willcocks 2001).

On the other hand, we found that loose contracts created conflicting goals, and they where claimed to be ‘disasters’ (Lacity and Willcocks 2001). This indicates that there are risks attached to both strategies. If the specifications are too loose, it might be undetermined and ‘flimsy’. Both parties would need to interpret according to their own internal norms and beliefs. Consider a buyer entering a car shop giving the salesperson 1.000.000 NOK with the ‘purchase order’: “give me the best car you’ve got”. The following day he enters the car shop and is shown the new ‘mini’. “This is the best car that money can buy”, says the car seller. “It is economic, it drives as fast as the speed limit, and it is safe”. Obviously, the buyer would react. He knew that there are many more expensive and ‘better’ cars in the shop. But he did not express any requirements at all. It is a risky business not to specify any requirements.

The other alternative is to express everything in such details that there might be no alternative solutions at all. In our car example, this could lead to an impossible delivery. All available cars could have some ‘flaws’, not having the right color or missing one horsepower. In our context, there might come new products on the market, and there might be alternative procedures that are better for both parties. If the requirements were too tight, it would not be possible to take advantage of this.

Even if we have identified tight and specific contracts as better than loose and flimsy, there is also a clear need for flexibility. If the parties in a complex and incomplete setting fix the specifications too tight, as if the future were certain, we expect a competition to arise. Instead of a mutual adaptation, the parties will be inclined to point at the other as responsible for corrective actions. On the other hand, the parties should not leave the contract too loose, because that would lead to conflicting goals.

It is difficult to draw this line between proper flexibility and adaptability on the one hand, and detailed specifications on the other. We are somehow left with two alternatives. However, the

two are mutually exclusive; detailed requirement specifications may have a positive *or* a negative effect on the co-operative contract relationship.

Because requirement specifications outline the intention and purpose of the contract, we feel confident to envisage a positive effect of this activity. It should lay the foundation for co-operation, and thus:

H2: There is a positive correlation between detailed requirement specifications and co-operative contract behavior in IT sourcing relationships.

3.4 Performance Specifications

It was found that a measurement system and monitoring procedures were critical to success, and even the need to measure everything was argued for (Lacity and Hirschheim 1993; Willcocks et al. 1995; Kern and Willcocks 2001). However, a measurement scheme with too much emphasis on control and penalty for non-performance was found to influence the relationship adversarial by Kern and Willcocks (1999).

Therefore, the parties should carefully select what to measure and how to monitor. This could be described in a Service Level Agreement (SLA), which "defines measurement and reporting obligations, describes the minimum and expected performance levels, and establishes financial consequences for actual performance levels" (Sourcing Interests Group 2002). The Service Level Agreement bridges the services and pricing exhibits, and it is a targeted way to communicate priorities and align incentives.

Monitoring tied back to payments demands the use of detailed specifications and metrics, which are supported by tailored reporting systems. It is argued that which performance

measures are actually used, matters less than how they are deployed. Frequently, performance measures are used in an adversarial fashion in a cat-and-mouse game: the client in pursuit, the contractor trying to avoid being caught (Domberger 1998). Macneil also argues that specificity and measurement *together* promotes discrete norms (Macneil 1981).

The SLA supplements specifications and contains hard measures on performance. It should be detailed and specified in advance, but often the parties allow for an initial period where the measures are detailed (Lacity and Willcocks 2001). Reporting requirements are a part of this, and there is a trade-off between details and key performance indicators (KPIs). Too much focus on detailed service measures creates both a monitoring problem and could drive behavior in a bad direction (Willcocks et al. 1995). If it is difficult to deliver what the contract specifies, i.e. difficult to operationalize the contract, an adversarial relationship could be the result (Kern and Willcocks 2001). An overly detailed SLA would be very difficult to satisfy.

Measurement should work for, rather than against, the creation of a good relationship. Aalders (2001) argues that the focus on SLA should be on measuring a few essential business outputs, i.e. “the 7+/- 2 things that matter the most”. This could be achieved and supported through techniques such as the balanced scorecard.

Kern and Willcocks (1999) found that hard measures should be accompanied by soft measures. Particularly user satisfaction and business impact are advanced as good overall measures. It is further argued that benchmarking and trend reporting could supplement the more regular, normally monthly, reports. Regular discussions and adjustments are also found to be ‘good practices’ (Lacity and Willcocks 2001).

The service provider should report regularly, and scheduled meetings between key personnel from both parties should discuss these reports. If the client takes a too critical and aggressive approach to remedial actions for non-performance, he could push the service provider into a

low-risk corner (Aalders 2001). This could be handled more co-operatively if the performance measures are based on trends and accumulations over time. It could also include credits.

Too much detail will drive behavior in a cat-and-mouse-game. Too loose performance measurements will leave the parties in an undetermined position. The balance between the two alternatives is not a clear and easy cut, and we have two alternative and mutual exclusive hypotheses here as well. However, we feel quite confident to go for the blunt version formulated by Macneil (1981) “specificity and measurement *together* promotes discrete norms”. Thus:

H3: There is a negative correlation between detailed performance specifications and co-operative contract behavior in IT sourcing relationships.

3.5 Pricing

In any contractual relationship, the first, and central, issue is the *contract price*. But contracts are not simply zero sum games, in which one party gains what the other loses. A contract is made to add value, and the design of the contract will influence the amount of value it adds (Kay 1993).

In addition to the obvious purpose of sharing value between the contract parties, price also has a purpose of placing risk. The principal risk in a contract is non-performance, and therefore the client is inclined to put this risk on the suppliers’ table. If the contractor does not deliver according to the requirements, the client could suffer a loss, and this loss is priced as incentives for superior performance, or penalties for poor performance.

However, it is a mistake to suppose that performance risk stems entirely from the supply side. If the specification are poorly developed and understood, the client will be at least partly responsible. This illustrates that allocating risk is difficult. Generally, more of the risk should be borne by the party that has greater control over it, and more of the risk should be allocated to the party that has the greater capacity to bear it. However, both parties are normally risk averse. Thus, the use of penalties would have a stronger effect on behavior than incentives. We will do more to avoid a loss than to make something extra. However, the use of penalties might create an adversarial climate.

In the purchasing literature, we find a number of different price mechanisms. In principle they are either fixed-price contracts or cost-type contracts (Monczka et al. 1998; van Weele 2002).

Fixed Price Contracts are based on a principle where the payment (fee) for the delivery is preset according to specifications. Unless the transaction is immediate and simple, the uncertainty attached to specifications is substantial. Hence, to price the delivery is equally uncertain. In principle, the supplier takes all the risk.

Fixed price contracts are best suited for well defined and specified deliveries. They introduce quite strong incentives because the supplier may create a better result if he finishes earlier or with less effort. These contracts are normally short-term, and would probably introduce a competitive attitude.

Cost-type Contracts are based on cost-calculations done by the supplier. The client will have to pay a fee according to incurred resource factors based on preset rates. Because the total price is a (often linear) function of volume, the client will take most of the risk.

This contract type is often called cost-reimbursable, cost-plus, or time and material (T&M). Because the risk is less for the supplier, given sound estimation of unit prices, the contract

type may promote co-operation. It is also recommended to use this price mechanism if trust is high and there is substantial uncertainty associated with the delivery.

Permutations of both these contract types exist, and the key differentiator for our study is how these price mechanisms allocate risk between the parties. Risk is mitigated if escalation clauses, renegotiation, incentives and penalties, and elaborate cost sharing mechanisms are introduced. Here are two examples:

Cost plus incentive fee; the client pays a defined fee to cover the incurred cost, and there are a proportion of the payment that are tied to performance.

Price schemes that share risk and reward; a price target is set according to estimates. If the real cost is less or higher, the parties will share the difference according to a preset key. Both these mechanisms will allocate risk more evenly between the client and supplier.

It has been found that T&M contracts are mostly used for IT projects that are complex and difficult to specify and estimate (Kalnins and Mayer 2004). They use low-powered incentives, and although the clients are most exposed for risk, T&M contracts distribute risk more evenly than fixed-fee contracts.

Kalnins and Mayer (2004) also found that a relationship between the two parties does more to overcome the limitations of T&M contracts than fixed-fee contracts. They argue that the frequent disturbances in the IT industry make adjustments of fixed-fee contracts difficult, and that closer relationships may help introduce more incentives into a T&M contract.

These results concur with the advice that contracts without sharing risk and rewards does not promote partnerships (Lacity and Willcocks 2001). It is further argued that penalties enforced unilaterally will damage the overall relationship (Kern and Willcocks 1999). It is necessary to

discuss the reasons, and how to avoid reoccurrence, to promote change in behavior. Otherwise, inflexible pricing can promote unnecessary conflicts (Kern and Willcocks 2001).

Further, one of the primary relational characteristics is that the parties share risk and rewards, respecting reciprocity and solidarity (Macneil 1981). Thus:

H4: There is a positive correlation between risk sharing price mechanisms and co-operative contract behavior in IT sourcing relationships.

H5: There is a negative correlation between penalty mechanisms and co-operative contract behavior in IT sourcing relationships.

3.6 Environmental and Behavioral Uncertainty

Environmental and behavioral uncertainty was identified as the most interesting and challenging antecedent condition for contracts and relationships (see sections 2.2.4 and 2.4.5). We have also touched upon uncertainty in connection with most of the contract mechanisms throughout this chapter. Hence, we will first of all look at uncertainty as a moderator on the effect of contract mechanisms on contract behavior.

However, we have seen that uncertainty is a rather complex construct, and we assume that there are different effects of the various types of uncertainty. Therefore, we will treat *environmental uncertainty* and *behavioral uncertainty* differently.

Environmental uncertainty is most often associated with external dynamism such as rapid technology shifts, rapid price changes, and other unanticipated changes in the market. Such dynamism is best handled through autonomous adaptation through the market (Poppo and

Lacity 2002). The parties in a dynamic market will probably not develop close and co-operative relationships (Cannon et al. 2000). This is also in line with the predictions in the IT sourcing literature (Lacity and Willcocks 2001, Poppo and Lacity 2002). Thus:

H6: There is a negative correlation between market dynamism and co-operative contract behavior in IT sourcing relationships.

Behavioral uncertainty has more to do with internal complexity and measurement problems. This type of uncertainty will render strategic behavior and can lead to opportunism (Williamson 1985). The contracted IT services may become difficult to understand, and it is equally difficult to specify exact requirements and performance measures.

Generally, complex conditions call for coordinated adaptation that is best secured in a relationship (Williamson 1985). Further, the effort to craft complex contracts may be turned into a common experience where the parties interact and learn. This will mitigate the hazards that are associated with asymmetric information (Kern and Willcocks 2001).

We assume that complexity will lead to more focus on close and co-operative relationships, and thus:

H7: There is a positive correlation between complexity and co-operative contract behavior in IT sourcing relationships.

Looking now on the possible interactions, it is obvious that all types of uncertainty will work in conjunction with the contract mechanisms. However, we consider behavioral uncertainty to be of most interest. First of all, the empirical evidence from earlier research on IT sourcing is quite clear. Dynamic markets are best handled through short-term and specific contracts (Lacity and Willcocks 2001, Poppo and Lacity 2002). Such contracts will by design be positioned towards competitive (as-if-discrete) contract behavior.

On the other hand, behavioral uncertainty is best handled through coordinated adaptability. The extreme case is unified governance through the hierarchy. Since this condition is not viable when companies actually use contracts between legally independent parties, it is important to investigate how the contract mechanisms function under various levels of behavioral uncertainty (complexity).

Since we have a model with five different contract mechanisms, we also have five possible interactions between these and complexity. However, we consider the price model to be of only modest interest here. First, most of the problems associated with price are connected with market dynamism, and second, the remaining problems are more associated with specifications. It turns on 'what is included?' Once that is established, the price is a result of 'easy' calculations. This leaves us with three remaining interactions, and now we treat each in turn.

First, complexity and contract length (agreed contract duration) should combine into closer co-operation. To cope with complex sourcing, the parties have to understand that they need to work together. They have to learn and adapt, they have to develop proper conduct together. To commit to such learning, that also demands relation specific investments, should be considered positive for the relationship (Lambe et al. 2000). Thus:

H8: Increasing levels of complexity will enhance the positive correlation between contract length (agreed contract duration) and co-operative contract behavior in IT sourcing relationships.

Second, complexity makes it even more paramount to mitigate hazards. If this is better done under internal governance, all efforts to express requirements such that ambiguities are reduced, should also lead to more co-operation. Hence:

H9: Increasing levels of complexity will enhance the positive correlation between detailed requirement specifications and co-operative contract behavior in IT sourcing relationships.

Finally, performance specifications cannot be ambiguous. They have to be precise and measurable, or else there will be fighting between the parties. Complexity will make this more and more impossible, and hence we advance:

H10: Increasing levels of complexity will enhance the negative correlation between detailed performance specifications and co-operative contract behavior in IT sourcing relationships.

4.

RESEARCH DESIGN AND METHODOLOGY

In the previous chapter we advanced a research model with testable hypotheses for the effect of contract mechanisms and uncertainty on contract behavior in IT sourcing relationships. In this chapter we describe the research design, the research context, the data collection procedures, the development of our survey instrument, and the measures used for the theoretical constructs.

4.1 Research Design

All our hypotheses are framed as *correlations*, and the research design is a detailed plan and procedure for an empirical test of these. We need to assign data to our theoretical constructs, and we need to control for spurious effects so that we isolate the effects of each of the included constructs.

We have a focus on real life contracts and relationships, which cannot be manipulated. Therefore, we have to rely on 'passive-observational studies'. Nor do we have time or resources to do a time serious study. Therefore, we decided to use a *cross-sectional survey* (Cook and Campbell 1979; Frankfort-Nachmias and Nachmias 1996).

A cross-sectional design allows us to test the hypotheses through establishing correlations between the variables and controlling for spurious effects. The latter is achieved through statistical techniques combined with the use of control variables.

Internal validity will be weaker than in experimental or quasi-experimental studies that are based on controlled manipulations. However, the study will be effectuated as a field study in natural settings. The 'realism of context' is high, and we do not sensitize or manipulate the subjects. Both of these aspects are usually considered to enhance the external validity (Cook and Campbell 1979).

4.2 Empirical Setting

The choice of an appropriate research context is a trade-off. 1) We must obtain sufficient variation with respect to the independent variables in the research model, and 2) we must

control for irrelevant (spurious) sources of variation (Cook and Campbell 1979). A completely random sample from all IT sourcing contracts in Norway would probably provide both of these goals. However, we did not consider this a viable option. Our study concerns current contracts between business parties, and most organizations view their contracts and business relationships as highly strategic and confidential.

Therefore, we chose to get access to a focal industrial buyer where we were allowed to observe both contracts and contract behavior over an extended period. As a consequence, we had to let go of the possibility to randomize. Instead we used a *deliberate sampling for heterogeneity* to get the necessary variation of contracts and contract relationships. Thus, we included different kinds of IT sourcing contracts, from the simplest to the most complex. This should increase the external validity (Cook and Campbell 1979).

With one large industrial buyer as a focal point, we also control for some extraneous organizational and industrial factors. These are held constant, and this should reduce the amount of error variance. Hence, both internal and statistical conclusion validity should be enhanced.

We chose to include IT sourcing contracts into our deliberate convenience sample based on the following characteristics:

- The contract should be active
- The contract should have an associated Purchaser, Owner and Sales Representative
- The key informants should be accessible and willing to participate
- There should be variance in the key constructs

Quite early, we decided to work closely with the IT Purchasing Unit. They are the link between the internal and the external market, and the individual purchaser is the best-informed source on our unit of analysis. Therefore we spent time with each in turn to identify contracts to include in our sample.

By including different kinds of IT contracts, we were quite certain that there were variance, and this was confirmed by our initial observations and pilot study. The final sample included 74 contracts and contract relationships, ranging from easy IT commodities to complex systems integration, outsourcing and strategic partnerships. It also included small and independent consultants as well as the large international IT corporations.

This setting should be sufficient to test our general theory on the interrelationship between formal contract mechanisms and contract behavior in IT sourcing relationships. A theory claimed to be general can be rejected if it is falsified for any subgroup (Calder et al. 1981), but if the theory stands the test, it is only 'not yet falsified' (Meehl 1990). Thus, to generalize a theory we need to do several studies.

4.3 Data Collection

All our hypotheses are framed as correlations between aspects concerning the contract, and contract behavior. I.e. for each contract, we have to measure some elements of the written contract (contract mechanisms) and the antecedent conditions (environmental and behavioral uncertainty). We also have to measure behavior associated with that very same contract (contract behavior), and map all these constructs in one unit of analysis. This is the *IT sourcing relationship.*

Contract mechanisms are written documents, but most relationship constructs are only present as sentiments and perceptions. They are in the ‘eye of the beholder’ (Heide and John 1995). We also chose to treat the contract mechanisms accordingly, because all the ‘nuts and bolts, cogs and wheels’ described in contracts, are subject upon the parties’ interpretations and perceptions. Our target is to study contract behavior, and therefore we focus on how the involved parties interpret and frame contracts.

To sum up the 'eyes of the beholder’, we can measure the constructs on an individual level and then aggregate into the interorganizational level, or we can measure the relationship properties directly (Heide and John 1995). Because the first approach is inherently difficult, and there are no theoretical arguments for continuity across levels of the construct in question, we decided to use the latter.

Hence, we chose to use a standard key-informant approach, where we measured the constructs through a number of knowledgeable individuals. Here we are in good company, because this is by far the most common approach in studies of inter-firm relationships (Heide and John 1995).

Now, the challenge is to decide on the best possible ‘source’ or the most suitable key-informants. The contracts in question involve two legal parties, and two different organizational units represent the client organization. First, the IT sourcing need and strategy is defined within the IT department. For critical relationships, they appoint one responsible for the relationship (relationship owner) and one responsible for the agreement (contract owner).

Second, the IT Purchasing Unit does the actual purchase and contract negotiations. This unit appoints one IT Purchaser as responsible. The co-operation between these units can be intricate, but there is a common process. The IT Department is responsible for the supply, and

they issue a request to the IT Purchasing Unit. Then it is this unit's responsibility to scan the market and do the purchase and negotiation. Thereafter, the IT Department takes on responsibility for the relationship.

On the supplier side, the picture is quite similar. A sales unit does the contract negotiations and owns the contract until it is finalized. Thereafter, some organizations transfer the contract to operational units, while others keep the responsibility within sales. However, in complex operations, there will be a complex web of interests within and between the organizations.

Key informants are deliberately chosen because of their knowledge about the phenomena under study (Heide and John 1995; Kumar et al. 1993). Having these alternative key informants, the question is whether to rely on several informants or a 'bare minimum'?

We decided to rely on the IT Purchasing Unit as our informants. The measures are on the organizational level, there is no reason to expect a complete consensus between different informants, and the purchaser is regarded as most knowledgeable of *both* the contract and the contract relationship. It is their sole responsibility and their purpose within the organization to know what is going on between the two parties, and they are involved in many of these relationships (Cannon et al. 2000).

So, our data set is the client's perception of the contract and the contract relationship, as seen through the lens of the IT purchasing unit. All measurements are through the questionnaire instrument reported next.

4.4 Measurements

We followed the procedure recommended by Churchill (1979), and started with a comprehensive literature review. At first, the emphasis was on complex IT outsourcing and inter-organizational literature on contracting and institutional theories. A pilot study was initiated in the target company, supplemented with discussions with colleagues and industry experts. We relied on informal observations in meetings and normal working environment, discussions and examinations of written contracts as well as information databases about contracts.

This led to a change in emphasis, from IT outsourcing relationships to IT sourcing relationships in general. The pilot study was completed with a semi-structured interview covering two IT sourcing relations. The cases were selected to reflect variance in contract mechanisms and (hopefully) contract behavior in the IT sourcing relationship. The interviews were recorded and a protocol was written on each. This led to a first revision of the model, and some of the theoretical elements were skipped because they would not show enough variation.

The first versions of questionnaire in both English and Norwegian were written, and the gross content was checked against industry expertise in a Norwegian seminar on IT contracts August 2003. Based on the presentations and informal discussions, the research model was assessed to fit the purpose. No modifications were deemed necessary at this point.

We designed the Norwegian version of the questionnaire to be used by both buyers and sellers, and we ran a test on two key account managers in the IT industry. Some modifications and clarifications seemed appropriate.

Then, we tested a revised version on two actual dyads. We discovered some problems concerning the use of a similar questionnaire for both buyer and seller, i.e. some combined phrases like ‘supplier/customer’ were unnatural for the informant. Therefore, we decided to make a specific version for both roles.

However, the test verified that the questionnaire and research model was suitable for our purpose, and the vast majority of questions had identical wording for all roles (only seven questions are tailored to the role).

The actual questionnaire was tested on real industry cases not involved in the final survey. Thus, we had all reasons to believe that the questionnaire would be understandable and tap the most important dimensions, without sensitizing the key informants. However, due to the limited sample, we could not use any statistical analysis at this stage.

The final data collection commenced in January 2004, and by the end of March we had covered 74 cases from the IT Purchasing Unit.

4.4.1 General Design Criteria for the Survey Instrument

We based our instrument on previously used and validated scales for all but the contract mechanisms. We used reflective seven-point scales with multiple items framed as statements anchored between 1-very bad description, and 7-very good description.

To make it possible to distinguish between formal contract mechanisms and the informal contract behavior, we used specific wordings such as *IT contract* and *contract relationship*. We also used an introductory text where we highlighted *this IT contract* and *this contract relationship*. Thus, we did our utmost to enable the distinction between several different

contract relationships, each associated with one contract. To our knowledge, this has not been done before.

4.4.2 Contract Behavior

Contract behavior in the IT sourcing relationship is the dependent variable, and it was measured through the manifested contract norms. We based our instrument on the industry non-specific scales proposed by Kaufmann and Dant (1992), and later modified to a Norwegian context by Rokkan (1985) (see also Rokkan and Haugland (2002)).

This instrument is an application and operationalization of the contract norms developed by Macneil (1974, 1978, 1980), and it is built on a common understanding of relational exchange as a higher order construct that is reflected in seven dimensions: *relational focus, solidarity, mutuality, flexibility, role integrity, restraint of power, and conflict resolution.*

All our items were based on the wordings made by Rokkan (1985), but we tailored the questions to our IT sourcing context. We used a total of 36 items to measure the contract behavior, and all details and items are reported in appendix 1. The Norwegian questionnaire is included in appendix 2 (see also section 2.3.3 for more information about the choice of instrument).

Now, we provide a short description of each of the seven dimensions, and we include two sample items from each. All items are measured with a seven-point scale anchored from very bad (1) to very good (7) description. A co-operative IT sourcing relationship should manifest itself through relatively high score on this scale, while low values should indicate competitive relationships.

Focus in the contract relationship (relational focus)

"The commercial exchange process is comprised of both the individual discrete transactions and the relationship which encompasses them. Relational focus reflects the extent to which the exchange relationship is perceived as relatively more important to the parties than the individual transactions" (Kaufmann and Dant, 1992).

If the score is high, then the parties put relatively more focus on the long-term relationship as opposed to the individual transaction. Hence, we interpret this as a relatively more co-operative contract relationship. We used seven items, two of which read:

Focus_1	The contract relationship itself is more important than the individual transactions (the individual buy and sell operations)
Focus_2	The outcome of individual transactions is less important than the contract relationship itself

Solidarity in the contract relationship

"Solidarity refers to the process by which an exchange relationship (as distinct from a series of discrete transactions) is created and sustained. In the more discrete forms of governance, the parties rely on arms-length bargaining and legal enforcement to create and sustain each transaction. To accommodate more complex and indefinite relational forms, the parties rely on trust and other informal processes" (Kaufmann and Dant 1992).

If the score is high, then the parties have relatively more focus on trust and co-operation as opposed to competition and short-term bargaining for individual gains. We used five items, two of which read:

Solidarity_2	Expectations of behavior reflect the strong spirit of fairness that exists in this contract relationship
Solidarity_3	An important feature of this contract relationship is that neither party would do something damaging to the other party.

Mutuality in the contract relationship

"Mutuality implies the requirement of a positive incentive to exchange for both parties. Under discrete governance, the parties require positive outcomes from each discrete transaction and envision the monitoring of each transaction as if it were the last, and therefore, the only capable of delivering the desired outcomes. Under relational exchange, the parties expect generalized reciprocity emanating from ongoing and indeterminate relationships" (Kaufmann and Dant 1992).

A high score indicates a long-term interest in the relationship and corresponds with a co-operative contract relationship. We used four items, two of which read:

Mutuality_1	Each transaction is expected to be reconciled completely and individually (Reverse scored)
Mutuality_2	Our organization assures itself that the other party is acting as we expect by precisely monitoring its performance on a transaction-by-transaction basis (Reverse scored)

Flexibility in the contract relationship

"If change is to occur in the contracts between parties so that they conform to changes in the environment, it must be envisaged and permitted within the existing relationship (relational exchange) or it must be possible for the outdated transactional specifications to be terminated and new, appropriate ones created (discrete transaction)" Kaufmann and Dant 1992).

This construct denotes the extent to which flexibility is secured through a potential use of 'exit', or through renegotiations and the use of 'voice'. A high score indicates a focus on flexible interpretations and corresponds with a co-operative contract relationship. We used five items, two of which read:

Flexibility_1	The terms of an ongoing transaction are not renegotiable under any circumstances (Reverse scored)
Flexibility_2	It is expected that changes in the terms of ongoing transactions would be allowed, if unanticipated events occur.

Roles in the contract relationship (role integrity)

"To provide the necessary predictability for contracting relationships, the roles of the parties must remain relatively stable. The more discrete the transaction, the more simplistic become the roles maintained by the parties. By contrast, relational exchange requires the parties to maintain highly complex and multi-dimensional roles" (Kaufmann and Dant 1992).

This construct denotes the extent to which the parties' roles are clearly separated, or complex and overlapping. A high value indicates complex roles that should be associated with a co-operative contract relationship. We used seven items, two of which read:

Role_integr_1	There are many expectations in this contract relationship that goes beyond the mere buying and selling of products.
Role_integr_3	This contract relationship creates a complex web of expectations between us over all kinds of issues

Use of power in the contract relationship (restraint of power)

"Contracts can be seen as the mutual creation of rights and obligations limited only by their specification. Under discrete governance structures those rights will be exercised subject only to limitation by the law. This is the natural corollary to the arms-length bargaining, which produces those rights. While recognizing that such legitimate power exists, more relational governance structures create expectations that its use will be voluntarily limited. This dimension reflects the degree to which the parties restrain their use of legitimate power" (Kaufmann and Dant 1992).

This construct denotes the extent to which individual rights are unilaterally exercised or voluntarily restrained. A high score indicates voluntary restraints that should be associated with a co-operative contract relationship. We used four items, two of which read:

Restraint_1	It is expected that the more powerful party in this contract relationship should use whatever means necessary to get its own way (Reverse scored)
Restraint_3	It is expected that each party in this contract relationship should limit the use of power they have over the other party.

Handling of conflict in the contract relationship (conflict resolution)

"Contracts reflect the social context in which they are created and executed. The more relational an exchange becomes, the more a separate and distinct social order is created within the relationship itself. In discrete transacting, conflict resolution is a formal external process (e.g. litigation). In relational exchange, conflict resolution is informal and internal" (Kaufmann and Dant 1992).

This construct denotes the extent to which conflicts are resolved through formal external processes, or through informal and internal processes. A high score indicates informal and

internal processes and should be associated with a co-operative contract relationship. We used four items, two of which read:

Conflict_res_1	Our organization's procedures for dealing with disputes with the supplier/customer are formalized, and it is expected that they should be followed rigidly (Reverse scored, specific wording to distinguish between supplier and customer)
Conflict_res_2	The supplier's/customer's procedures for dealing with disputes with us are formalized, and it is expected that they should be followed rigidly (Reverse scored, specific wording to distinguish between supplier and customer)

For some of the items that are used in the questionnaire, a high score will indicate low levels of co-operative behavior. These items are marked reversed score, and they were recoded before the statistical analysis.

4.4.3 Contract Mechanisms and Uncertainty

Our main hypotheses are framed as correlations between formal contract mechanisms and co-operative behavior in IT sourcing relationships. However, the model also includes uncertainty, and we derived hypotheses for both direct and moderating effects of uncertainty. Thus, we treat contract mechanisms that are defined as the 'nuts and bolts' expressed in the written contract with exhibits, and uncertainty as a set of independent variables.

We are particularly occupied with the contract as a planning document and a foundation for the co-operation in the exchange. Therefore, we do focus on the specification of a few selected areas necessary to plan and deliver the contracted products and services.

Contract length is defined as the specified duration for the contract. It was measured as the actual contracted time in number of years, and we did the same for contracted optional

periods. Thus, we have a continuous measure of total contracted time in years. As part of our analyses we combined these two items into a contract length including optional periods.

Requirement specifications are defined as 'the specifications of requirements to be satisfied by the contracted IT products and services'. We had to develop items specifically for this study. There are no agreed and previously used scales for such purpose, and most of the referenced sources normally treat 'the contract' as a whole. We used a more micro-analytic approach where we look at various aspects of the contract normally described in different exhibits.

Marcolin (2002) measured the contractual definition as the contract's degree of detail within each clause, the number of clauses and the length (in pages) of the contract. Poppo and Zenger (2002) measured the degree of formalization as the degree of customization and legal work required. Fitzgerald and Willcocks (1994) measured loose contracts as only specifying vaguely the core exchange and not regulating change. They measured tight contracts as the opposite, specifying everything in considerable detail, and well-defined contracts as somewhere in between. The last type included clauses and procedures for handling change. Lacity and Willcocks (2001) used a similar approach.

The general purchasing literature distinguishes between the 'what' and the 'how'. The 'what' could be expressed as a *functional specification* - this describes the functionality that the product must have for the user. The 'how' could be described as a technical specification – this describes the technical properties and characteristics of the products as well as the activities to be performed by the supplier (van Weele 2002).

We decided to combine these aspects and made seven items following the general criteria described in section 4.4.1. Details are reported in appendix 1 and 2, while we only provide two sample items here:

Requirement_3	The contract specifies functional requirements, with a focus on which results the customer wants to achieve by the delivery.
Requirement_5	The contract specifies requirements for the products and services to be delivered, in great details

A high score on the seven-point scale for these items would indicate a complex and comprehensive requirement specification (scope of work).

Performance specifications are defined as 'specifications of measurable performance to be met by the contracted IT products and services'. We also had to develop a specific scale for this study. This construct denotes how the parties specify measurement systems and metrics. This will normally be specified in a Service Level Agreement, although not all contracts will include this. Drawing on the same sources as above, we developed nine items. Here we provide two samples:

Performance_3	The contract specifies performance measures in great details, through a Service Level Agreement (SLA).
Performance_6	The contract specifies reporting procedures and procedures for monitoring of the contract.

A high score on the seven-point scale for these items would indicate a complex and comprehensive performance specification.

Pricing is defined as 'specified price mechanisms for the contracted IT products and services'. We measured this with items combining different theoretical price models (van Weele 2002, Monczka et al. 1998) and the reviewed IT sourcing literature to generate statements about different pricing methods. Here we provide two sample items:

Price_1	The contract specifies that the products and services are to be delivered according to a fixed price, independent of actual time and materials.
Price_2	The contract specifies that the products and services are to be delivered according to fixed unit prices, so that the total price for the contract depends on actual time and materials".

A high score on the seven-point scale for these items would indicate the use of a clear pricing model with a clear distribution of risk. The first will allocate risk to the supplier, while the second allocate most of the risk to the buyer. Normally, these two pricing mechanisms are mutually exclusive, and we made a new item calculated as the difference between the two (Price_1 – Price_2). The result is an item that denotes the extent of fixed price, ranging from -6 to +6.

Uncertainty expressed as Market Dynamics and Complexity

Contracts are agreed and implemented under influence of external conditions in the market, and the technology involved can be more or less complex. This might lead to dynamic and uncertain conditions where there is substantial risk associated with the contract. Uncertainty includes both *environmental uncertainty* and *behavioral uncertainty*, and it is one of the key antecedents to the choice of proper safeguards (Williamson 1979, 1985, 1996; see also section 2.2.4).

We decided to conceptualize *environmental uncertainty* as market dynamism, and *behavioral uncertainty* as complexity. Both variables can influence the choice of contract mechanisms and the development of the co-operative relationship.

Market dynamism reflects to what extent the market surrounding the particular contract is subject to rapidly changing technology, frequent price changes or fluctuations in product

availability. *Complexity* (Cannon and Perrault 1999), or task ambiguity (Cannon et al. 2000) reflects to what extent it is difficult to describe requirements or performance measures associated with the product.

Our items are based on scales and wordings used by Cannon and Perreault (1999), Cannon et al. (2000), Poppo and Zenger (1998, 2002), Fitzgerald and Willcocks (1994), and Buvik (1995). We used four items to measure market dynamism and four to measure complexity. Here we provide two sample items:

Dynamism_1	Market prices for this type of IT products and services changes rapidly.
Complexity_2	It is very difficult to specify exact requirements for this type of IT products and services.

4.4.4 Control Variables

Although we advanced a research model with contract behavior as dependent variable, and contract mechanisms and uncertainty as independent variables, there are several other factors that will influence both contract behavior and the choice of contract mechanisms. We have to control for such factors. These variables will be included in the analysis to achieve statistical control.

Due to the fact that we have a sample that originates from one single industrial buyer, we hold some extraneous variables constant. However, we do not use a controlled experiment with manipulated treatments. Nor do we use randomization. Therefore we rely on *statistical controls based on a set of additional variables* to be used in our regression models. This will enable us to partial out the individual contribution for each in turn, because the regression analyses hold each other variables constant while the regression coefficients are calculated (Hair et al. 1998, Lewis-Beck 1980).

The candidates for such variables are: 1) variables likely to be correlated with *both* the independent and dependent variables, and 2) variables that are *other* likely causes of the dependent variable but not correlated with the independent variables.

Specific investments in the contract relationship

TCE argues that specific investments, i.e. investments of time and efforts (including money), that loose their value outside the relation (transaction) is the key variable in the choice of governance mechanisms. Especially when combined with high uncertainty, the parties should develop complex governance structures to mitigate contractual hazards (Williamson 1979, 1985, 1996; see also section 2.2).

Complex governance structures can involve *both* complex formal contracts and relational governance (Poppo and Zenger 2002). Further, if specific investments are used as deliberate governance mechanisms, or pledges (Anderson and Weitz 1992), this should be decided at the time of contract development (Williamson 2002). Because the parties are farsighted, they will assess the contractual hazards when they choose between feasible governance structures. This will be a concerted decision that influence both the *ex ante* contract and the *ex post* relationship (Williamson 2002).

Thus, we expect specific investments to be correlated with *both* the independent and the dependent variables.

We adapted the scale and items used by Anderson and Weitz (1992), with a few adjustments made by Buvik (1995). We used nine items, and here we provide two sample items:

RSI_1	If we end this contract relationship, we would lose a lot of the investments we have made specifically for this contract.

RSI_2	It would be difficult for us to recoup investments made specifically for this contract, if we end this contract relationship.

Contract importance and availability of alternatives

In addition to supply market dynamisms and complexity as sources of uncertainty, it is argued that alternatives of supply sources also lead to uncertainty (Cannon and Perrault 1999; Cannon et al. 2000). They also argue that important supplies should be treated different than less important ones. These two conditions also give rise to dependence, and the farsighted buyer should consider dependence at the outset and not get taken by surprise (Williamson 1985, 1996).

Therefore, the two conditions can influence both the choice of legal bonds (formal contract) and co-operative norms (Cannon and Perrault 1999; Cannon et al. 2000). These two constructs are thus included in our research model, because they can influence *both* the independent and the dependent variables.

The scale for *contract importance* is adapted from Cannon and Perreault (1999) and is made of four items. The scale and items for *availability of alternatives* were also adapted from Cannon and Perreault (1999). It is made of another five items, and here we provide some samples for these two kinds of items:

Importance_1	This is a very important IT contract for our company.
Alternatives_1	The supply market for this type of IT products and services is very competitive.
Alternatives_2	There are several other suppliers that could deliver this type of IT products and services.

Stability and history of the contract relationship expressed through the contract age

Relational contract theory argues that contract norms are developed over time as a result of learning and interactions (Macneil 1980). Hence, the informal mechanisms are developing as the cooperation enfolds, and this development requires a history of interactions and personal ties between the parties (Dyer and Singh 1998).

Key personnel on both sides of a contract relationship matters (Macneil 1980; Kern and Willcocks 2001). “A key factor often noted as destabilizing operations and relations was the changes in key managers on either side (Kern and Willcocks 2001). Hence, we argue that both parties’ key personnel actually frame the relationship, and a change in key personnel can alter the attitude in the relation.

Contract age as such does not account for what really happens, but we interpret the actual contract age (duration) as a proxy measurement of stability and history. As discussed in section 3.2, the actual duration is probably more important than the agreed contract length. Therefore, we decided to calculate an item for *contract age* as the time between commencement of the contract and the time for our data collection.

5.

DATA EXAMINATION AND MEASURE VALIDATION

In this chapter we present assessments of data quality. We cover the sample and descriptive statistics, we do an assessment of missing data, and we describe the procedures used to validate the measurements of the theoretical constructs.

5.1 Sample Description

We used a convenience sample of contracts and contract relationships, deliberately chosen for heterogeneity. This should secure necessary variations and increase the external validity (Cook and Campbell 1979). The sample consists of a representative mix of all kinds of IT sourcing contracts within our focal organization, and it is based on agreements and discussions with the 11 key-informants.

First, we assessed *informant quality* by a simple mean comparison between the informant tenure and the contract age. On average the tenure was longer than the contract age, with 2.87 vs. 2.45. This implies that, on average, the informants have been working with the contracts and relationships from early negotiations and into the contract operations. This was confirmed by the fact that less than 15% of the cases have a negative difference between the informant tenure and contract age of more than one year.

The quality of the informants was again confirmed in the final sample selection. Initially, we identified 85 contracts to be analyzed, and we received a total of 74. On average we 'lost' one contract from each informant. In a few cases, we found that the informant was not properly knowledgeable about all aspects of the contracts and relationships. These contracts were not included in the sample.

Further, there had been changes in the contract portfolio between the initial identification and the actual data collection. The final reason for 'missing' cases were due to the heavy burden it is to set aside time to answer surveys like this.

However, before any of the contracts were excluded from the survey, we had a chance to discuss this with the informant. Obviously, there is a real danger that these exclusions

decrease the variations, and as such, that the statistical conclusion validity is decreased. However, the descriptive statistics reported in appendix 3 confirms that we have a reasonable variation on all our focal constructs, and we deem the material to be fit for our purposes.

Second, we assessed *item non-response* by missing value analysis on the complete data set (N=74). This revealed nine cases with missing values. Only four cases had non-response on six items or more, with a 'worst case' missing nine items. This is less than 10% (8.6%), and we saw no need to exclude cases (Hair et al. 1998).

Further, one of the items used to measure relation specific investments (RSI_8) is missing in six of the 74 cases, which give a maximum item non-response of 8.11%. As it turned out, this item was excluded in the further validation process, and none of the other items showed a non-response rate above 5%. Due to our limited sample and the relatively low item non-response rates, we consider this to be more than acceptable, and saw no need for further remedies.

For further analysis we used a conservative strategy (Hair et al. 1998). I.e. we used *replace with mean* on all the factor analyses, and we employed a *list-wise deletion* on the regression analysis. This strategy provided an analysis with data from 73 cases.

Finally, multivariate data analysis such as factor analysis and multiple regression analysis demand that all the variables are (close to) *normally distributed*. We used the procedure proposed by Hair et al. (1998) and excluded all variables that deviated substantially from a normal distribution. We used a cutoff of +/- 1.96 on *skewness and kurtosis*. This corresponds to a significance level of 0.05, and we dropped 11 items from further analysis (eight from contract mechanisms, one from contract behavior, and two from the control variables).

5.2 Procedure for Scale Construction and Validation

Having a set of (close to) normal distributed indicators with sufficient variation, the task is now to construct reliable and valid scales for the theoretical constructs. We used an iterative procedure like the one proposed by Churchill (1979).

The main purpose is to identify the interrelationships between our indicators and reduce them to a smaller set of variables that are suitable to test the hypotheses. The indicators are derived from earlier research and theory; hence we have a priori knowledge of the underlying structure. Conceptually, we used a confirmatory approach. However, due to our limited sample size we could not use a strict confirmatory factor analysis, such as structural equation modeling (Hair et al. 1998). Therefore, we used SPSS to run a set of exploratory factor analyses in a 'confirmatory mode'.

First, we used Principal Component (factor) analysis to verify that all theoretical constructs were *unidimensional*. Hence, we determined a set of one-factor solutions according to the procedure proposed by Hair et al. (1998) and Pett et al. (2003). We (mostly) kept items with communality larger than 0.5, hence requiring that at least 50% of the variation in the indicator is explained by the factor solution. Further, we looked for items with a factor loading of 0.5 or higher on the first factor. The squared factor loading is a measure of how much of the item variance that is explained by the factor. 0.5^2 is 0.25, which means that 25% or more of the variance will be explained.

Because the item communality is the sum of these squared factor loadings, one-factor solutions will typically show higher factor loadings. However, this threshold value is important in the final validation, as it increase the statistical significance in our relatively small sample size (Hair et al. 1998).

Second, we ran a *reliability* test with a calculation of Cronbach's Alpha for each construct. We (mostly) deleted items that had a lower item-to-total correlation than 0.5, and thus tried to maximize the alpha. According to theory, this test is weaker than the factor analysis, and we compared the two solutions before we decided to delete items. The goal was to have scales with alpha of 0.7 or higher (Hair et al. 1998; Nunnally and Bernstein 1994).

Third, to test for *convergent and discriminant validity*, we combined similar constructs in a new set of factor analyses. We took each of the classes of construct in turn: contract behavior, contract mechanisms, uncertainty, and the control variables. We used Principal Component with Varimax rotation, and we deleted items that cross-loaded on two or more factors, loaded on the 'wrong' factor, or did not pass the 0.5 threshold based on communality and factor loadings.

However, factor analysis is an 'artful' technique, and the aim was to "construct a set of scales that are few in number and as short as possible while meeting the requirements of scale reliability" (Pett et al. 2003: 167). Therefore, we always used theoretical and conceptual 'lenses' before we decided what to do with individual items.

As the goal was to seek a simple and robust solution, Varimax rotation normally provides the easiest structure. The assumption is that the factors are orthogonal and do not correlate with each other. This maximizes the variations, and it is a sound strategy for further use of the constructs in hypotheses testing (Hair et al. 1998). However, we anticipate some of our constructs to be inter-correlated, and therefore oblique rotations are theoretically more correct. Further, principal components analyze the total variations, which includes error variation. Hence, we compared the Varimax rotated solution first with oblique rotation, and then with principal axis solutions that analyze only the common variance shared between items.

The final scales are calculated as a simple mean of the included items. Such use of summated scales is less vulnerable of specific variations in our empirical setting, and is thus comparable with other studies (Hair et al. 1998). The validation process was concluded by an inspection of the inter-construct correlations.

5.3 Unidimensionality and Reliability

We now comment on each construct in turn, starting with contract behavior (dependent variable), continuing with contract mechanisms and uncertainty (independent variables), and then the control variables. We denote reversed score by using 'r' after the item number (i.e. item 4 in the scale for relational focus is reversed, and we denote it Focus_4r). All one-factor solutions are found in appendix 4.

Contract behavior is measured by the manifested contract norms, and first we validated each of the seven contract norms individually.

Relational focus was measured with seven items, and three items (Focus_4r, 6 and 7) were dropped because they loaded on a 'second' factor. The remaining four items show satisfactory loadings and item-to-total correlations, and they have a Cronbach's Alpha of 0.77 and account for 60.61 % of the variance.

Solidarity was measured with five items, and two items (Solidarity_1r and 5r) were dropped because they loaded on a 'second' factor. The remaining three items show satisfactory loadings and item-to-total correlations, and they have a Cronbach's Alpha of 0.75 and account for 68.56 % of the variance.

Mutuality was measured with four items, and one item (Mutuality_3) was dropped because of low communality (0.14), and low item-to-total correlation (-0.19). The remaining three items show satisfactory loadings and item-to-total correlations, although one item (Mutuality_1r) just below 0.5. However, this is the only threshold criterion violated, and we decided to keep the item. Mutuality has a Cronbach's Alpha of 0.74 and account for 67.10 % of the variance.

Flexibility was measured with five items, and two items (Flexibility_4r and 5r) were dropped because they loaded on a 'second' factor. The remaining three items did not show satisfactory loadings and item-to-total correlations, and we dropped one further item (Flexibility_3) with a communality of 0.27 and an item-to-total correlation of 0.18. The remaining two-item scale is still weak, with an inter-item correlation of 0.43.

Role Integrity was measured with seven items, and all items showed satisfactory loadings and item-to-total correlations. However, in the final validation process (section 5.4), Role_Integr_2r loaded both on its proper Role Integrity (0.573) and the scale for Conflict Resolution (0.561). We decided to drop the item, and the remaining items showed satisfactory loadings and item-to-total correlations with a Cronbach's Alpha of 0.91, and the items accounted for 69.38 % of the variance.

Restraint of power was measured with four items, and the first analysis gave us two factors. Because the 'second' factor had an eigenvalue just merely above one (1.007), we decided to force a one-factor solution. This time, one item (Restraint_4) was dropped because of low communality (0.20), and the remaining three items show satisfactory loadings and item-to-total correlations with a Cronbach's Alpha of 0.88. The items account for 80.55 % of the variance.

Conflict resolution was measured with four items, and one item (Conflict_res_3) was dropped because it had a kurtosis of 2.32. Another item (Conflict_res_4) was dropped because of

(extremely) low communality (0.04), and low item-to-total correlation (-0.09). The remaining two-item scale has an inter-item correlation of 0.82.

Contract mechanisms were defined as 'the nuts and bolts' that are described in the contract exhibits, and *contract length* was measured with two single items combined to a total contract length including optional periods. We do not report more validity check for these.

Requirement specifications were measured with seven items, and two items (Requirement_1 and requirement_4) were dropped because they exceeded the threshold values for skewness and kurtosis. The five remaining items were analyzed and two more items (Requirement_2 and Requirement_7) were dropped because they loaded on a 'second' factor. The remaining three items showed satisfactory loadings and item-to-total correlations, and they had a Cronbach's Alpha of 0.81 and account for 72.85 % of the variance.

Performance specifications were measured with nine items and two items (Performance_4 and Performance_9) were dropped because they exceeded the threshold values for skewness and kurtosis. The remaining seven items were analyzed and two more items (Performance_1 and Performance_2) were dropped because they loaded on a 'second' factor. The five remaining items showed satisfactory communalities, although one item (Performance_5) was as 'low' as 0.485. However, the factor loadings and the item-to-total correlations were according to our cutoff thresholds, and we decided to keep all. They had a Cronbach's Alpha of 0.86 and account for 64.11 % of the variance.

Price specifications were measured with eight items, and four items (price_3, price_4, price_7, and price_8) were dropped because they exceeded the threshold values for skewness and kurtosis. The four remaining items were inspected and analyzed, and we decided to combine two items (price_1 and price_2) into a single item calculated as the difference between the two. This combined item denotes the extent of a fixed price versus the extent of

time and material. A large score indicates fixed price, and a low score indicates a price based on time and materials. In addition we decided to use the single item measuring the use of penalty attached to performance (price_6).

Uncertainty was divided in two constructs. First, environmental uncertainty was defined as *market dynamism* and was measured with four items. One item (dynamism_4) was dropped because of low communality (0.206), and low item-to-total correlation (0.31). The remaining three items showed satisfactory loadings and item-to-total correlations, and they had a Cronbach's Alpha of 0.89 and accounted for 83.61% of the variance.

Second, behavioral uncertainty was defined as *complexity* and was measured with four items. One item (complexity_1) was dropped because of low communality (0.424), and low item-to-total correlation (0.47). The item-to-total correlation was considered acceptable, but we decided to delete the item because both conditions were violated. The remaining three items showed satisfactory loadings and item-to-total correlations, and they have a Cronbach's Alpha of 0.80 and accounted for 73.13 % of the variance.

We introduced four **control variables**. *Relation specific investments* were measured with nine items. We first dropped one item (RSI_6) with low communality (0.341), and then two more (RSI_7 and 8) because they loaded on a 'second' factor. The remaining six items showed satisfactory communalities, factor loadings and item-to-total correlations. The six-item scale had a Cronbach's Alpha of 0.92, and accounted for 72.07 % of the variance.

Contract importance was measured with four items, and all items showed satisfactory communalities, factor loadings and item-to-total correlations. The four-item scale had a Cronbach's Alpha of 0.90, and accounted for 77.57 % of the variance.

Availability of alternatives was measured with five items, and one item (alternatives_5r) was dropped because it exceeded the threshold values for skewness and kurtosis. The remaining four items showed satisfactory communalities, factor loadings and item-to-total correlations. The four-item scale had a Cronbach's Alpha of 0.87, and accounted for 73.14 % of the variance.

We measured contract stability and history with *contract age* as a proxy. This item was calculated based on the commencement date for the contract, and it is an objective measure in years. We do not report more validity check for this construct.

5.4 Convergent and Discriminant Validity

Construct validity, is showed by "first, testing for a convergence across different measures of the same 'thing' and, second, testing for a divergence between measures and manipulations of related but conceptually distinct 'things'" (Cook and Campbell 1979: 61).

Contract behavior is manifested through seven interrelated dimensions that should originate from a higher order construct. They should be inter-correlated, but still show satisfactory convergent and discriminant validity (Kaufmann and Dant 1992). When we combined all remaining items in a Principal Component analysis with Varimax rotation, we had to force the solution to have seven factors (flexibility had eigenvalue less than one).

All seven dimensions were 'loud and clear', with eigenvalues ranging from 6.323 to 0.880. All communalities were higher than 0.5, and all factor loadings are above 0.5 and on the 'right' factor. The seven factors explain 78.59% of the variance.

Table 5.1: Contract behavior -Varimax rotated Principal Component solution

	Component						
	1	2	3	4	5	6	7
Role_integr_1	**,65**	,02	,03	,51	,19	-,14	,11
Role_integr_3	**,86**	-,05	-,03	,31	,18	,01	-,08
Role_integr_4	**,85**	,01	-,03	-,01	-,03	,05	,09
Role_integr_5	**,79**	-,03	-,16	,22	-,14	-,15	,10
Role_integr_6	**,84**	-,07	-,14	,05	,05	-,05	,04
Role_integr_7r	**,78**	,12	,10	-,21	-,10	,07	-,31
Restraint_1r	-,13	**,83**	,19	,00	,24	,19	,06
Restraint_2r	-,14	**,86**	,19	,01	,18	,25	-,01
Restraint_3	,28	**,83**	,05	,22	,03	,04	,05
Focus_1	-,05	,15	**,74**	,08	,19	-,25	,39
Focus_2	,11	,09	**,77**	-,04	,07	,00	,32
Focus_3r	-,26	,25	**,60**	-,28	,32	,40	-,04
Focus_5r	-,21	,14	**,71**	-,18	-,01	,37	-,14
Solidarity_2	,20	,07	-,10	**,75**	-,33	-,07	,02
Solidarity_3	,04	,16	-,07	**,89**	-,06	-,10	-,05
Solidarity_4	,39	-,28	-,49	**,54**	,06	-,23	-,02
Conflict_res_1r	,12	,23	,09	-,15	**,87**	,21	-,07
Conflict_res_2r	-,04	,13	,14	-,05	**,88**	,11	-,12
Mutuality_1r	-,05	,06	,09	,00	,02	**,85**	,10
Mutuality_2r	-,06	,37	,11	-,15	,27	**,71**	,01
Mutuality_4r	,10	,20	-,07	-,25	,41	**,58**	,06
Flexibility_1r	-,16	,33	,29	-,24	-,04	,11	**,70**
Flexibility_2	,10	-,10	,13	,09	-,16	,08	**,79**

Table 5.1 shows all the included items and the loading on seven factors (components). We have marked the loading in bold for the factor that items are assigned to, and we have underlined loadings where they exceed 0.5 on other factors.

All the items load high on their 'right' factor, which is a good indication for convergent validity. They also load substantially lower on the other factors, except for role_integr_1 and solidarity_4.

Then, we compared the solution with oblique rotation as well as common factor analysis (principal axis), and it was not possible to devise a better and simpler structure. Even though oblique and varimax rotation put the factors in slightly different orders, all the items loaded on the same seven factors.

However, divergent validity is not 'perfectly' established, and we decided to compare the correlations between all the seven dimensions.

Table 5.2: Contract behavior - Correlations

	Relational focus	Solidarity	Mutuality	Flexibility	Role integrity	Restraint of power	Conflict resolution
Relational focus	**(0.77)**						
Solidarity	-0.45[a]	**(0.75)**					
Mutuality	0.33[a]	-0.34[a]	**(0.74)**				
Flexibility	0.40[a]	-0.22	0.16	**(0.43)**			
Role integrity	-0.18	0.46[a]	-0.09	-0.10	**(0.91)**		
Restraint of power	0.38[a]	-0.10	0.41[a]	0.22	0.01	**(0.88)**	
Conflict resolution	0.31[a]	-0.24[b]	0.43[a]	-0.08	0.10	0.37[a]	**(0.82)**

[a] Correlation is significant at the 0.01 level (2-tailed) , [b] Correlation is significant at the 0.05 level (2-tailed).

The diagonal (in bold) is the internal consistency expressed by Cronbach's Alpha.

Table 5.2 shows that none of the contract norms correlate higher than 0.46 (role integrity and solidarity). This indicates that although the dimensions are inter-related, they are different and show satisfactory discriminant validity.

It is also clear that relational focus, mutuality, restraint of power, and conflict resolution all are significantly and positively inter-correlated. Further, flexibility only correlates significantly with relational focus, and solidarity and role integrity correlates positively. However, solidarity correlates negatively with relational focus, mutuality, and conflict resolution. This does not indicate that we have one common underlying factor represented in our empirical sample.

This was indeed demonstrated when we treated all seven factors in a 'second order' factor analysis. First, we got three factors. Mutuality, restraint of power, and conflict resolution loaded on the first factor. Solidarity and role integrity loaded on the second, while relational focus and flexibility loaded on a third factor.

We decided to delete flexibility because it was the weakest factor, and then we got two distinct factors with eigenvalue 2.403 and 1.370. In total they explained 62.87 % of the variance. Relational focus, mutuality, restraint of power, and conflict resolution combined into a four-item, one-factor solution. It showed an eigenvalue of 2.119 and accounted for 52.96 % of the variance. The scale had a Cronbach's alpha of 0.70, and the inter-item-correlations were not ideal, but satisfactory, ranging from 0.44 to 0.52.

We conclude that we have a weak, but still satisfactory scale, and deem it fit for our research purpose. We denote the scale as ***Co-operative relation***, and it is the mean value of relational focus, mutuality, restraint of power, and conflict resolution.

We considered the two remaining dimensions, solidarity and role integrity, as a possible second factor. However, since there is no theory supporting such actions, we decided to keep just one overall factor for further analysis.

Contract mechanisms, uncertainty and control variables.

We assessed construct validity for the independent and control variables in several steps. First, we ran a combined analysis of *requirement and performance specifications*. This showed satisfactory convergent and discriminant validity with two distinct factors (eigenvalue 4.279 and 1.199). All items except performance_5 show communalities higher than 0.5, and they all load high on the expected factor.

Then, we combined *dynamism and complexity* in a principal components analysis, and this confirmed two distinct factors (eigenvalue 2.294 and 1.796). All items showed communalities higher than 0.5, and they loaded high on the expected factor.

Then, we combined all the items used to measure the *control variables*. Relation specific investments, contract importance, and availability of alternatives showed satisfactory convergent and discriminant validity. We got three distinct factors with all the items loading properly on their expected factor. The eigenvalues ranged from 6.15 to 1.539, and they explained 75.52% of the variance.

Finally, we combined all the items in one Principal Component Analysis with Varimax rotation:

Table 5.3: Contract mechanisms, uncertainty and control variables - Varimax rotated Principal Component solution

	Component						
	1	2	3	4	5	6	7
RSI_1	**,91**	-,05	,05	,12	-,08	,09	-,05
RSI_2	**,84**	-,16	,21	,16	-,17	,06	,01
RSI_3	**,73**	-,10	,18	,19	,05	-,14	,00
RSI_4	**,86**	-,10	,00	,16	-,03	-,21	-,10
RSI_5	**,76**	,01	,01	,29	,04	,10	-,31
RSI_9	**,67**	-,36	,10	,31	-,14	,19	,11
Alternatives_1	-,09	**,89**	,11	,01	,25	-,02	,05
Alternatives_2	-,09	**,90**	,12	-,05	,10	-,01	,07
Alternatives_3r	-,18	**,82**	-,03	,05	,22	,06	-,06
Alternatives_4r	-,10	**,66**	-,19	-,13	,04	,32	,17
Performance_3	-,06	,15	**,70**	-,03	,08	,42	,07
Performance_5	,26	,15	**,39**	,03	,07	,50	,13
Performance_6	,11	,02	**,87**	,18	,09	,00	,11
Performance_7	,14	-,06	**,76**	,11	,05	,39	,02
Performance_8	,31	-,09	**,71**	,19	,01	,22	,05
Importance_1	,33	-,05	,24	**,82**	-,09	,12	,11
Importance_2	,30	,18	,35	**,80**	,00	,00	-,03
Importance_3	,26	-,03	,16	**,83**	,18	,16	-,01
Importance_4	,27	-,26	-,23	**,71**	,15	,24	-,20
Dynamism_1	-,02	,37	,05	,06	**,83**	,05	,02
Dynamism_2	-,06	,08	,14	,02	**,92**	,13	,10
Dynamism_3	-,12	,21	,00	,08	**,84**	,09	,22
Requirement_3	,03	,00	,10	,13	,19	**,80**	-,03

	Component						
	1	2	3	4	5	6	7
Requirement_5	-,03	,12	,39	,15	,10	**,74**	-,07
Requirement_6r	-,24	,06	,36	,19	-,09	**,61**	-,18
Complexity_2	,04	-,03	,03	-,06	,17	,11	**,81**
Complexity_3	-,04	,01	,10	-,01	,08	-,09	**,91**
Complexity_4	-,24	,22	,06	,04	,03	-,14	**,79**

Table 5.3 shows that we have seven distinct constructs, and eigenvalues ranged from 6.975 to 1,133. The seven dimensions explained 77.45% of the variance.

One of the performance items loaded below the threshold value of 0.5, and showed higher loading on requirement specifications than on performance specifications. Further, the oblique rotated model showed that requirement and performance specifications could have been combined into one construct. However, because these two constructs are vitally important for our study, we saw the Varimax solution combined with the two-factor solution, as strong enough indication for convergent and discriminant validity.

This is also supported by an inspection of the inter-construct correlations. Here we also included the *Co-operative relation*, which is the final dependent variable.

Table 5.4: Correlations between the theoretical multi-item constructs

		1	2	3	4	5	6	7	8
1	Co-operative relation	**(0.70)**							
2	Dynamism	-0.44[a]	**(0.89)**						
3	Complexity	0.00	0.24[b]	**(0.80)**					
4	Requirement specifications	-0.17	0.22	-0.08	**(0.81)**				
5	Performance specifications	-0.42[a]	0.18	0.10	0.56[a]	**(0.86)**			
6	Relational Investments	-0.06	-0.13	-0.16	0.03	0.28[b]	**(0.92)**		
7	Contract Importance	-0.26[b]	0.12	-0.10	0.29[b]	0.37[a]	0.59[a]	**(0.90)**	
8	Availability of Alternatives	-0.48[a]	0.44[a]	0.12	0.19	0.10	-0.25[b]	-0.04	**(0.87)**

[a] Correlation is significant at the 0.01 level (2-tailed), [b] Correlation is significant at the 0.05 level (2-tailed).

The diagonal (in bold) is the internal consistency expressed by Cronbach's Alpha.

In table 5.4 we see that the highest inter-construct correlation is 0.56 (requirement specifications and performance specifications). None of the constructs are nearly perfect correlated, which indicate that they are distinct constructs that are both convergent and discriminant valid.

5.5 Measurement Summary

We have established that all theoretical constructs are valid and reliable, and the following table represents a summary of the scales used to measure our theoretical constructs:

Table 5.5: Scales used for hypotheses testing

Construct	N	Items	Min - Max (b)	Mean	SD	Skewness	Kurtosis	Coefficient alpha (a)
Co-operative relation	74	4	1.58 – 5.46	3.55	0.98	-0.23	-0.81	0.70
Focus	74	4	1.00 – 6.25	3.24	1.11	0.34	0.49	0.77
Mutuality	74	3	1 – 7	2.89	1.20	1.20	2.21	0.74
Restraint of power	74	3	1.00 – 6.33	4.13	1.49	-0.30	-1.18	0.88
Conflict resolution	74	2	1 – 7	3.95	1.58	0.08	-0.87	0.82
Solidarity	74	3	1.33 – 7.00	4.85	1.16	-0.73	0.84	0.75
Flexibility	74	2	1 – 7	4.30	1.21	-0.26	-0.34	0.43
Role integrity	74	6	1.17 – 6.50	3.45	1.25	0.25	-0.08	0.91
Contract length	74	1	0.25 – 20.0	7.90	6.42	0.94	-0.51	NA
Requirement specification	74	3	1 – 7	3.94	1.49	-0.01	-0.82	0.81
Performance specification	74	5	1 – 7	3.12	1.56	0.62	-0.40	0.86
Fixed price	74	1	-6 – 6	-1.64	4.04	0.57	-1.03	NA
Penalty	74	1	1 – 7	2.55	2.25	0.93	-0.91	NA
Dynamism	73	3	1.00 – 6.33	3.59	1.36	0.06	-0.95	0.89
Complexity	73	3	1.33 – 5.33	3.15	1.08	0.38	-0.97	0.80
Relational investments	74	6	1.00 – 6.33	3.12	1.42	0.24	-1.02	0.92
Contract importance	74	4	1 – 7	4.13	1.38	-0.23	-0.44	0.90
Alternatives	74	4	1.25 – 7.00	5.03	1.36	-0.39	-0.33	0.87
Contract age	74	1	0.17 – 8.25	2.45	2.30	1.19	0.11	NA

(a) Alpha for constructs based on two items is the inter-item correlation
(b) All scales have a theoretical range from 1 to 7, except for Contract length and Contract age that are measured in years (>0), and Fixed price that range from –6 to +6.

Some comments are in order: First, ***co-operative relation*** is the only dependent variable. The underlying contract norms are only reported to be compatible with the works by Kaufmann

and Dant (1992) and Rokkan (1995). Second, all the used scales are sufficiently reliable with a coefficient alpha larger than the recommended 0.70 (Nunnally and Bernstein 1994). The only exception from this ‘rule of thumb’ is the scale for Contractual Flexibility, but this construct is not included in the Co-operative relation.

Third, the mutuality construct violates the cutoff value for kurtosis, with a value of 2.21. Because it otherwise behaves as expected, with good variations and high reliability, we decided to keep the construct as one of the four underlying variables in the composite scale for co-operative relation.

With these comments, we regard the scales fit for our research purposes.

6.

HYPOTHESES TESTING

In chapter three, we advanced ten correlation hypotheses. They all pertain to anticipated changes in contract behavior connected to variations in formal contract mechanisms and uncertainty. This chapter presents the main findings in our study, and we start by the testing procedures before we test each of the hypotheses in turn.

6.1 Testing Procedure

The parties deliberately choose how they specify requirements and performance measures; they deliberately choose the length of the contract and the pricing mechanisms. These contract mechanisms are *choice variables*, and we framed hypotheses for the correlation between each contract mechanism and co-operative contract behavior in the IT sourcing relationship.

We also framed hypotheses for main effects of environmental and behavioral uncertainty, and we introduced a set of interaction hypotheses concerning the moderating effect of behavioral uncertainty on the effect from three of the contract mechanisms.

There are several alternative methods for testing correlation hypotheses, and we chose to use regression analysis because: we are interested in strength, direction, and the relative importance of the variables. We also want to achieve statistical control, and we have advanced hypotheses for interaction effects. All this can be treated by multiple regression analysis, where we estimate effects (correlations) from all the independent variables simultaneously (Hair et al 1998, Lewis-Beck 1980, Skog 1998).

Since there is no theoretical indication of complex functional relationships, we anticipate a linear function, and we specified three incremental regression models. The complete model (Model 3) can be expressed like this:

$$\textit{Contract behavior} = a_0 + b_1\,(\textit{Contract length}) + b_2\,(\textit{Requirement Specifications}) + b_3\,(\textit{Performance Specifications}) + b_4\,(\textit{Fixed Price}) + b_5\,(\textit{Price Penalty}) + b_6\,(\textit{Dynamism}) + b_7\,(\textit{Complexity}) + b_8\,(\textit{Contract Length} * \textit{Complexity}) + b_9\,(\textit{Requirement Specifications} * \textit{Complexity}) + b_{10}\,(\textit{Performance Specifications} * \textit{Complexity}) + \textit{controls} + e.$$

This function is basically a mathematically representation of *one variable dependent* on several other variables, and multiple regression is a suitable statistical tool. “The objective of multiple regression analysis is to predict the changes in the dependent variable in response to changes in the independent variables. This objective is most often achieved through the statistical rule of least squares” (Hair et al. 1998).

Hence, we entered all the independent and control variables into three ordinary least square regression models in SPSS. I.e. we regressed the co-operative *contract behavior* in the IT sourcing relationship (dependent variable) on all the identified contract mechanisms, uncertainty (independent variables) and control variables. The models are incrementally specified, so that:

- Model 1; regress contract behavior on contract mechanisms and uncertainty.
- Model 2; regress contract behavior on contract mechanisms, uncertainty and control variables.
- Model 3; regress contract behavior on contract mechanisms, uncertainty, control variables and interactions (product terms between contract mechanisms and complexity).

In all three models, the calculated regression coefficients are the partial (net) effect of each included variable on contract behavior, while all the other variables are held constant. The effect of one variable is ‘free of’ influence from any of the others. Thus, we achieve statistical control (Lewis-Beck 1980).

Table 6.1 Contract behavior regressed on contract mechanisms, uncertainty, control variables, and interactions

		Unstandardized	Standardized		
Model		B	Beta	t	Sig.
M1	(Constant)	3,56		39,94	,00
	Contract Length	-,02	-,13	-1,29	,20
	Requirement Specifications	,15	,22	1,79	,08
	Performance Specifications	-,20	-,32	-2,65	,01
	Fixed Price	,01	,04	,41	,69
	Price Penalty	-,15	-,35	-3,27	,00
	Dynamism	-,29	-,40	-4,08	,00
	Complexity	,13	,14	1,45	,15
M2	(Constant)	4,92		8,75	,00
	Contract Length	-,03	-,22	-2,00	,05
	Requirement Specifications	,17	,25	2,11	,04
	Performance Specifications	-,23	-,37	-3,01	,00
	Fixed Price	-,01	-,06	-,64	,52
	Price Penalty	-,10	-,23	-2,02	,05
	Dynamism	-,21	-,29	-2,84	,01
	Complexity	,15	,16	1,75	,09
	RSI	,03	,04	,32	,75
	Contract Importance	-,09	-,12	-1,06	,29
	Availability of Alternatives	-,26	-,36	-3,09	,00
	Contract age	,09	,21	1,95	,06
M3	(Constant)	4,75		9,03	,00
	Contract Length	-,02	-,16	-1,51	,14
	Requirement Specifications	,17	,26	2,35	,02
	Performance Specifications	-,23	-,36	-2,92	,00
	Fixed Price	-,01	-,05	-,59	,56
	Price Penalty	-,10	-,24	-2,21	,03
	Dynamism	-,21	-,28	-2,98	,00
	Complexity	,18	,20	2,33	,02
	RSI	,08	,11	,95	,35
	Contract Importance	-,11	-,15	-1,40	,17
	Availability of Alternatives	-,21	-,29	-2,61	,01
	Contract age	,04	,08	,76	,45
	Contract length*Complexity	,03	,23	2,62	,01
	Performance Specifications*Complexity	-,10	-,19	-2,07	,04

M1: $R^2 = 0.46$, R^2 adj. = 0.41, F = 8.03, Sig. F = 0.00. M2: $R^2 = 0.56$, R^2 adj. = 0.48, F = 7.00, Sig. F = 0.00.

M3: $R^2 = 0.63$, R^2 adj. = 0.55, F = 7.72, Sig. F = 0.00.

Table 6.1 includes three regression models: M1 is contract behavior regressed on contract mechanism and uncertainty. M2 is contract behavior regressed on contract behavior, uncertainty and control variables. M3 is contract behavior regressed on contract behavior, uncertainty, control variables and interactions (product terms).

The table shows the unstandardized (B) and standardized (Beta) regression coefficients for all independent variables. It further shows the t-value and significance level for each of the coefficients. A summary of all three models is provided below the table.

Before we tested each of the hypotheses, we verified that the assumptions for regression analysis hold. It is a prerequisite for using multiple regression analysis that the independent variables do not correlate too much, and therefore we mean centered the contract mechanisms and uncertainty according to the procedure proposed by Aiken and West (1991) and Jaccard et al. (1990). The VIF indexes ranged from 1.199 to 2.422, which is substantially different from the threshold value of 10 (Hair et al. 1998). Thus, multicollinearity is not an issue in this study.

Then we assessed the explanatory power of the three models, and as we can see from the table, all three models explain a fair amount of the observed variance in contract behavior. By inspecting R^2 in all three models, we see that contract mechanisms and uncertainty accounts for 46% (model 1), control variables add another 10% (model 2), and the interactions add 7% (model 3).

Although we could have optimized the models by excluding insignificant variables, all three models are significant, and we can now go on to test our hypotheses.

6.2 Main Effects of Contract Mechanisms on Contract Behavior

We derived at five hypotheses for the correlation between contract mechanisms and contract behavior.

H1: We anticipated a *positive correlation between contract length (agreed contract duration) and co-operative contract behavior* in IT sourcing relationships. Hence, we expected to find higher levels of co-operative (relational) norms in IT sourcing relationships based on long-term contracts than IT sourcing relationships based on short-term contracts.

First, we notice that the regression coefficient is not significant in model one (M1), but it becomes significant in model two (M2). Now, the standardized regression coefficient is –0.22 and significant on the 5% level ($t = -2.00$, $p = 0.05$). Hence, there is a significantly negative correlation between long-term contracts and co-operative contract behavior in the IT sourcing relation.

Our hypothesis was that long-term contracts would correlate positively with co-operative contract behavior in the IT sourcing relationship. Thus, *we reject H1*.

This indicates that to *agree* on a long-term contract including optional periods, does not in itself promote co-operation. The ‘shadow of the future’ does not continue forever, and very long horizons may even create a ‘discount’ effect. The contract length in itself might be useful as a safeguard, but it does not necessarily imply real commitment.

According to transaction cost economics and relational contract theory, a long-term contract will inevitably be incomplete. This incompleteness can be mitigated by the development of a relationship, but it might also lead to a more narrow and short-term focus. When the parties cannot anticipate the future ‘with certainty’, they might secure intended outcome through a focus on short-term delivery connected to each individual transaction.

However, it is interesting to compare this finding with the effect of *actual* contract duration (contract age). The result in model two (M2) indicates that older relationships are more co-operative than newer ones (beta = 0.21, t = 1.95). We will discuss this, as well as the interaction between contract length and complexity, later in this chapter.

We conclude that the negotiated contract length (agreed contract duration) primarily serve as safeguard, while *actual* contract duration promote co-operation between the parties.

H2: We anticipated a *positive correlation between detailed requirement specifications and co-operative contract behavior* in IT sourcing relationships. IT sourcing relationships based on contracts with complex and detailed requirement specifications should show higher levels of co-operative (relational) norms than IT sourcing relationships based on less specified contracts.

In model one (M1), the regression is positive but at a moderate level of significance (t=1.79). However, when we add control variables in model two (M2), the regression coefficient for *requirement specifications* is 0.25 and significant at the 5% level ($t = 2.11$, $p < 0.05$). This provides quite strong support for Hypothesis 2; that contracts based on complex and detailed requirement specifications will correlate positively with co-operative contract behavior in IT sourcing relationships.

This indicates that to specify the ‘scope of work’ more closely promotes co-operation. When the parties spend time to define and specify the ‘scope of work’ more thoroughly, they enhance the understanding and co-operation in the contract relationship.

To write is to learn, and when the parties specify, they write. Hence, they will extend their understanding of the issues involved, they will become more aware of both their own and the other parties’ understanding and priorities.

Writing specifications is a joint task. In systems development projects, this is often done in two exhibits. First the customer's specification, then the supplier's description of how he will accomplish the work. Alternatively, the parties can create a joint requirement specification. However, the crux of the matter is that the requirement specification is their best effort to express in writing their common understanding of the contracted work.

For any given level of complexity, uncertainty, and all the other included variables, it promotes co-operation to try once more to increase the specificity of 'scope of work'.

H3: We anticipated a *negative correlation between detailed performance specifications and co-operative contract behavior* in IT sourcing relationships. IT sourcing relationships based on contracts with complex and detailed performance specifications should show lower levels of co-operative (relational) norms than IT sourcing relationships based on less specified performance measures.

In all three models, the regression coefficient is significantly negative on the 1% level (t values from -2.65 to -3.01). The strength is also substantial with beta values less than –0.30. This provides strong support for Hypothesis 3; contracts based on complex and detailed performance specifications will correlate negatively with co-operative contract behavior in IT sourcing relationships. This indicates that complex and detailed performance specifications significantly promote competitive relationships.

To increase the specificity of performance measures draw attention towards the short-term results. Measurements are by nature short-term, and we found that complex and detailed performance specifications *always* introduce a competitive attitude. This confirms the 'cat and mouse game' that are stimulated when the parties try to fulfill specific measurable performance targets.

This implies that even if the parties do their best to learn and understand, measurements are so powerful and discrete as to draw attention away from co-operation. Instead it eludes the parties to hold each other accountable for any deviations to the agreed performance. This is quite in accordance with relational contract theory: “Discreteness calls for measurement and specificity. Price and quantity must be precisely defined along with detailed specification of the product. In contractual relations, however, some aspects that eventually must become very specific may have been very nonspecific at the start of the relation. Further, while much either starts out or finishes measured and specific, much does not” (adapted from Macneil 1981:1028).

H4: We anticipated a *positive correlation between risk-sharing price mechanisms and co-operative contract behavior* in IT sourcing relationships. IT sourcing relationships based on risk-sharing price mechanisms should show higher levels of co-operative (relational) norms than IT sourcing relationships based on price mechanisms with unilateral risk allocation.

The regression coefficient for *fixed price* is not significant in any of the three models, and we reject hypothesis 4. The sign of the regression coefficient are slightly negative in the two most advanced models (M2 and M3), which imply a negative correlation between the use of fixed price and a co-operative relationship. A fixed-price contract allocates risk unevenly between the client and supplier, with most of the risk on the supplier. Therefore, the sign supports Hypothesis 4; that a risk-sharing price mechanism will correlate positively with a co-operative contract relationship. However, it is not at all significant, and we will not speculate further.

H5: We anticipated a *negative correlation between penalty mechanisms and co-operative contract behavior* in IT sourcing relationships. IT sourcing relationships based on contracts with penalty clauses should show lower levels of co-operative (relational) norms than IT sourcing relationships based on contracts that are ‘silent about’ penalties.

The regression coefficient for *price penalty* is significantly negative in all three models. The beta values range from –0.23 to –0.35 at the 1% and at the 5% level. This gives quite strong support for Hypothesis 5; that the use of price penalties will correlate negatively with co-operative contract relationships.

Like performance measures, penalty mechanisms attempt at measuring specific obligations (items), and then use the fulfillment of these obligations as a 'proof' of proper behavior. Unconditionally, this mechanism introduces a competition between the two parties. What one has to gain, the other has to loose.

Penalties are probably the most discrete of all mechanisms. The result of a penalty is that one party pays directly what the other party gains. A client might look at this potential payment, as a way to 'get more for less', and the supplier will be forced to look at penalties as a potential loss. This is the essence of a 'zero-sum-competition', and it can lead to war between the parties.

6.3 Main Effects of Uncertainty on Contract Behavior

We derived at two hypotheses for the effect of uncertainty on contract behavior.

H6: We treated environmental uncertainty as market dynamism, which includes rapid technology shifts, rapid price changes, and other unanticipated changes in the market. We anticipated that *market dynamism would correlate negatively with co-operative contract behavior* in IT sourcing relationships.

The regression coefficient is negative (-0.28 to –0.40) and significant on the 1% level in all three models. This gives very strong support for our hypothesis. It seems rather obvious that

dynamic market conditions promote competitive contract behavior. This finding is consistent and robust in all regression models, and we conclude that dynamic market conditions unconditionally foster short-term competitive contract behavior.

H7: We treated behavioral uncertainty as internal complexity and measurement problems. We anticipated that this type of uncertainty could render strategic behavior that is better handled in a close and long-term relationship. Hence, we advanced that *complexity correlates positively with co-operative contract behavior* in IT sourcing relationships.

The regression coefficient is not significant in model one (M1), but it becomes significant on the 10% level when we introduce the control variables in model two (M2). When we introduce the interaction terms (M3) it is even significant on the 5% level, which gives support for our hypothesis

We conclude that parties in a complex environment are more inclined to co-operate in the contract relationship, and that complexity promotes co-operative relationships.

6.4 The Moderating Effect of Complexity (behavioral uncertainty)

We advanced three hypotheses for the interaction between complexity and contract mechanisms.

H8: First, we advanced that complexity and contract length should combine into closer co-operation. To cope with complex sourcing, the parties need to allow for mutual learning and adaptation, and we anticipated that *increasing levels of complexity would enhance the positive correlation between contract length (agreed contract duration) and co-operative contract behavior* in IT sourcing relationships.

H9: Second, we advanced that complexity would promote hazard mitigation through mutual and complex requirement specifications. Hence, we anticipated that *increasing levels of complexity would enhance the positive correlation between detailed requirement specifications and co-operative contract behavior* in IT sourcing relationships.

H10: Finally, performance specifications cannot be ambiguous. They have to be precise and measurable, or else there will be fighting between the parties. Complexity will make this more and more impossible, and hence we advanced that *increasing levels of complexity would enhance the negative correlation between detailed performance specifications and co-operative contract behavior* in IT sourcing relationships.

We tested these three hypotheses in two steps. First, we introduced one interaction term at a time, and tested whether we got significant effects on the total regression (sig. F change). Two of the three were significant, but we had to reject the interaction between complexity and requirement specifications (H9).

Then, we entered the two remaining interaction terms in model three (M3), and we found that Contract length * Complexity had a regression coefficient of 0.23 at the 1% level (t = 2.62), and Performance Specifications * Complexity had –0.19 at the 5% level (t = -2.07).

The regression model (M3) is significant, and it has added significantly to the explanatory power from the regression with only main effects (M2). A closer inspection shows that most of the effects from model two remains stable and significant. The exceptions are contract length and contract age.

The regression coefficient for contract length is barely significant, but it remains negative with a standardized beta of -0.16 (t=-1.51, sig. 0.14). This implies that for average values of

complexity, longer agreed contract lengths does not promote co-operative relationships. It still has to be regarded as mainly a safeguard.

However, the positive interaction between complexity and contract length implies that as complexity builds up, longer contract lengths will promote closer and more co-operative relationships. At the same time, contract age is no longer significant. This might imply that contract age also interact with complexity, which was confirmed in a separate analysis (0.27, sig. 0.004). We interpret this as a convergence between agreed contract length and actual contract age. More complex supply should be associated with longer contracts, and so it is.

The next interaction is between performance specifications and complexity, and this is significant on the 5% level (beta -0.19, t= -2.07). This implies that as complexity builds up, the challenge of specifying measurable performance criteria is prohibitively difficult. If the parties still do, either they succeed or fail; it will certainly draw attention towards short-term fulfillment of specific outcome. Hence, measurements have proved (without reasonable doubt) to be the most powerful discrete mechanism available for the parties.

This is confirmed by inspection of the main effect, which now is the effect of performance specifications for average levels of complexity. This is still significantly negative on the 1% level (beta -0.36, t=-2.92). Put differently, only for very low complexity will it be possible to promote co-operation through use of performance measures.

Although the regression coefficient for contract length is barely significant in model three, it is illustrative to express the two linear functions for the regression coefficients like this:

a) Beta for contract length = -0.16 + 0.23*Complexity

b) Beta for performance specifications = -0.36 – 0.19*Complexity.

This implies that the beta for contract length is negative for medium to low levels of complexity. However, it turns positive for higher complexity levels.

The beta for performance specifications will remain negative, unless for very low levels of complexity.

6.5 The Effect of Control Variables

Model two (M2) includes four control variables, and two of them showed significant regression coefficients. Many alternative sources (-0.36, t = 3.09) promote a competitive relationship, and contract age (0.21, t = 1.95) promotes a co-operative relationship.

Even if we do not hypothesize any effects of the control variables, some comments are useful: 1) availability of alternative sources promotes competition, 2) important contracts are not associated with co-operation, 3) lasting contractual relationships foster co-operation or become lasting due to co-operation. Finally, 4) relation specific investments show no significant effect on co-operative contract behavior in the IT sourcing relationship.

That dynamic market conditions and available alternatives promote competitive contract behavior is quite in accordance with transaction cost economics (Williamson 1996). With available alternatives at hand, it will always be possible to change from one source to another. Further, the less inter-twined, the easier it is to change. If this also coincides with a dynamic environment, the obvious choice would be to keep the supplier at arm's length.

Intuitively, we had expected important relationships to be associated with co-operative contract behavior. Here, we have to go behind the regression analysis, which showed a negative but not significant regression coefficient (-0.12). However, as can be seen from table

5.4, the correlation between co-operative contract behavior and importance was negative and significant at the 5% level (-0.26).

A further inspection of the correlation matrix showed that importance also correlated significantly with both requirement and performance specifications. Important relationships were associated with more complex and detailed specifications than less important ones.

The two specifications ‘exhibits’ have opposite effect on the co-operative contract behavior, while importance indicates a negative effect. Probably, this indicates that performance measures are so powerful that they draw attention quite ‘effectively’ towards short-term obligations. Further, this might indicate that measurement regimes are heavily involved in the fulfillment of important contract relationships.

6.6 Summary of Hypotheses Testing

We can summarize the results with the following table:

Table 6.2: Results of hypotheses testing

Hypothesis	Reads like:	Result
H1	There is a positive correlation between contract length (agreed contract duration) and co-operative contract behavior in IT sourcing relationships	Not supported
H2	There is a positive correlation between detailed requirement specifications and co-operative contract behavior in IT sourcing relationships	Supported
H3	There is a negative correlation between detailed performance specifications and co-operative contract behavior in IT sourcing relationships	Supported
H4	There is a positive correlation between risk sharing price mechanisms and co-operative contract behavior in IT sourcing relationships	Not supported
H5	There is a negative correlation between penalty mechanisms and co-operative contract behavior in IT sourcing relationships	Supported
H6	There is a negative correlation between market dynamism and co-operative contract behavior in IT sourcing relationships	Supported
H7	There is a positive correlation between complexity and co-operative contract behavior in IT sourcing relationships	Supported
H8	Increasing levels of complexity will enhance the positive correlation between contract length (agreed contract duration) and co-operative contract behavior in IT sourcing relationships	Supported
H9	Increasing levels of complexity will enhance the positive correlation between detailed requirement specifications and co-operative contract behavior in IT sourcing relationships	Not supported
H10	Increasing levels of complexity will enhance the negative correlation between detailed performance specifications and co-operative contract behavior in IT sourcing relationships	Supported

Seven out of ten hypotheses were supported, and we will discuss the implications of the findings in the next chapter.

7.

IMPLICATIONS AND EXTENSIONS

"Contracts are fundamentally mechanisms of cooperation, and only mechanisms of conflict when things have gone wrong. Thus, law is not what contract is all about; contracts are about getting things done in the real world" (adapted from Macneil 1969, 1980).

In this final chapter we first provide a summary of the study, and then we discuss the implications of our findings for theory and practice. We round off the dissertation with a discussion about limitations and future research opportunities.

7.1 Summary of the Study

This dissertation is positioned to contribute to IT sourcing research in particular, and contracting research in general. First, we identified a gap in the current understanding of the relationship between contract and contract behavior in IT sourcing relationships, which led to the following research question: *"what is the impact of contract mechanisms on contract behavior in IT sourcing relationships?"*

On a more general level, we are interested in the relationship between formal contract governance and relational governance of business relationships. It is a study of 'the nature of contract', with an emphasis on how elements of the contract influence on co-operation in business relationships (IT sourcing relationships).

We used contracting theories and IT sourcing literature, and we developed a model of the anticipated effect of contract mechanisms and uncertainty on contract behavior in IT sourcing relationships (figure 3.1). Then we framed ten hypotheses, which we tested in three incremental regression models (table 6.1). The first model (M1) regressed co-operative contract behavior on contract mechanisms and uncertainty, the second model (M2) added control variables, and the third model (M3) added interactions between behavioral uncertainty (complexity) and three contract mechanisms.

The first result to recapitulate is that all our three regression models were significant. Model one (M1) explains 46%, model two (M2) explains 56%, and model three (M3) explains 63% of the observed variance in contract behavior (R^2 between 0.46 and 0.63). Although model three (M3) explains more than the other two, we could still have optimized our model by excluding insignificant variables. However, all the variables were included for theoretical reasons, and they all function as control variables.

Now, we turn to the individual effect associated with each of the variables. First, long-term contracts expressed through the *contract length* (agreed contract duration) do not seem to be associated with *co-operative contract behavior*. However, there is a notable exception for sourcing situations where complexity (behavioral uncertainty) is high. For average and low levels of complexity, contract length seems to function primarily as a safeguard, while older relationships seem to be associated with co-operative contract behavior. This indicates that behavior is adaptable and that co-operation is either a pre-requisite for, or a result of, durable contracts.

Second, contracts with complex and detailed *requirement specifications* do seem to be associated with co-operative contract behavior in IT sourcing relationships. This indicates that co-operation depends on a fairly common understanding of the contracted scope, which should be enhanced by efforts and time spent at writing complex and detailed requirement specifications.

Third, contracts with complex and detailed *performance specifications* do not seem to be associated with co-operation. On the contrary, there is a significantly and strong correlation between detailed performance specifications and competitive contract behavior in IT sourcing relationships. This indicates that measurements and specificity together, are really powerful discrete contract mechanisms. This negative effect is further enhanced when complexity (behavioral uncertainty) increases.

Fourth, the *pricing* mechanism does not seem to be all that important in the IT sourcing context. However, *penalty* mechanisms do seem to be associated with competitive contract behavior. This coincides with the result above, because penalties and measurements are ‘two sides of the coin’.

And, finally, we found that environmental uncertainty (market dynamism) are significantly associated with competitive contract behavior, while behavioral uncertainty (complexity) seems to motivate for co-operative contract behavior.

7.2 Theoretical Implications

Extant IT sourcing literature has argued that the contract is a foundation for development of the relationship; any appropriate approach to understand business relationships would have to include the contract, yet the 'contracting perspective' has been downplayed (Kern and Willcocks 2000, 2001, 2002). We need to understand the dimensions or the *Gestalt* of the relationship: "The *Gestalt* consists of two key parts: the contract and its operationalization. The relationship operates within the 'spirit of the contract'. The relationship consists of exchange episodes, and it depends largely on the initial *contractual* stage, since it greatly influences the quality of the relationship" (Kern 1997).

We respond to this by an explicit treatment of the formal contract as a starting point, from where the contract relationship develops. On a conceptual level, we followed the process models of IT sourcing that include *contract as artifact* and *relationship as behavior* (Hui and Beath 2001; Kern and Willcocks 2001; Lacity and Willcocks 2001; Hirschheim and Dibbern 2002; Alborz et al 2004; Cullen and Seddon 2004; Cullen et al. 2005).

We view IT sourcing as a contract process, and therefore we also add to contracting research in general. We respond to calls like: "we regard contracts as providing the framework for a complex set of interactions between the parties to economic relationships" (Deakin and Michie 1997:19).

More specifically, we used a micro-analytic approach, where we analyzed the influence of several contract mechanisms on contract behavior. Formal contracts are taken as written documents that are combined from a discrete menu of available contract mechanisms. The parties can agree on contracts of short or long duration, with or without optional contract periods. They can specify the requirements (scope of work) thoroughly and detailed, or they can focus on overall and loose specifications. They can specify performance measures and metrics through complex and detailed performance specifications, or they can focus on overall performance.

Our main premise is that contract mechanisms are choice variables, to be decided when the parties enter the contracts. These should be decided deliberately to promote proper contract behavior.

7.2.1 The Nature and Impact of Contract

Although there are some warnings about the effect of a control agenda in the IT sourcing literature (Kern and Willcocks 1999), the most common advice has been to use short-term, detailed and measurable contracts (Lacity and Willcocks 2001).

This seems to be quite far from the essence of relational contract theory, which to a large extent has centered on the limits of formal contract and the importance of the relation (see chapter two, and Macneil and Campbell 2001). Further, there has been a growing interest in the interrelationship between formal and informal governance in the contracting (interorganizational) literature (Zenger et al. 2002, Poppo and Zenger 2002).

However, there are important gaps in the understanding of the effect associated with specific parts of the contracts. I.e. one of the questions is: do detailed requirement specifications

promote or prohibit co-operative contract behavior in the business (IT sourcing) relation. With our empirical study, we hope to partly fill this gap, and we will point at three specific findings:

1. Complex and detailed *requirement specifications* seem to promote co-operative contract behavior, i.e. formal specifications may function as a complement to the informal co-operative contract norms. (Support of hypothesis 2).

2. Complex and detailed *performance specifications* seem to promote competitive contract behavior, and this is especially salient for complex sourcing. I.e. formal specifications may function as a substitute to informal co-operative contract norms. (Support of hypotheses 3 and 10).

3. *Penalty clauses* are, together with specific performance measures, the most powerful discrete contract mechanisms. Penalties promote competitive behavior. (Support of hypothesis 5).

One of the most significant findings in our study is that complex and detailed *performance specifications* are associated with competition between the two parties, especially for complex sourcing. The regression coefficients are significantly negative on the 1% level, and beta values are in the range of -.30, in all three models.

Penalties have a similar effect, with beta values in the range of -.20, and significant on the level from 1% to 5%. It seems that this mechanism (unconditionally) introduces a zero-sum competition between the two parties. What one party stands to gain, the other stands to lose. Specific and detailed performance specifications and penalty clauses seem to strongly promote competitive contract behavior.

Detailed Service Level Agreements with requirements for specific measured performance introduce and promote a focus on achieving these measurable outcomes. The parties will tend to focus on short-term compliance with the contract instead of adaptable behavior for long-term value. They will efficiently turn the attention towards short-term fulfillment of measurable outcomes, and they will compete in a zero-sum-game. It may even turn into a 'warlike' fight.

This result confirms that "specificity and measurement *together* promote discrete norms" (Macneil 1981), and that "monitoring and the imposition of penalties according to the strict letter of the contract is likely to undermine trust and co-operation, to the overall detriment of the service" (Vincent-Jones 1997:157). Vincent-Jones further argues that: "Extremely detailed specifications may actually tend to discourage the development of relations, and may provide hostages to fortune by creating the potential for excessively literal or pedantic contract interpretation" (Vincent-Jones 2001:80).

Hence, our empirical findings provide statistical support for important elements of the relational contract theory.

This result also seems to be quite in line with the spirit of transaction cost economics, or economic institutions seen through 'the lens of contract' (Williamson 2002). There are limits to our cognitive capacity, and complex contracts will never be completely specified. If we act as if there are specific performance measures over and above reasons, then co-operation will 'break down'. This may in turn lead to less adaptability and higher transaction costs due to mal-adaptations and 'fighting' over the proper actions. According to transaction cost economics (Williamson 1985, 1996, 2002) this is not efficient governance.

Interestingly, the effect of requirement specifications proved to be different. We found that detailed requirement specifications had a significantly positive effect on co-operative contract

behavior in the two most advanced models (in the range of .20 and on the 5% level). This implies that detailed requirement specifications in fact can be used to build a foundation for co-operative relationships. By describing carefully what the content and functionality of the deliverables should be, and how this could be achieved, the parties enhance the mutual understanding.

”The written instrument does not always contain the entire agreement”, “*A contract does not a contract make*” Palay (1985b: 561). To deal with this problem, Palay and other proponents of the relational contract theory, argue for the need to study and understand the contractual relation.

Our findings add another dimension to this statement. In fact, we found that different parts of the contracts have conflicting effect on contract behavior. *Requirement specifications* had a positive effect, i.e. it might function as a complement to the relation. *Performance specifications* had a negative effect on co-operative behavior, i.e. it might function as a substitute for the relation.

Hence, the interrelation between formal and informal governance mechanisms are indeed complex, and we must look beyond *the contract*. Formal contracts are made of smaller parts. Contract mechanisms do have a merit. It does not suffice to measure the specificity of the contract as such.

Therefore, one important result of our study is that specifications have to be distinguished. Specifications serve different purposes, and we have found that requirement and performance specifications have opposite impacts on contract behavior. Complex and detailed requirement specifications seem to promote co-operative behavior, while complex and detailed performance specifications seem to promote competition between the parties.

7.2.2 The Impact of Contract Duration and Uncertainty

We also found interesting 'dualities' in the impact of contract duration and uncertainty. First, long-term contracts as such do not seem to be associated with co-operation, while actual contract duration does seem to enhance co-operative contract behavior. Although slightly less significant than the accepted 5% threshold (beta = 0.21 on the 6% level in model two), we find it interesting to note a positive association between contract age and co-operative behavior.

This is a contrast to the agreed contract length, which had a negative impact unless for high complexity. Long-term contracts are more often associated with competitive behavior. It seems that these contracts most often function as safeguards, while our findings suggest that the parties actually tend to have a short-term and day-to-day (discrete) focus on the deliverables.

Again, our findings seem to give statistical support for relational contract theory. Co-operation is a result of lasting relations. When we combine this finding with the positive effect of detailed requirement specifications, we might conclude that co-operative behavior is a result of learning and working together. This learning process is initiated while the parties negotiate, continue through combined efforts in writing requirement specifications, and is enhanced as the relationship enfolds.

Now, we turn to the conflicting effects of uncertainty. First, we modeled environmental uncertainty as market dynamism. We also specified one control variable that measured the extent of alternative sources for the supply at hand. Both of these refer to the external environment, and both show significantly negative effect on co-operative behavior (consistently on the 1% level and between -.20 and -.40). Environmental uncertainty seems to be strongly associated with short-term appliance and competitive contract behavior.

This result is in line with earlier IT sourcing literature, which argues for the use of short-term contracts and market governance for uncertain situations (Lacity and Willcocks 2001). Our findings also support Paswan et al. (1998). Environmental uncertainty seems to reduce motivations for relational governance. Finally, this also seems to be in line with TCE. Uncertainty will force contracts to flee to one of the extremes (Williamson 1996). In this case, it has 'fled to' the discrete market exchange.

However, behavioral uncertainty (complexity) showed the opposite effect. We found a significantly positive effect on co-operative behavior in the two most advanced models (in the range of .20 and significant on the level of 10% and 5%). Complexity also had a significantly moderating effect on contract length, so that contract length had a positive association with co-operative behavior for higher levels of complexity. On the other hand, complexity had a negative effect on performance specifications, turning detailed performance measures into a prohibitively (impossible) difficult task when complexity builds up.

It has been argued that if detailed contracts are used in situations with high uncertainty, performance will deteriorate without the support of co-operative norms (Cannon et al. 2000). Our findings add and suggest that it will be extremely difficult to develop such norms under those conditions.

Our findings further suggest that it is necessary to treat uncertainty as originating from different sources. This is in line with Cannon et al. (2000), and Cannon and Perrault (1999). The parties will have to treat complex supplies different from dynamic supplies. Environmental and behavioral uncertainty has to be treated differently.

It might be possible to avoid contractual problems for dynamic supplies, just by keeping arms-length and be prepared for 'exit'. However, this will not necessarily be an option for complex IT products and services. It will not be possible to negotiate complexity away,

complex products and services have to be handled by learning. Short-term arms-length contracts might seriously restrict necessary ‘time to learn’.

If the parties understand that complexity has to be mitigated by development of a common understanding, they may be more inclined to agree on a long-term journey together. This is in line with expectations from relational contract theory and transaction cost reasoning.

7.2.3 Measurement of Contract Norms

Now, we turn to some side effects of more methodological interest. First, we acknowledge that there is no clear understanding in the literature for how to measure contract norms (see Blois 2002; Ivens and Blois 2002; and note 3 in Cannon et al. 2000). Most empirical work starts with Macneil, and his ten contract norms (1980, 1981), but no studies have used all ten norms. More worrying is it that replicated studies seldom use the same list of norms.

Some prefer to aggregate the norms ‘directly’, and these studies most often use a list of items tapping various aspects of the relational syndrome into one construct. Others prefer to measure some of the proposed norms as separate constructs, and then treat them as originating from a common second-order factor.

Although we (in this study) are primarily interested in the aggregated ‘relational syndrome’, we decided to use the rather extensive list of seven norms suggested by Kaufmann and Dant (1992). This allowed us to test some of the implications of the extensive work by Macneil. With our treatment of co-operative contract behavior through the manifestation of contract norms, we thus contribute to a better understanding of behavior within an exchange (Blois 2002).

We found the instrument applicable for the IT sourcing context, and our empirical data confirmed a seven-dimension construct. However, two of the original dimensions (solidarity and role-integrity) were in conflict with the other dimensions, and the flexibility dimension did not prove to be properly reliable. Hence, our study does not completely support that contract norms should originate from a single underlying factor.

Our findings are more in accordance with Macneil's original work (1974, 1978, 1980, 1981). He argues that the common contract norms are many faceted, and there is 'competition in and between some of the norms'. We found two underlying factors in our empirical material, and the two correlate negatively with each other. Hence, we provide some empirical support for Macneil's 'competing' norms.

It is also important that we have treated all contract relationships as being both co-operative (relational) *and* competitive (discrete). There will only be a relative difference in degree, from relatively competitive (discrete) to relatively co-operative (relational).

Throughout the dissertation, we have used co-operative contract relationships as our interpretation of relational, complex and intertwined contractual relations as described by Macneil (1980, 1981, 1985, 2000, 2001). We do not intend to clarify the original work, but we found substantive evidence that the contract norms in fact can be used to measure co-operative contract behavior. This seems to be totally in line with Macneil's own work (Campbell 2001), and most importantly, it gives an intuitive meaning to people involved in contract relationships.

7.2.4 Theoretical Summary.

We found that detailed specifications have different effects on co-operation in the relationship. Requirement specifications may function as a complement while performance specifications most certainly will function as a supplement to relational governance. If the parties seek co-operation, then there are limits to using formal contract as a mechanism to ensure that expectations are realized.

We found, that measurements and penalties are the most discrete mechanisms and there is a real danger in over-specifying performance measures and penalty clauses. This might seriously hamper necessary co-operation.

We also found that co-operation probably is a result of 'learned behavior', and that lasting contractual relations lead to better co-operation between the parties.

We further found that environmental uncertainty will render the exchange to 'flee' to the short-term market transaction, and that behavioral uncertainty is better treated and mitigated in close learning relationships.

7.3 Managerial Implications

The conventional 'wisdom', common 'folklore' and managerial advice found in the IT sourcing literature prior to this study, is to use complex and detailed contracts with specific measurements tied back to penalties for non-performance (Lacity and Willcocks 2001). Never sign an incomplete contract, use detailed service level agreements, and use penalties for non-performance.

This study is primarily descriptive, and we cannot give any causal explanations. Our findings are only possible, not necessary effects. However, it seems proper to counter this advice.

First, it will be advantageous to specify requirements as thorough as possible. The parties should invest much time and resources to negotiate and specify complex and detailed requirements for the 'scope of work'. This will enable both parties to gain an understanding of the required services and start the process of 'gap filling'. This might enhance the co-operative contract behavior in the IT sourcing relationship, which in turn might increase the size of the pie. Hence, we support the advice: "the negotiations should be oriented to learning about one another and encouraging one another to spell out one's assumptions and expectations more fully" (Cannon et al. 2000: 192).

Second, and most importantly, measurement and specificity combined with penalties for non-performance are very powerful discrete contract mechanisms. In fact, they are so powerful that they effectively promote competition between the parties in IT sourcing relationships. No wonder these mechanisms are so popular, they actually work!

Detailed and specific measurement regimes with economic consequences will draw attention towards fulfilling performance measures and avoiding economic loss incurred by penalties. Such contract regimes might seriously hamper development of mutual co-operation. The client gets exactly what he has specified – nothing more, and (hopefully) nothing less. The parties will tend to focus on these actions with a short-term attention on fulfilling obligations and dividing burdens according to the contract. They will treat the whole sourcing venture as a zero-sum-competition where the objective is to get more for yourself than your 'partner'.

At best this will limit necessary co-operation, restrain adaptable efforts to increase the pie, and might lead to less value. At worst it is directly counter-productive and will erode value through endless warlike fighting. These contract mechanisms should be used with utterly

caution, and they should be kept for work in (the rare) situations where the parties are capable of specifying exactly what to be done and how to achieve this. Hence, we agree with Cannon et al. (2000): “detailed contracts seem to be effective in more certain transactional environments”.

Third, we found that both durable contract relationships and complexity promote co-operative contract behavior. When these are combined, the parties need to invest time and efforts to learn. So, our advice is that the parties deliberately plan and signal for long-term contracts as complexity builds up. This might invite the parties to invest in the relationship for the benefit of both.

We do not argue for harmless and ‘flimsy’ relationships without any purpose, we only advice the parties to be farsighted. The essence of TCE is that governance should be tailored to fit the sourcing situation at hand, and relational contract theory adds with a detailed description of contract behavior. If the parties learn this lesson (Poppo and Lacity 2002), then they might add value through effective contract relationships based on proper contract behavior.

We suggest that the parties in the initial phase of a relationship do their utmost to develop a common understanding of the required services. At first, there should be a focus on critical and important deliverables, the ‘bare minimum’. Measurement regimes and price mechanisms should be easy to understand and accepted by both parties. As long as co-operation enfolds, trust will build up, and the parties might seek to introduce more detailed service level agreements and measurement regimes. These should still be developed in close co-operation so that none are held accountable unless the reason and effect are agreed and accepted.

If we allow ourselves to sum up, we would suggest that companies: ***Never sign a detailed contract with someone they do not trust***!

7.4 Limitations and Future Research

The results of our study must be interpreted in view of certain limitations, and in this section we address some of these together with suggestions for future research.

First, the study is an investigation of IT sourcing and contracting, and we have used earlier literature accordingly. Due to the overwhelming literature that deals with contract, we chose to focus on two streams only: Transaction cost economics based on Williamson (1975, 1985, 1996) and relational contract theory based on Macneil (1974, 1978, 1980). This combination is rather common, and we have explicitly used literature that comments on, and apply the work of Macneil. By doing so, we are humbly aware of the volume as well as the richness of the original work by Macneil. This richness is part of the reason for the extensive use of citations in section 2.3. We chose this approach for our theory development, because we (reluctantly) had to admit our own limitations. We were not able to sum up Macneil's work better than his own 'selected works' edited by David Campbell (Macneil and Campbell 2001).

We also acknowledge that the extensive TCE literature deserves more attention. Hence, our attempt at combining 'Macneil and Williamson', will probably only function as a (hopefully) promising beginning. We acknowledge the need to continue this work for years to come.

Second, we framed a research question that is causal in nature. We are interested in actions and decisions that will lead to certain behavior. However, it was not possible to manipulate the possible causes, the contract mechanisms. Therefore we framed hypotheses as correlations that were tested with a cross-sectional design.

Third, we have build on process models and treated IT sourcing as a contracting process. The cross-sectional (correlation) design is static, and the time dimension is (almost) not present. The study would have benefited from a longitudinal or a time-series design, where we could

have given fuller attention to the time dimension. This would also increased our ability to discuss causality.

Fourth, due to a rather limited sample size (N = 74), we could not use more powerful analytic techniques such as structural equation modeling. Therefore, we had to rely on a set of (exploratory) factor analyses for validation of the measures. On the other hand, multiple regression analysis with product terms is suitable for testing combined hypotheses with interaction effects (Jaccard et al. 1990).

Further, we decided to test our hypotheses in one particular (and homogeneous) context, namely IT sourcing with a focus on one industrial purchaser of IT products and services. This deliberately improves internal validity due to control of extraneous sources of variation, and it is further combined with statistical control through inclusion of theoretical driven control variables. Since our study (in principle) is theory testing, internal validity should hold preference (Cook and Campbell 1979).

However, internal validity is normally increased on the expense of external validity. It becomes difficult to generalize to different contexts. We tried to take care of this threat by deliberate sampling for heterogeneity within our context (Cook and Campbell 1979). Even though we are mostly interested in complex IT sourcing, we deliberately designed a study where we included a variety of IT contracts and contract relationships. This should increase our ability to generalize to other IT sourcing contexts.

We are slightly more cautious to generalize outside this context, i.e. we are cautious about generalizing *across* (Cook and Campbell 1979). But as a general theory test, we feel confident to conclude its validity. Our constructs are generally applicable, and all the items used to measure these are held in a generally acceptable ‘contract language’.

Because “any general theory that holds for a large context, will equally hold for a subset of this context” (Cook and Campbell 1979), we feel quite confident to conclude that our findings may hold for any IT sourcing context. However, it is necessary with replicated studies in other settings before we can generalize to (across) other sourcing settings, or business relationships in general.

As a final comment on internal and external validity, it is worth noting that we did not find evidence of advanced pricing models. According to relational theory (Macneil 1980), an important element of relational governance is to share risk and rewards, and we expected to find more sophisticated pricing models in use. The choice of one industrial buyer as a focal point, may explain this rather limited use of pricing models. It may be a result of contract strategy, and as such, we may even think of it as a control variable. The results on the use of specifications may be interpreted more clearly, because we hold the contract strategy constant, while including pricing in our analysis. Even if we should not exclude that more elaborate pricing mechanisms could be used to promote co-operative relationships, the inclusion of the rather limited models in our analysis, strengthen the internal validity of our findings.

There are certain limitations associated with measurements and statistical analysis as well. First, we notice that the regression explains close to 50% of the variance in the dependent variable. Given the fact that there are numerous factors that might explain variance in social constructs, this is a rather impressive result. We should be slightly cautious.

We measured all the constructs as perceptions held by one informant for each IT sourcing relationship. Understanding that “norms are shared expectations, there is a need to measure both sides of a dyad” (Ivens and Blois 2004: 253). However, the use of one key informant is rather common (Heide and John 1995).

It can further be questioned whether we measure actual or intended (wanted) contract behavior. Nor can we rule out the possibility of a 'positive learning', where the informants have interpreted co-operative norms as a measure of 'how the contract is working' and the contract mechanisms as 'how the contract is specified'. Hence, even contract mechanisms might not measure actual but rather intended mechanisms. However, perceptions are in the 'eye of the beholder' (Heide and John 1995), and we anticipate that behavior is more a result of perception than (objective) truth.

Some of these problems could have been limited by the use of several informants from both sides of the dyad, possibly measuring different constructs.

Another measurement problem is the items used to measure contract mechanisms. All the other constructs and measurements are adapted from earlier studies of marketing relationships, and they are comparable and valid. However, we did not identify any earlier application of a similar 'micro-analytic' approach to contract mechanisms.

It was never our intention to invent new constructs, and therefore we did our utmost to use standard contracting language. It is difficult to tell whether we have succeeded with this approach or not. We believe that the difference between our study and for instance Poppo and Zenger (2002), is probably more of a 'degree' issue than a conceptual one. We have added a micro analytic dimension with our treatment of contract mechanisms, while the general investigation of the interrelationship between formal and informal governance remains the same. Hence, it could be a promising avenue for further research to investigate the applicability of this approach in other settings.

Therefore, the story does not have to end here. We could have treated Service Level Agreements (SLA) much more thoroughly (Sturm et al. 2000; Goo et al. 2004). It is reasonable to think of such agreements as a contract in itself. Hence, we could have treated

SLAs as being made of smaller mechanisms that might have different effects on behavior. This could also be an interesting extension of our study.

Further, in complex infrastructure technology like IT, there are several stakeholders. IT departments, purchasing specialists, managers, and users might hold different opinions about the importance and quality of any given sourcing situation. It is important to understand how these differ across the organizations, and it is important to go further into which competence (capability) the different organizational units should have (Lacity and Willcocks 2001).

Finally, it would be interesting to look further into the role of Key Account Managers and the supplier organization at large. This would also open up for work on negotiation and supplier development.

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APPENDIX 1

ITEMS USED FOR CONSTRUCT MEASUREMENT

This appendix gives a full description of items used to measure the theoretical constructs.

Contract behavior (contract norms):

Relational focus (Response scale from (1) very bad description to (7) very good description)

Focus_1	The contract relationship itself is more important than the individual transactions (the individual buy and sell operations)
Focus_2	The outcome of individual transactions is less important than the contract relationship itself
Focus_3	The outcome of individual transactions is more important than the contract relationship itself (Reverse scored)
Focus_4	The contract relationship is only important to the extent that it facilitates the individual transactions (Reverse scored)
Focus_5	The contract relationship is only important as long as each individual transaction produces a positive outcome for our organization (Reverse scored)
Focus_6	Each new transaction is merely another event in an ongoing contract relationship
Focus_7	The individual transactions are merely how the two organizations carry out this contract relationship

Solidarity (Response scale from (1) very bad description to (7) very good description)

Solidarity_1	This contract relationship could better be described as a series of one-shot deals, entered into one at a time, rather than a long-term co-operation (Reverse scored)
Solidarity_2	Expectations of behavior reflect the strong spirit of fairness that exists in this contract relationship
Solidarity_3	An important feature of this contract relationship is that neither party would do something damaging to the other party.
Solidarity_4	It is expected that, if one party has information that would help the other organization in its business, such information will be provided.
Solidarity_5	The other party is just another supplier/customer (Reverse scored, specific version)

Mutuality (Response scale from (1) very bad description to (7) very good description)

Mutuality_1	Each transaction is expected to be reconciled completely and individually (Reverse scored)
Mutuality_2	Our organization assures itself that the other party is acting as we expect by precisely monitoring its performance on a transaction-by-transaction basis (Reverse scored)
Mutuality_3	We can accept unfavorable distribution of costs and benefits regarding isolated activities, as long as the distribution of costs and benefits for the total contract relationship is perceived as being fair.
Mutuality_4	It is expected that all discrepancies in performance or payment, no matter how small, should be investigated (Reverse scored)

Flexibility (Response scale from (1) very bad description to (7) very good description)

Flexibility_1	The terms of an ongoing transaction are not renegotiable under any circumstances (Reverse scored)
Flexibility_2	It is expected that changes in the terms of ongoing transactions would be allowed, if unanticipated events occur.
Flexibility_3	The ability to react to a changing environment is provided by a flexible contract relationship that recognizes the importance of change within the confines of the relationship itself.
Flexibility_4	It is expected that each party will live with the terms of each transaction, no matter what happens, until after its completion, when they can negotiate new terms for the next transaction (Reverse scored)
Flexibility_5	The ability to react to a changing environment is provided by relatively short-term transaction agreements that do not bind the organizations together for a long time (Reverse scored)

Role integrity (Response scale from (1) very bad description to (7) very good description)

Role_integr_1	There are many expectations in this contract relationship that goes beyond the mere buying and selling of products.
Role_integr_2	This contract relationship is a simple buy-and-sell arrangement and the roles the parties play are only those of individual buyer and seller (Reverse scored)

Role_integr_3	This contract relationship creates a complex web of expectations between us over all kinds of issues
Role_integr_4	This contract relationship is extremely complicated, comprising many diverse expectations about each other's behavior.
Role_integr_5	Both parties expect a great deal of each other in this contract relationship.
Role_integr_6	This contract relationship involves expectations about many different areas of commercial activity beyond the buying and selling of products.
Role_integr_7	The expectations about the behavior of both parties could be explained quickly to a third party (Reverse scored)

Restraint of power (Response scale from (1) very bad description to (7) very good description)

Restraint_1	It is expected that the more powerful party in this contract relationship should use whatever means necessary to get its own way (Reverse scored)
Restraint_2	It is expected that each party, if necessary, should use what power they have over the other party (Reverse scored)
Restraint_3	It is expected that each party in this contract relationship should limit the use of power they have over the other party.
Restraint_4	Both parties would avoid putting maximum pressure on the other party in cases of conflicting interests, in order to preserve the overall atmosphere of the contract relationship.

Conflict resolution (Response scale from (1) very bad description to (7) very good description)

Conflict_res_1	Our organization's procedures for dealing with disputes with the supplier/customer are formalized, and it is expected that they should be followed rigidly (Reverse scored, specific)
Conflict_res_2	The supplier’s/customer’s procedures for dealing with disputes with us are formalized, and it is expected that they should be followed rigidly (Reverse scored, specific)
Conflict_res_3	Both parties expect conflicts to be solved in a cooperative manner without the use of third parties or the judicial system.

Conflict_res_4	In this contract relationship both parties contribute to solve conflicts in a constructive manner

Contract mechanisms:

Contract length and **Contract options** were measured in years.

Requirement specifications (Response scale from (1) very bad description to (7) very good description)

Requirement_1	The contract specifies ‘what’ to be delivered
Requirement_2	The contract specifies ‘how’ the deliveries are to be conducted
Requirement_3	The contract specifies functional requirements, with a focus on which results the customer wants to achieve by the delivery
Requirement_4	The contract specifies technical requirements, with a focus on how the product is to function or the service is to be delivered
Requirement_5	The contract specifies requirements for the products and services to be delivered, in great details
Requirement_6	The contract specifies only general requirements for the products and services to be delivered (Reverse scored)
Requirement_7	The contract specifies how changes of requirements for the delivery are to be handled

Performance specifications (Response scale from (1) very bad description to (7) very good description)

Performance_1	The contract specifies ‘hard’ performance measures (date, volume, availability etc.)
Performance_2	The contract specifies ‘soft’ subjective measures (user satisfaction, business impact)
Performance_3	The contract specifies performance measures in great details, through a Service Level Agreement (SLA)
Performance_4	The contract specifies general requirements that are measured with key performance indicators, such as a Balanced Scorecard

Performance_5	The contract specifies how changes of performance measures are to be handled
Performance_6	The contract specifies reporting procedures and procedures for monitoring of the contract
Performance_7	The contract specifies meeting structures and arenas to discuss performance measures and possible deviations
Performance_8	The contract specifies routines and procedures for escalation of critical events
Performance_9	The contract specifies that performance shall be compared with other relevant contracts (’benchmarking’)

Pricing (Response scale from (1) very bad description to (7) very good description)

Price_1	The contract specifies that the products and services are to be delivered according to a fixed price, independent of actual time and materials
Price_2	The contract specifies that the products and services are to be delivered according to fixed unit prices, so that the total price for the contract depends on actual time and materials
Price_3	The contract specifies that the products and services are to be delivered according to a price that covers the supplier’s documented costs plus a fixed percentage (cost plus, open book)
Price_4	The contract specifies an estimated target price for the products and services, and deviations will be shared between the parties according to an agreed key.
Price_5	The contract specifies how changes of pricing are to be handled
Price_6	If the performance falls below the agreed levels for one period, the contract specifies a penalty to be paid by the supplier
Price_7	If the performance is above the agreed levels for one period, the contract specifies a bonus to be paid by the customer
Price_8	If the performance deviates from the agreed levels for one period, the contract specifies credit points saved for later determination of penalty or bonus

Environmental and Behavioral Uncertainty (Antecedents):

Market Dynamics and Complexity (Response scale from (1) very bad description to (7) very good description)

Dynamism_1	Market prices for this type of IT products and services changes rapidly
Dynamism_2	The underlying technology for this type of IT products and services evolves rapidly
Dynamism_3	The underlying skills associated with this type of IT products and services changes rapidly
Dynamism_4	It is very difficult to specify the exact demand (volume) for these IT products and services
Complexity_1	It is very difficult to understand how this type of IT products and services functions
Complexity_2	It is very difficult to specify exact requirements for this type of IT products and services
Complexity_3	It is very difficult to evaluate the performance of this type of IT products and services
Complexity_4	It is very difficult to evaluate the performance of the supplier in this contract objectively

Control Variables:

Relation specific investments (Response scale from (1) very bad description to (7) very good description)

RSI_1	If we end this contract relationship, we would lose a lot of the investments we have made specifically for this contract.
RSI_2	It would be difficult for us to recoup investments made specifically for this contract, if we end this contract relationship.
RSI_3	If we end this contract relationship, we would have a lot of trouble redeploying personnel and equipment specifically allocated to this contract.
RSI_4	If we end this contract relationship, we would be wasting a lot of knowledge that is specifically tailored to this contract

RSI_5	We have committed a lot of time and resources to the training and development of our personnel specifically for this contract
RSI_6	We have committed a lot of time and resources to the training and development of the supplier's personnel specifically for this contract
RSI_7	We provide extensive user training in the products and services included in this contract
RSI_8	We have committed a lot of time and resources to develop a satisfactory quality control system specifically for this contract
RSI_9	It would be very costly to change to another supplier

Contract importance (Response scale from (1) very bad description to (7) very good description)

Importance_1	This is a very important IT contract for our company.
Importance_2	We give this IT contract very high priority
Importance_3	This IT contract contributes very much to the value creation in our business unit.
Importance_4	This IT contract contributes very much to our company's overall value creation

Availability of alternatives (Response scale from (1) very bad description to (7) very good description)

Alternatives_1	The supply market for this type of IT products and services is very competitive
Alternatives_2	There are several other suppliers that could deliver this type of IT products and services
Alternatives_3	This supplier is one of a few available suppliers for this type of IT products and services
Alternatives_4	No other supplier of this type of IT products and services has similar capacity and capability as us
Alternatives_5	This is the only supplier that could be used for this type of IT product and services

Contract age was calculated in years, as the time difference between contract commencement and the time for data collection. This was a proxy measure for *stability and history*.

APPENDIX 2

QUESTIONNAIRE (IN NORWEGIAN)

The questionnaire was used to collect data from informants in a large Norwegian company, and the complete questionnaire is provided in the original Norwegian version.

KONFIDENSIELT

Spørreskjema

Kjøp (”sourcing”) av IT-produkter og tjenester: En undersøkelse av kontrakter og samarbeid mellom kunde og leverandør

Inngår i dr. gradsarbeid ved NHH.

utført av Bjarte Ravndal, Høgskolen i Stavanger

FYLLES UT AV KUNDE (IT ANS)

Formål og gjennomføring av undersøkelsen

Formelle kontrakter er sentrale når en organisasjon kjøper varer og tjenester fra en leverandør. De har en åpenbar juridisk side som skal beskytte partenes interesser i tilfelle konflikt. Men kontraktene er også sentrale planleggingsdokumenter som skal regulere og forklare hva kunden skal få levert fra sin leverandør, og til hvilken pris.

Når partene gjennomfører leveransene knyttet til kontrakten, vil det etter hvert avtegne seg et mønster for hvordan samarbeidet i kontraktsforholdet arter seg. Selve kontrakten kan ha avgjørende betydning for dette, og formålet i denne undersøkelsen er å belyse **hvordan sentrale deler av kontrakten påvirker samarbeidet i kontraktsforholdet** mellom kjøper og leverandør.

Undersøkelsen tar utgangspunkt i en stor kjøper (Statoil) av IT-relaterte varer og tjenester, og hvert spørreskjema skal dekke **en kontrakt** som danner grunnlag for **ett kontraktsforhold**.

Vi vil kartlegge både kjøpers og selgers oppfatning av kontrakten og samarbeidet i kontraktsforholdet, og de fleste spørsmålene er utformet som påstander som gir en god eller dårlig beskrivelse av denne kontrakten og dette kontraktsforholdet.

Resultatene av undersøkelsen vil stå og falle på oppriktige og ærlige svar, og vi ber deg derfor ta stilling til det som passer best med **din oppfatning** av spørsmålene og påstandene.

Generell informasjon om denne kontrakten og dette kontraktsforholdet

Kundens (Statoil) kontraktsnummer: Dato:

Leverandør:

Adresse:

Kontaktperson hos leverandør som er best i stand til å svare på spørsmål angående denne kontrakten og dette kontraktsforholdet:

Navn på person som svarer (informant):

Beskriv din rolle i dette kontraktsforholdet:

Hvor lenge har du hatt denne rollen?

Beskriv kortfattet de IT produkter og tjenester som leveres under **denne kontrakten**:

Hvem er ansvarlig eier av kontrakten i Statoil sitt forretningsområde (IT)?

Eksterne forhold knyttet til marked og teknologi

Det er mange forhold som påvirker inngåelse og gjennomføring av IT-kontrakter. Teknologien kan være enkel eller kompleks, det kan være varierende grad av endringer i teknologi og markedspriser i kontraktsperioden. Slike forhold vil ha stor betydning for hvilke mekanismer som velges av partene, og det vil påvirke risiko og usikkerhet knyttet til kontrakten.

I hvilken grad mener du følgende utsagn gir en god eller dårlig beskrivelse av dynamikk og kompleksitet knyttet til marked og teknologi for **denne IT-kontrakten**?

1.	**Dynamikk og kompleksitet**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Prisene for disse IT-produktene og tjenestene endres svært ofte	1	2	3	4	5	6	7
2	Den underliggende teknologien knyttet til disse IT-produktene og tjenestene endres svært ofte	1	2	3	4	5	6	7
3	Den underliggende ferdigheten/kompetansen knyttet til disse IT-produktene og tjenestene endres svært ofte	1	2	3	4	5	6	7
4	Det er svært vanskelig å spesifisere det eksakte behovet (volumet) for disse IT-produktene og tjenestene	1	2	3	4	5	6	7
5	Det er svært vanskelig å forstå hvordan disse IT-produktene og tjenestene fungerer	1	2	3	4	5	6	7
6	Det er svært vanskelig å spesifisere eksakte krav til disse IT-produktene og tjenestene	1	2	3	4	5	6	7
7	Det er svært vanskelig å evaluere ytelsen til disse IT-produktene og tjenestene	1	2	3	4	5	6	7
8	Det er svært vanskelig å evaluere leverandørens ytelse i denne kontrakten objektivt	1	2	3	4	5	6	7

Kontraktsmekanismer

Alle kontrakter består av et sentralt dokument med generelle juridiske forhold, samt et sett av bilag som beskriver ulike forhold ved kontrakten. I denne undersøkelsen betegner kontraktsmekanismer **det som er skrevet i kontrakten og kontraktens bilag**.

I denne undersøkelsen er vi opptatt av kontrakt som planleggingsdokument og grunnlag for samarbeidet om leveransen. Derfor fokuserer vi kun på noen få og sentrale forhold, og vi vil kartlegge hvordan disse beskrives i kontrakten.

2. Kontraktslengde

(1) Denne kontrakten har en varighet på _____ år/mnd, fra og med _____(dato)

(2) Denne kontrakten inkluderer _____ (antall) opsjonsperioder, hver på _____ (år/mnd)

(3a) Denne kontrakten inneholder klausuler for tidlig terminering: (Ja/Nei).

(3b) Hvis ja, hvem kan utøve denne rettigheten (kunden, leverandøren, begge)?

Kontraktens spesifikasjon av krav, ytelsesmåling og pris.

I tillegg til kontraktslengde, må partene beskrive hva som skal leveres under kontrakten, hvordan leveransen skal måles og verifiseres, og til hvilken pris for kunden. Disse forholdene beskrives vanligvis i forskjellige bilag, og vi ber deg ta stilling til et sett av utsagn som beskriver mulige måter å gjøre dette på.

I hvilken grad mener du følgende utsagn gir en god eller dårlig beskrivelse av hvordan disse forhold er spesifisert i **denne IT-kontrakten**?

3.	**Spesifikasjon av krav**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Kontrakten spesifiserer 'hva' som skal leveres	1	2	3	4	5	6	7
2	Kontrakten spesifiserer 'hvordan' leveransen skal foregå	1	2	3	4	5	6	7
3	Kontrakten spesifiserer funksjonelle krav, med vekt på hvilke resultater kjøper ønsker å oppnå med leveransen	1	2	3	4	5	6	7
4	Kontrakten spesifiserer tekniske krav, med vekt på hvordan varen skal fungere eller tjenesten skal utføres	1	2	3	4	5	6	7
5	Kontrakten spesifiserer detaljerte og utfyllende krav til de produktene og tjenestene som skal leveres	1	2	3	4	5	6	7
6	Kontrakten spesifiserer kun generelle krav til produktene og tjenestene som skal leveres	1	2	3	4	5	6	7
7	Kontrakten spesifiserer hvordan endringer av krav til leveransen skal håndteres	1	2	3	4	5	6	7

4.	**Spesifikasjon av ytelsesmåling**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Kontrakten spesifiserer at leveransen skal måles i forhold til eksakte 'harde' ytelsesmål (dato, mengde, tilgjengelighet etc.)	1	2	3	4	5	6	7
2	Kontrakten spesifiserer at leveransen skal måles i forhold til subjektive 'myke' mål (bruker tilfredshet, betydning for organisasjonen etc.)	1	2	3	4	5	6	7
3	Kontrakten spesifiserer svært detaljerte og utfyllende ytelsesmål gjennom en avtale om tjenestekvalitet (Servisenivåavtale/SLA)	1	2	3	4	5	6	7
4	Kontrakten spesifiserer generelle krav som måles gjennom et fåtall nøkkelindikatorer (KPI), for eksempel bruk av balansert målekort	1	2	3	4	5	6	7
5	Kontrakten spesifiserer hvordan endringer av ytelsesmål skal håndteres	1	2	3	4	5	6	7
6	Kontrakten spesifiserer rapporteringsrutiner og prosedyrer for oppfølging av kontrakten	1	2	3	4	5	6	7
7	Kontrakten spesifiserer møtestrukturer og arenaer for å diskutere gjennomføringen og eventuelle avvik fra spesifisert ytelse	1	2	3	4	5	6	7
8	Kontrakten spesifiserer rutiner og prosedyrer for eskalering av kritiske hendelser	1	2	3	4	5	6	7
9	Kontrakten spesifiserer at ytelsen skal sammenlignes med relevante andre bedrifter ('benchmarking')	1	2	3	4	5	6	7

5.	**Spesifikasjon av pris**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Kontrakten spesifiserer at produktene og tjenestene skal leveres til fast avtalt pris, uavhengig av faktisk mengde av timer og materialer	1	2	3	4	5	6	7
2	Kontrakten spesifiserer at produktene og tjenestene skal leveres til fast avtalte enhetspriser, slik at total pris for kontrakten avhenger av faktisk mengde av timer og materialer (time-and-materials)	1	2	3	4	5	6	7
3	Kontrakten spesifiserer at produktene og tjenestene skal leveres til en pris som dekker leverandørens dokumenterte kostnader, og som gir et fast avtalt påslag (kost-pluss, åpen bok)	1	2	3	4	5	6	7
5	Kontrakten spesifiserer et måltall (estimert) som prisen er basert på, og eventuelle avvik fordeles mellom partene etter en avtalt nøkkel	1	2	3	4	5	6	7
5	Kontrakten spesifiserer hvordan endringer av pris skal håndteres	1	2	3	4	5	6	7
6	Hvis ytelsen faller under det avtalte nivået for en periode, så spesifiserer kontrakten en straff som skal betales av leverandør (avkortet betaling)	1	2	3	4	5	6	7
7	Hvis ytelsen er bedre enn det avtalte nivået for en periode, så spesifiserer kontrakten en bonus som skal betales av kunden (utvidet betaling)	1	2	3	4	5	6	7
8	Hvis ytelsen avviker fra det avtalte nivået for en periode, så spesifiserer kontrakten at disse avvikene kan samles opp som ’poeng’ til en seinere vurdering av straff eller bonus (akkumulert)	1	2	3	4	5	6	7

Samarbeidet i kontraktsforholdet

Kontrakter gjennomføres i et samarbeid mellom kunde og leverandør, og i de fleste tilfeller vil et kontraktsforhold bestå av mange enkeltleveranser. Disse avsluttes ved at leverandøren utfører tjenesten eller leverer produktet, og kunden betaler for dette. I sum vil disse avsluttede enkeltleveransene utgjøre kontraktsforholdet. For å kartlegge hvordan samarbeidet i dette kontraktsforholdet utfolder seg, har vi laget et sett av beskrivende påstander som du skal ta stilling til.

I hvilken grad mener du følgende utsagn gir en god eller dårlig beskrivelse av samarbeidet i **dette kontraktsforholdet**?

6.	**Fokus i kontraktsforholdet**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Selve kontraktsforholdet er viktigere enn de individuelle enkeltleveransene (den enkelte kjøp-salg-transaksjonen)	1	2	3	4	5	6	7
2	Utfallet av enkeltleveransene er mindre viktige enn selve kontraktsforholdet	1	2	3	4	5	6	7
3	Utfallet av enkeltleveransene er viktigere enn selve kontraktsforholdet	1	2	3	4	5	6	7
4	Kontraktsforholdet er viktig kun fordi det underbygger de individuelle enkeltleveransene	1	2	3	4	5	6	7
5	Kontraktsforholdet er kun viktig så lenge hver individuell enkeltleveranse gir et positivt resultat for vår organisasjon	1	2	3	4	5	6	7
6	Hver enkeltleveranse er bare 'nok en hendelse' i et pågående kontraktsforhold	1	2	3	4	5	6	7
7	Hver enkeltleveranse er kun et uttrykk for hvordan de to organisasjonene gjennomfører dette kontraktsforholdet	1	2	3	4	5	6	7

7.	**Solidaritet i kontraktsforholdet**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Dette kontraktsforholdet kan beskrives som en serie enkeltleveranser , mer enn et langvarig samarbeidsforhold	1	2	3	4	5	6	7
2	Forventninger om oppførsel gjenspeiler en sterk sans for rettferdighet i kontraktsforholdet	1	2	3	4	5	6	7
3	Et kjennetegn ved dette kontraktsforholdet er at ingen av partene ville gjøre noe som kan skade motparten	1	2	3	4	5	6	7
4	Det er en forventning hos partene at dersom den ene har informasjon som kan hjelpe motparten i sin forretningsmessige virksomhet, så vil slik informasjon bli overført	1	2	3	4	5	6	7
5	Vi ser på leverandøren som kun en av mange leverandører	1	2	3	4	5	6	7
8.	**Fellesskap i kontraktsforholdet**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Det forventes at hver enkeltleveranse blir gjennomført fullt ut og uavhengig av andre leveranser	1	2	3	4	5	6	7
2	Vi forsikrer oss om at motparten opptrer som forventet ved nøye overvåkning av hva som blir gjort for hver enkeltleveranse	1	2	3	4	5	6	7
3	Når det gjelder fordeling av kostnader og inntekter, aksepterer vi forskjeller for enkeltleveranser, så lenge fordelingen for kontraktsforholdet totalt sett oppleves som rettferdig	1	2	3	4	5	6	7
4	Det er underforstått at alle avvik i ytelse eller økonomisk oppgjør, uansett størrelse, bør undersøkes for å få klarhet i forholdet	1	2	3	4	5	6	7

9.	**Fleksibilitet i kontraktsforholdet**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Betingelsene for pågående enkeltleveranser er ikke gjenstand for forhandlinger under noen omstendigheter	1	2	3	4	5	6	7
2	Det forventes at betingelsene for pågående enkeltleveranser kan endres dersom utenforliggende forhold tilsier dette	1	2	3	4	5	6	7
3	Behovet for å tilpasse seg endrede utenforliggende forhold er tilfredstilt gjennom et fleksibelt kontraktsforhold, som vektlegger betydningen av forandringer innenfor rammen av dette	1	2	3	4	5	6	7
4	Begge parter forventer at en må forholde seg til de fastsatte vilkår for enkeltleveranser, uansett hva som måtte skje, til etter at leveransen er fullført og en eventuelt kan forhandle nye betingelser for neste leveranse	1	2	3	4	5	6	7
5	Behovet for å kunne tilpasse seg endrede utenforliggende forhold er ivaretatt ved korte kontraktsperioder, som ikke binder partene i for lang tid av gangen	1	2	3	4	5	6	7
10.	**Roller i kontraktsforholdet**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Det eksisterer mange forventninger i dette kontraktsforholdet som går utover det å kjøpe og selge produkter	1	2	3	4	5	6	7
2	Dette kontraktsforholdet er et rent kjøper- og selger forhold, og som sådan har de to organisasjonene ingen funksjon for motparten utover rollen som kjøper og selger	1	2	3	4	5	6	7
3	Dette kontraktsforholdet er forbundet med mange forventninger som går utover levering av og oppgjør for produktene	1	2	3	4	5	6	7
4	Dette kontraktsforholdet er svært komplisert, og sammensatt av ulike forventninger om hverandres atferd	1	2	3	4	5	6	7

5	Begge parter har mange og sammensatte forventninger til motparten	1 2 3 4 5 6 7
6	I dette kontraktsforholdet er det forventninger knyttet til mange andre kommersielle aktiviteter enn kun kjøp og salg	1 2 3 4 5 6 7
7	De forventninger som partene har til hverandre kan forklares fort og enkelt til en utenforstående tredjepart	1 2 3 4 5 6 7
11.	**Bruk av makt i kontraktsforholdet**	Svært Dårlig Beskrivelse Svært God Beskrivelse
1	Det forventes at den sterkeste parten i dette kontraktsforholdet om nødvendig vil bruke sin sterke stilling for alt hva den er verdt for å få det som den vil	1 2 3 4 5 6 7
2	Det forventes at hver av partene i dette kontraktsforholdet om nødvendig vil bruke all den makten de har vis a vis motparten	1 2 3 4 5 6 7
3	Det forventes at hver av partene i dette kontraktsforholdet vil avstå fra å bruke all den makt en måtte ha vis a vis motparten	1 2 3 4 5 6 7
4	Av hensyn til den generelle atmosfæren i kontraktsforholdet, vil både vi og motparten unnlate å legge maksimalt press på motparten i enkeltsaker hvor det oppstår uenighet	1 2 3 4 5 6 7
12.	**Håndtering av konflikt i kontraktsforholdet**	Svært Dårlig Beskrivelse Svært God Beskrivelse
1	De prosedyrer vi har for å håndtere eventuelle konflikter med leverandøren er svært formelle, og vi forventer at vi stort sett vil følge dem til punkt og prikke dersom slike situasjoner skulle oppstå	1 2 3 4 5 6 7
2	De prosedyrer leverandøren har for å håndtere eventuelle konflikter med oss er svært formelle, og vi forventer at de stort sett vil følge dem til punkt og prikke dersom slike situasjoner skulle oppstå	1 2 3 4 5 6 7

3	Begge parter er innstilt på at konflikter skal løses i fellesskap og ikke ved bruk av megler eller rettsapparatet	1 2 3 4 5 6 7
4	I dette kontraktsforholdet løses konflikter ved at begge parter bidrar på en konstruktiv måte	1 2 3 4 5 6 7

Resultater og utfall av kontraktsforholdet

Kontrakter inngås for at begge parter skal skape resultater, hver for seg og sammen. Disse kan være tilfredstillende for en eller begge parter, og det antas at det er av avgjørende betydning for forholdet hvordan dette oppleves. I denne delen er vi derfor opptatt av en vurdering knyttet til opplevde kostnader forbundet med gjennomføring av kontrakten og i hvor stor grad partene er fornøyd med utfallet.

I hvilken grad mener du følgende utsagn gir en god eller dårlig beskrivelse av slike forhold knyttet til **denne IT-kontrakten og dette kontraktsforholdet**?

13.	**Transaksjonskostnader**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Det var svært tidkrevende og vanskelig å forhandle om inngåelsen av denne kontrakten	1	2	3	4	5	6	7
2	Vårt firma bruker svært mye tid og ressurser på å koordinere og kontrollere leveransene knyttet til denne kontrakten	1	2	3	4	5	6	7
3	Det er svært tidkrevende og vanskelig å bli enige med motparten om hva som faktisk er inkludert i denne kontrakten (hvilke ytelser til hvilke priser)	1	2	3	4	5	6	7
4	Det er svært tidkrevende og vanskelig å justere denne kontrakten (reforhandle spesifikasjoner eller priser og betalingsbetingelser)	1	2	3	4	5	6	7

14.	**Tilfredshet med dette kontraktsforholdet**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Alt i alt så er vi svært godt fornøyd med dette kontraktsforholdet	1	2	3	4	5	6	7
2	Vi er svært godt fornøyd med hva motparten gjør for oss i dette kontraktsforholdet	1	2	3	4	5	6	7
3	Vi er svært godt fornøyd med motpartens behandling av problemer og spørsmål knyttet til denne kontrakten	1	2	3	4	5	6	7
4	Vi er svært godt fornøyd med vårt kommersielle resultat (kostnad, pris) fra denne kontrakten	1	2	3	4	5	6	7
5	Hvis vi skulle gjøre dette om igjen, så ville vi fortsatt inngått denne kontrakten	1	2	3	4	5	6	7

Andre forhold

Det er også andre forhold som kan påvirke valg av kontraktsmekanismer, og som kan spille avgjørende betydning for hvordan samarbeidet knyttet til kontrakten utvikler seg. I denne avsluttende delen vil vi kartlegge noen av disse forholdene.

I hvilken grad mener du følgende utsagn gir en god eller dårlig beskrivelse av forhold knyttet til **denne IT-kontrakten og dette kontraktsforholdet**?

15.	**Spesifikke investeringer i kontraktsforholdet**	Svært Dårlig Beskrivelse						Svært God Beskrivelse
1	Hvis vi avslutter dette kontraktsforholdet, så vil vi miste mye av de investeringene som er gjort spesifikt for kontrakten	1	2	3	4	5	6	7

2	Det vil være vanskelig å tjene inn de investeringene som er gjort spesifikt for denne kontrakten dersom vi avslutter dette kontraktsforholdet	1 2 3 4 5 6 7
3	Hvis vi avslutter dette kontraktsforholdet, så vil det være vanskelig å omdisponere personell og utstyr som er knyttet spesifikt til kontrakten	1 2 3 4 5 6 7
4	Hvis vi avslutter dette kontraktsforholdet, så vil vi kaste bort mye kunnskap som er knyttet spesifikt til denne kontrakten	1 2 3 4 5 6 7
5	Vi har brukt mye tid og ressurser på å utvikle eget personell knyttet spesifikt til denne kontrakten	1 2 3 4 5 6 7
6	Vi har brukt mye tid og ressurser på å utvikle personell hos vår leverandør som er spesifikt knyttet til denne kontrakten	1 2 3 4 5 6 7
7	Vi gir utstrakt brukeropplæring i de produkter og tjenester som er knyttet til denne kontrakten	1 2 3 4 5 6 7
8	Vi har brukt mye tid og ressurser på å utvikle et oppfølgings- og rapporteringssystem spesifikt for denne kontrakten	1 2 3 4 5 6 7
9	Det vil bli svært kostbart for oss å skifte til en annen leverandør	1 2 3 4 5 6 7
16.	**Stabilitet og historikk i kontraktsforholdet**	Svært Dårlig Beskrivelse Svært God Beskrivelse
1	Leverandørens nøkkelpersonell har vært tilknyttet kontrakten i lang tid	1 2 3 4 5 6 7
2	Kundens nøkkelpersonell har vært tilknyttet kontrakten i lang tid	1 2 3 4 5 6 7
3	Det har vært store endringer i leverandørens nøkkelpersonell	1 2 3 4 5 6 7
4	Det har vært store endringer i kundens nøkkelpersonell	1 2 3 4 5 6 7
5	Denne kontrakten er en av flere pågående kontrakter mellom våre to organisasjoner	1 2 3 4 5 6 7

6	Før vi inngikk denne kontrakten, hadde vi en lang historie av kontrakter mellom våre to organisasjoner	1 2 3 4 5 6 7
17.	**Kontraktens betydning for partene**	Svært Dårlig Beskrivelse — Svært God Beskrivelse
1	Dette er en svært viktig IT-kontrakt for vår bedrift	1 2 3 4 5 6 7
2	Denne IT-kontrakten har svært høy prioritet hos oss	1 2 3 4 5 6 7
3	Denne IT-kontrakten bidrar mye til vårt bidrag til bedriftens verdiskapning	1 2 3 4 5 6 7
4	Denne IT-kontrakten bidrar mye til vår bedrifts verdiskapning	1 2 3 4 5 6 7
18.	**Partenes vurdering av alternativer**	Svært Dårlig Beskrivelse — Svært God Beskrivelse
1	Det er svært stor konkurranse i markedet for disse IT-produktene og tjenestene	1 2 3 4 5 6 7
2	Det er flere andre leverandører som kan levere tilsvarende IT-produkter og tjenester	1 2 3 4 5 6 7
3	Denne leverandøren er en blant svært få aktuelle leverandører av tilsvarende IT-produkter og tjenester	1 2 3 4 5 6 7
4	Det er ikke noen andre leverandører av slike IT-produkter og tjenester med tilsvarende kapasitet og kompetanse	1 2 3 4 5 6 7
5	Denne leverandøren er den eneste vi kan bruke for disse IT-produktene og tjenestene	1 2 3 4 5 6 7

Avsluttende spørsmål

19. Hvor mange leverandører ble invitert til å gi tilbud på denne kontrakten?

Vi inviterte _____ (antall) leverandører til å gi tilbud

20. Endelig kontrakt ble inngått etter

a) Åpen konkurranse basert på auksjonsprinsipper

b) Lukket anbud uten forhandlinger

c) Lukket anbud med forhandlinger

d) Direkte forhandlinger uten forutgående anbud

21. Hvor mange leverandører bruker dere for denne type IT-produkter og tjenester?

Vi bruker _____ (antall) leverandører

22. Hvilken fase av kontraktsforholdet er denne kontrakten i akkurat nå?

a) Kontrakten er fortsatt i en relativt tidlig oppstartsfase

b) Kontrakten er i ordinær driftsfase

c) Kontrakten er i avslutningsfasen

d) Vi forhandler med motparten om en forlengelse av kontrakten

23. Hvilken type aktør er denne leverandøren?

a) Internasjonal, nasjonal, eller lokal aktør?

b) Nisjepreget eller generell?

Takk for hjelpen!!

APPENDIX 3

DESCRIPTIVE STATISTICS

This appendix provides descriptive statistics for all items used to measure the theoretical constructs used in our study. Note that the questionnaire provides a richer set of data.

Descriptive Statistics: Contract behavior (Contract norms)

	N	Minimum	Maximum	Mean	Std.	Skewness	Kurtosis
Focus_1	74	1,00	7,00	3,32	1,59	,54	-,11
Focus_2	74	1,00	5,00	2,72	1,21	,33	-,80
Focus_3r	74	1,00	7,00	3,20	1,31	,81	,91
Focus_4r	74	1,00	6,00	2,95	1,25	,28	-,33
Focus_5r	74	1,00	7,00	3,70	1,59	,44	-,49
Focus_6	74	1,00	7,00	4,43	1,44	-,30	-,48
Focus_7	74	1,00	7,00	4,38	1,37	-,26	-,29
Solidarity_1r	73	1,00	7,00	4,25	1,67	-,40	-,91
Solidarity_2	74	1,00	7,00	4,92	1,29	-1,06	1,79
Solidarity_3	74	2,00	7,00	5,14	1,23	-,81	,53
Solidarity_4	74	1,00	7,00	4,50	1,69	-,55	-,50
Solidarity_5r	74	1,00	6,00	3,39	1,52	-,10	-1,21
Mutuality_1r	74	1,00	7,00	2,66	1,52	1,03	,35
Mutuality_2r	71	1,00	7,00	3,15	1,39	,83	,96
Mutuality_3	71	1,00	7,00	3,37	1,63	,13	-1,03
Mutuality_4r	74	1,00	7,00	2,88	1,53	1,19	1,23
Flexibility_1r	74	1,00	7,00	4,14	1,56	-,21	-1,07
Flexibility_2	74	1,00	7,00	4,46	1,31	-,54	-,10
Flexibility_3	74	1,00	7,00	4,12	1,55	-,50	-,37
Flexibility_4r	74	1,00	7,00	3,28	1,31	,13	-,09
Flexibility_5r	74	2,00	7,00	5,03	1,60	-,45	-1,01
Role_integr_1	74	1,00	7,00	3,80	1,67	-,01	-1,03
Role_integr_2r	74	1,00	7,00	3,88	1,78	,01	-1,36
Role_integr_3	74	1,00	7,00	3,66	1,77	,04	-1,19
Role_integr_4	74	1,00	7,00	3,27	1,41	,14	-,41
Role_integr_5	74	1,00	6,00	3,54	1,39	-,04	-,63
Role_integr_6	74	1,00	6,00	3,19	1,36	,28	-,49
Role_integr_7r	74	1,00	7,00	3,23	1,38	,63	,32
Restraint_1r	74	1,00	7,00	4,11	1,72	,01	-1,20
Restraint_2r	74	1,00	7,00	4,30	1,71	-,29	-1,16
Restraint_3	74	1,00	6,00	3,99	1,57	-,33	-1,09
Restraint_4	74	1,00	6,00	4,20	1,41	-,49	-,71
Conflict_res_1r	74	1,00	7,00	3,81	1,72	,20	-,98
Conflict_res_2r	74	1,00	7,00	4,09	1,59	-,10	-,88
Conflict_res_3	74	3,00	7,00	5,91	,81	-1,23	**2,32**
Conflict_res_4	74	3,00	7,00	5,78	,98	-1,33	1,47
Valid N (listwise)	67						

Descriptive Statistics: Contract Mechanisms and Uncertainty (Antecedents)

	N	Minimum	Maximum	Mean	Std.	Skewnes	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
Contract_length	74	,25	10,00	3,98	3,14	1,02	-,22
Options	74	,00	10,00	3,91	4,05	,70	-1,24
Requirement_1	74	1,00	7,00	5,65	1,20	-1,69	3,95
Requirement_2	74	2,00	7,00	5,45	1,09	-1,04	1,56
Requirement_3	74	1,00	7,00	4,19	1,80	-,48	-,94
Requirement_4	74	1,00	33,00	4,39	3,80	**5,94**	**45,00**
Requirement_5	74	1,00	7,00	3,76	1,73	,03	-,86
Requirement_6r	74	1,00	7,00	3,88	1,71	,28	-,94
Requirement_7	74	1,00	7,00	4,20	1,72	-,59	-,68
Performance_1	74	1,00	7,00	3,72	1,99	-,07	-1,38
Performance_2	74	1,00	7,00	2,34	1,39	1,17	1,22
Performance_3	74	1,00	7,00	2,61	1,97	,94	-,51
Performance_4	74	1,00	5,00	1,47	,85	**2,51**	**7,39**
Performance_5	74	1,00	7,00	2,39	1,73	1,15	,20
Performance_6	74	1,00	7,00	3,78	1,93	-,02	-1,34
Performance_7	74	1,00	7,00	3,47	2,04	,16	-1,44
Performance_8	74	1,00	7,00	3,36	2,05	,30	-1,37
Performance_9	74	1,00	7,00	1,51	1,21	**3,04**	**9,54**
Price_1_fixed	74	1,00	7,00	3,11	2,26	,59	-1,33
Price_2_TM	74	1,00	7,00	4,74	2,16	-,60	-1,20
Price_3	74	1,00	6,00	1,28	,85	**4,05**	**17,79**
Price_4	74	1,00	6,00	1,32	,85	**3,37**	**13,46**
Price_5	74	1,00	7,00	5,03	1,99	-1,18	,06
Price_6_penalty	74	1,00	7,00	2,55	2,25	,93	-,91
Price_7	74	1,00	7,00	1,47	1,48	**3,10**	**8,34**
Price_8	74	1,00	6,00	1,11	,61	**7,40**	**58,72**
Degree of fixed price	74	-6,00	6,00	-1,64	4,04	,57	-1,02
Dynamism_1	73	1,00	7,00	3,73	1,73	,17	-1,20
Dynamism_2	73	1,00	6,00	3,62	1,40	,00	-1,00
Dynamism_3	73	1,00	6,00	3,42	1,33	,15	-,86
Dynamism_4	73	1,00	7,00	3,48	1,47	,24	-,61
Complexity_1	73	1,00	6,00	2,73	1,35	,62	-,42
Complexity_2	73	1,00	6,00	3,26	1,46	,41	-1,14
Complexity_3	73	1,00	6,00	3,22	1,25	,54	-,78
Complexity_4	73	1,00	6,00	2,96	1,09	,55	-,17
Valid N (listwise)	73						

Descriptive Statistics: Control Variables

	N	Minimum	Maximum	Mean	Std.	Skewnes	Kurtosis
	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic	Statistic
RSI_1	74	1,00	7,00	3,41	1,77	,25	-1,32
RSI_2	74	1,00	6,00	3,07	1,75	,42	-1,22
RSI_3	74	1,00	5,00	2,34	1,11	,70	-,31
RSI_4	74	1,00	7,00	3,09	1,68	,45	-,95
RSI_5	73	1,00	7,00	3,51	1,78	,07	-1,18
RSI_6	74	1,00	7,00	3,05	1,77	,40	-1,00
RSI_7	73	1,00	7,00	3,56	1,90	,03	-1,41
RSI_8	68	1,00	6,00	2,51	1,47	,72	-,62
RSI_9	73	1,00	7,00	3,40	1,83	,25	-1,24
Importance_1	74	1,00	7,00	4,43	1,54	-,23	-,54
Importance_2	74	1,00	7,00	4,32	1,54	-,29	-,69
Importance_3	74	1,00	7,00	4,24	1,50	-,46	-,61
Importance_4	74	1,00	7,00	3,51	1,75	-,01	-1,07
Alternatives_1	74	1,00	7,00	4,81	1,50	-,37	-,37
Alternatives_2	74	2,00	7,00	5,11	1,48	-,43	-,61
Alternatives_3r	74	1,00	7,00	4,62	1,75	-,26	-1,07
Alternatives_4r	73	1,00	7,00	5,60	1,62	-1,09	,23
Alternatives_5r	73	1,00	7,00	5,96	1,43	-1,75	**2,84**
Contract age	74	,17	8,25	2,45	2,30	1,19	,11
Valid N (listwise)	68						

APPENDIX 4

MEASUREMENT MODEL: PRINCIPAL COMPONENT ANALYSIS

This appendix provides detailed description of the principal component analysis that we used to assess the validity of our measures. We report single factor solutions and Varimax rotated solutions to assess convergent and discriminant validity.

Contract behavior: Relational focus

Communalities

	Initial	Extraction
Focus_1	1,000	,570
Focus_2	1,000	,625
Focus_3r	1,000	,650
Focus_5r	1,000	,579

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,424	60,610	60,610	2,424	60,610	60,610
2	,954	23,838	84,448			
3	,323	8,075	92,523			
4	,299	7,477	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Focus_1	,755
Focus_2	,791
Focus_3r	,806
Focus_5r	,761

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Contract behavior: Solidarity

Communalities

	Initial	Extraction
Solidarity_2	1,000	,722
Solidarity_3	1,000	,725
Solidarity_4	1,000	,610

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,057	68,558	68,558	2,057	68,558	68,558
2	,554	18,465	87,024			
3	,389	12,976	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Solidarity_2	,850
Solidarity_3	,851
Solidarity_4	,781

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Contract behavior: Mutuality

Communalities

	Initial	Extraction
Mutuality_1r	1,000	,554
Mutuality_2r	1,000	,817
Mutuality_4r	1,000	,642

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,013	67,104	67,104	2,013	67,104	67,104
2	,682	22,738	89,842			
3	,305	10,158	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Mutuality_1r	,744
Mutuality_2r	,904
Mutuality_4r	,802

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Contract behavior: Flexibility

Communalities

	Initial	Extraction
Flexibility_1r	1,000	,509
Flexibility_2	1,000	,751
Flexibility_3	1,000	,273

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1,533	51,089	51,089	1,533	51,089	51,089
2	,980	32,661	83,749			
3	,488	16,251	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Flexibility_1r	,713
Flexibility_2	,867
Flexibility_3	,522

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Note that we excluded Flexibility_3 based on assessment of communality.

Contract behavior: Role Integrity

Communalities

	Initial	Extraction
Role_integr_1	1,000	,618
Role_integr_3	1,000	,846
Role_integr_4	1,000	,686
Role_integr_5	1,000	,697
Role_integr_6	1,000	,762
Role_integr_7r	1,000	,554

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,163	69,378	69,378	4,163	69,378	69,378
2	,614	10,237	79,615			
3	,465	7,757	87,372			
4	,349	5,822	93,194			
5	,259	4,314	97,509			
6	,149	2,491	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Role_integr_1	,786
Role_integr_3	,920
Role_integr_4	,828
Role_integr_5	,835
Role_integr_6	,873
Role_integr_7r	,744

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Contract behavior: Restraint of power

Communalities

	Initial	Extraction
Restraint_1r	1,000	,841
Restraint_2r	1,000	,899
Restraint_3	1,000	,677

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,417	80,554	80,554	2,417	80,554	80,554
2	,458	15,268	95,822			
3	,125	4,178	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Restraint_1r	,917
Restraint_2r	,948
Restraint_3	,823

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Contract behavior: Conflict resolution

Communalities

	Initial	Extraction
Conflict_res_1r	1,000	,917
Conflict_res_2r	1,000	,887
Conflict_res_4	1,000	,040

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	1,843	61,442	61,442	1,843	61,442	61,442
2	,992	33,071	94,513			
3	,165	5,487	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Conflict_res_1r	,957
Conflict_res_2r	,942
Conflict_res_4	-,200

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Note that we excluded Conflict_res_4 based on low communality.

Contract behavior: All seven dimensions (contract norms)

This is the result of the validation process.

Communalities

	Initial	Extraction
Role_integr_1	1,00	,75
Role_integr_3	1,00	,87
Role_integr_4	1,00	,74
Role_integr_5	1,00	,75
Role_integr_6	1,00	,74
Role_integr_7r	1,00	,78
Restraint_1r	1,00	,84
Restraint_2r	1,00	,89
Restraint_3	1,00	,83
Focus_1	1,00	,82
Focus_2	1,00	,71
Focus_3r	1,00	,83
Focus_5r	1,00	,76
Solidarity_2	1,00	,73
Solidarity_3	1,00	,83
Solidarity_4	1,00	,81
Conflict_res_1r	1,00	,90
Conflict_res_2r	1,00	,85
Mutuality_1r	1,00	,75
Mutuality_2r	1,00	,75
Mutuality_4r	1,00	,63
Flexibility_1r	1,00	,79
Flexibility_2	1,00	,70

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,32	27,49	27,49	4,31	18,76	18,76
2	4,10	17,82	45,31	2,75	11,95	30,71
3	2,36	10,27	55,58	2,53	11,00	41,71
4	1,96	8,50	64,08	2,43	10,56	52,27
5	1,39	6,05	70,13	2,27	9,85	62,12
6	1,06	4,63	74,76	2,21	9,63	71,75
7	,88	3,82	78,59	1,57	6,84	78,59
8	,84	3,64	82,23			
23	,05	,24	100,00			

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component						
	1	2	3	4	5	6	7
Role_integr_1	**,65**	,02	,03	,51	,19	-,14	,11
Role_integr_3	**,86**	-,05	-,03	,31	,18	,01	-,08
Role_integr_4	**,85**	,01	-,03	-,01	-,03	,05	,09
Role_integr_5	**,79**	-,03	-,16	,22	-,14	-,15	,10
Role_integr_6	**,84**	-,07	-,14	,05	,05	-,05	,04
Role_integr_7r	**,78**	,12	,10	-,21	-,10	,07	-,31
Restraint_1r	-,13	**,83**	,19	,00	,24	,19	,06
Restraint_2r	-,14	**,86**	,19	,01	,18	,25	-,01
Restraint_3	,28	**,83**	,05	,22	,03	,04	,05
Focus_1	-,05	,15	**,74**	,08	,19	-,25	,39
Focus_2	,11	,09	**,77**	-,04	,07	,00	,32
Focus_3r	-,26	,25	**,60**	-,28	,32	,40	-,04
Focus_5r	-,21	,14	**,71**	-,18	-,01	,37	-,14
Solidarity_2	,20	,07	-,10	**,75**	-,33	-,07	,02
Solidarity_3	,04	,16	-,07	**,89**	-,06	-,10	-,05
Solidarity_4	,39	-,28	-,49	**,54**	,06	-,23	-,02
Conflict_res_1r	,12	,23	,09	-,15	**,87**	,21	-,07
Conflict_res_2r	-,04	,13	,14	-,05	**,88**	,11	-,12
Mutuality_1r	-,05	,06	,09	,00	,02	**,85**	,10
Mutuality_2r	-,06	,37	,11	-,15	,27	**,71**	,01
Mutuality_4r	,10	,20	-,07	-,25	,41	**,58**	,06
Flexibility_1r	-,16	,33	,29	-,24	-,04	,11	**,70**
Flexibility_2	,10	-,10	,13	,09	-,16	,08	**,79**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 11 iterations.

Second order factor analysis

Contract behavior is supposed to originate from a common source, and we ran a second order principal component analysis to verify this.

We report three steps of the validation process: first all seven dimensions, then a two-factor solution without flexibility, and finally a single factor solution with four dimensions.

Contract behavior (all dimensions)

Communalities

	Initial	Extraction
Relational focus	1,000	,648
Solidarity	1,000	,763
Mutuality	1,000	,590
Flexibility	1,000	,854
Role Integrity	1,000	,751
Restraint of power	1,000	,618
Conflict resolution	1,000	,761

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,529	36,129	36,129	2,529	36,129	36,129
2	1,404	20,052	56,182	1,404	20,052	56,182
3	1,051	15,018	71,200	1,051	15,018	71,200
4	,660	9,433	80,633			
5	,588	8,403	89,037			
6	,404	5,776	94,813			
7	,363	5,187	100,000			

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component		
	1	2	3
Relational focus	,456	-,327	**,577**
Solidarity	-,298	**,807**	-,151
Mutuality	**,727**	-,205	,140
Flexibility	-,047	-,081	**,919**
Role Integrity	,130	**,856**	-,044
Restraint of power	**,656**	,143	,408
Conflict resolution	**,855**	-,013	-,171

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 4 iterations.

Contract behavior (without flexibility)

Communalities

	Initial	Extraction
Relational focus	1,000	,547
Solidarity	1,000	,740
Mutuality	1,000	,570
Role Integrity	1,000	,750
Restraint of power	1,000	,569
Conflict resolution	1,000	,597

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,403	40,045	40,045	2,403	40,045	40,045
2	1,370	22,827	62,872	1,370	22,827	62,872
3	,705	11,748	74,620			
4	,648	10,794	85,414			
5	,509	8,487	93,901			
6	,366	6,099	100,000			

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component	
	1	2
Relational focus	**,580**	-,460
Solidarity	-,279	**,814**
Mutuality	**,722**	-,219
Role Integrity	,162	**,851**
Restraint of power	**,753**	,034
Conflict resolution	**,772**	,039

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Contract behavior (one factor solution with four dimensions)

Communalities

	Initial	Extraction
Relational focus	1,000	,464
Mutuality	1,000	,569
Restraint of power	1,000	,561
Conflict resolution	1,000	,525

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,119	52,964	52,964	2,119	52,964	52,964
2	,715	17,875	70,839			
3	,606	15,155	85,993			
4	,560	14,007	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Relational focus	,681
Mutuality	,754
Restraint of power	,749
Conflict resolution	,725

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Contract mechanisms: Requirement specifications

Communalities

	Initial	Extraction
Requirement_3	1,000	,654
Requirement_5	1,000	,835
Requirement_6r	1,000	,697

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,185	72,847	72,847	2,185	72,847	72,847
2	,549	18,296	91,143			
3	,266	8,857	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Requirement_3	,809
Requirement_5	,914
Requirement_6r	,835

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Contract mechanisms: Performance specifications

Communalities

	Initial	Extraction
Performance_3	1,000	,667
Performance_5	1,000	,485
Performance_6	1,000	,653
Performance_7	1,000	,722
Performance_8	1,000	,679

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,205	64,106	64,106	3,205	64,106	64,106
2	,775	15,494	79,601			
3	,410	8,193	87,793			
4	,355	7,107	94,900			
5	,255	5,100	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Performance_3	,817
Performance_5	,696
Performance_6	,808
Performance_7	,850
Performance_8	,824

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Contract mechanisms: Requirement and performance specs.

Communalities

	Initial	Extraction
Requirement_3	1,000	,698
Requirement_5	1,000	,809
Requirement_6r	1,000	,673
Performance_3	1,000	,656
Performance_5	1,000	,454
Performance_6	1,000	,742
Performance_7	1,000	,739
Performance_8	1,000	,707

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,279	53,489	53,489	4,279	53,489	53,489
2	1,199	14,983	68,472	1,199	14,983	68,472
3	,828	10,352	78,824			
4	,583	7,284	86,108			
5	,377	4,713	90,821			
6	,318	3,970	94,790			
7	,259	3,242	98,032			
8	,157	1,968	100,000			

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component	
	1	2
Requirement_3	,156	**,821**
Requirement_5	,371	**,819**
Requirement_6r	,179	**,800**
Performance_3	**,710**	,389
Performance_5	**,609**	,289
Performance_6	**,860**	,056
Performance_7	**,767**	,389
Performance_8	**,827**	,156

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Antecedents: Environmental Uncertainty (Dynamism)

Communalities

	Initial	Extraction
Dynamism_1	1,000	,794
Dynamism_2	1,000	,880
Dynamism_3	1,000	,835

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,508	83,614	83,614	2,508	83,614	83,614
2	,313	10,431	94,046			
3	,179	5,954	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Dynamism_1	,891
Dynamism_2	,938
Dynamism_3	,914

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Antecedents: Behavioral Uncertainty (Complexity)

Communalities

	Initial	Extraction
Complexity_2	1,000	,624
Complexity_3	1,000	,865
Complexity_4	1,000	,705

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,194	73,130	73,130	2,194	73,130	73,130
2	,587	19,582	92,712			
3	,219	7,288	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Complexity_2	,790
Complexity_3	,930
Complexity_4	,840

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Antecedents: Both uncertainty dimensions

Communalities

	Initial	Extraction
Complexity_2	1,000	,625
Complexity_3	1,000	,866
Complexity_4	1,000	,713
Dynamism_1	1,000	,797
Dynamism_2	1,000	,879
Dynamism_3	1,000	,840

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,924	48,729	48,729	2,924	48,729	48,729
2	1,796	29,933	78,662	1,796	29,933	78,662
3	,585	9,744	88,406			
4	,308	5,139	93,545			
5	,257	4,288	97,833			
6	,130	2,167	100,000			

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component	
	1	2
Complexity_2	,178	**,770**
Complexity_3	,056	**,929**
Complexity_4	,067	**,842**
Dynamism_1	**,891**	,060
Dynamism_2	**,934**	,081
Dynamism_3	**,897**	,189

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 3 iterations.

Control variables: Relation specific investments

Communalities

	Initial	Extraction
RSI_1	1,000	,842
RSI_2	1,000	,812
RSI_3	1,000	,629
RSI_4	1,000	,757
RSI_5	1,000	,661
RSI_9	1,000	,623

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	4,324	72,070	72,070	4,324	72,070	72,070
2	,520	8,663	80,734			
3	,396	6,595	87,329			
4	,389	6,480	93,809			
5	,291	4,852	98,662			
6	,080	1,338	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
RSI_1	,918
RSI_2	,901
RSI_3	,793
RSI_4	,870
RSI_5	,813
RSI_9	,789

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Control variables: Contract importance

Communalities

	Initial	Extraction
Importance_1	1,000	,856
Importance_2	1,000	,786
Importance_3	1,000	,832
Importance_4	1,000	,628

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	3,103	77,567	77,567	3,103	77,567	77,567
2	,537	13,413	90,980			
3	,223	5,577	96,557			
4	,138	3,443	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Importance_1	,925
Importance_2	,887
Importance_3	,912
Importance_4	,792

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Control variables: Availability of alternatives

Communalities

	Initial	Extraction
Alternatives_1	1,000	,839
Alternatives_2	1,000	,840
Alternatives_3r	1,000	,753
Alternatives_4r	1,000	,494

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Extraction Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	2,926	73,140	73,140	2,926	73,140	73,140
2	,622	15,539	88,679			
3	,318	7,947	96,626			
4	,135	3,374	100,000			

Extraction Method: Principal Component Analysis.

Component Matrix[a]

	Component
	1
Alternatives_1	,916
Alternatives_2	,916
Alternatives_3r	,868
Alternatives_4r	,703

Extraction Method: Principal Component Analysis.

a. 1 components extracted.

Control variables: All three dimensions

We ran a combined Varimax rotated solution with all three dimensions, and the dimensions were assessed to show acceptable convergent and discriminant validity.

Communalities

	Initial	Extraction
RSI_1	1,000	,859
RSI_2	1,000	,816
RSI_3	1,000	,651
RSI_4	1,000	,787
RSI_5	1,000	,678
RSI_9	1,000	,694
Importance_1	1,000	,834
Importance_2	1,000	,804
Importance_3	1,000	,833
Importance_4	1,000	,691
Alternatives_1	1,000	,874
Alternatives_2	1,000	,841
Alternatives_3r	1,000	,755
Alternatives_4r	1,000	,457

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,150	43,926	43,926	4,173	29,810	29,810
2	2,884	20,602	64,528	3,235	23,106	52,916
3	1,539	10,992	75,520	3,165	22,605	75,520
4	,775	5,535	81,056			
14	,046	,329	100,000			

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component		
	1	2	3
RSI_1	**,906**	,181	-,073
RSI_2	**,853**	,232	-,184
RSI_3	**,773**	,214	-,087
RSI_4	**,866**	,135	-,137
RSI_5	**,730**	,381	-,016
RSI_9	**,632**	,391	-,377
Importance_1	,314	**,856**	-,052
Importance_2	,344	**,809**	,178
Importance_3	,203	**,890**	,020
Importance_4	,170	**,773**	-,254
Alternatives_1	-,049	,002	**,933**
Alternatives_2	-,073	-,035	**,914**
Alternatives_3r	-,191	,038	**,847**
Alternatives_4r	-,119	-,095	**,659**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 5 iterations.

Contract mechanisms, uncertainty and control variables (all independent variables)

As a final step, we ran a combined Varimax rotated solution with all dimensions that would be treated as independent variables in the regression analysis.

Communalities

	Initial	Extraction
RSI_1	1,000	,857
RSI_2	1,000	,835
RSI_3	1,000	,637
RSI_4	1,000	,830
RSI_5	1,000	,766
RSI_9	1,000	,743
Alternatives_1	1,000	,874
Alternatives_2	1,000	,855
Alternatives_3r	1,000	,771
Alternatives_4r	1,000	,625
Performance_3	1,000	,707
Performance_5	1,000	,509
Performance_6	1,000	,818
Performance_7	1,000	,766
Performance_8	1,000	,703
Importance_1	1,000	,881
Importance_2	1,000	,885
Importance_3	1,000	,831
Importance_4	1,000	,826
Dynamism_1	1,000	,832
Dynamism_2	1,000	,903
Dynamism_3	1,000	,831
Requirement_3	1,000	,703
Requirement_5	1,000	,756
Requirement_6r	1,000	,635
Complexity_2	1,000	,705
Complexity_3	1,000	,856
Complexity_4	1,000	,749

Extraction Method: Principal Component Analysis.

Total Variance Explained

	Initial Eigenvalues			Rotation Sums of Squared Loadings		
Component	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	6,975	24,911	24,911	4,564	16,302	16,302
2	5,289	18,889	43,800	3,300	11,785	28,086
3	2,620	9,359	53,158	3,222	11,506	39,592
4	2,428	8,671	61,830	2,976	10,630	50,223
5	1,829	6,532	68,362	2,600	9,286	59,509
6	1,412	5,041	73,403	2,574	9,193	68,702
7	1,133	4,048	77,451	2,450	8,749	77,451
8	,927	3,310	80,761			
28	,043	,152	100,000			

Extraction Method: Principal Component Analysis.

Rotated Component Matrix[a]

	Component						
	1	2	3	4	5	6	7
RSI_1	**,91**	-,05	,05	,12	-,08	,09	-,05
RSI_2	**,84**	-,16	,21	,16	-,17	,06	,01
RSI_3	**,73**	-,10	,18	,19	,05	-,14	,00
RSI_4	**,86**	-,10	,00	,16	-,03	-,21	-,10
RSI_5	**,76**	,01	,01	,29	,04	,10	-,31
RSI_9	**,67**	-,36	,10	,31	-,14	,19	,11
Alternatives_1	-,09	**,89**	,11	,01	,25	-,02	,05
Alternatives_2	-,09	**,90**	,12	-,05	,10	-,01	,07
Alternatives_3r	-,18	**,82**	-,03	,05	,22	,06	-,06
Alternatives_4r	-,10	**,66**	-,19	-,13	,04	,32	,17
Performance_3	-,06	,15	**,70**	-,03	,08	,42	,07
Performance_5	,26	,15	**,39**	,03	,07	,50	,13
Performance_6	,11	,02	**,87**	,18	,09	,00	,11
Performance_7	,14	-,06	**,76**	,11	,05	,39	,02
Performance_8	,31	-,09	**,71**	,19	,01	,22	,05
Importance_1	,33	-,05	,24	**,82**	-,09	,12	,11
Importance_2	,30	,18	,35	**,80**	,00	,00	-,03
Importance_3	,26	-,03	,16	**,83**	,18	,16	-,01
Importance_4	,27	-,26	-,23	**,71**	,15	,24	-,20
Dynamism_1	-,02	,37	,05	,06	**,83**	,05	,02
Dynamism_2	-,06	,08	,14	,02	**,92**	,13	,10
Dynamism_3	-,12	,21	,00	,08	**,84**	,09	,22
Requirement_3	,03	,00	,10	,13	,19	**,80**	-,03
Requirement_5	-,03	,12	,39	,15	,10	**,74**	-,07
Requirement_6r	-,24	,06	,36	,19	-,09	**,61**	-,18
Complexity_2	,04	-,03	,03	-,06	,17	,11	**,81**
Complexity_3	-,04	,01	,10	-,01	,08	-,09	**,91**
Complexity_4	-,24	,22	,06	,04	,03	-,14	**,79**

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.

a. Rotation converged in 7 iterations.

APPENDIX 5

MEASUREMENT MODEL: RELIABILITY AND SCALES

We ran a reliability analysis, and here we report Cronbach's alpha and item-to-total correlations for all the summated scales.

Contract behavior (dependent variable)

Scale	Item-to-total correlations	Coefficient alpha
Co-operative relation (4 of 7 dimensions)		**0.6959**
Relational focus	0.4387	
Mutuality	0.5424	
Restraint of power	0.5211	
Conflict resolution	0.4758	
Relational focus (4 of 7 items)		**0.7737**
Focus_1	0.5368	
Focus_2	0.6145	
Focus_3r	0.6378	
Focus_5r	0.5524	
Mutuality (3 of 4 items)		**0.7447**
Mutuality_1r	0.4750	
Mutuality_2r	0.7264	
Mutuality_4r	0.5333	
Restraint of power (3 of 4 items)		**0.8790**
Restraint_1r	0.7997	
Restraint_2r	0.8668	
Restraint_3	0.6460	
Conflict resolution (2 of 4 items)		**0.8247**
Conflict_res_1r	0.8247	
Conflict_res_2r	0.8247	
Solidarity (3 of 5 items)		**0.7525**
Solidarity_2	0.6204	
Solidarity_3	0.6257	
Solidarity_4	0.5409	
Role Integrity (6 of 7 items)		**0.9090**
Role_integr_1	0.6971	
Role_integr_3	0.8754	
Role_integr_4	0.7441	
Role_integr_5	0.7500	
Role_integr_6	0.8036	
Role_integr_7r	0.6440	
Flexibility (2 of 5 items)		**0.4254**
Flexibility_1r	0.4254	
Flexibility_2	0.4254	

Relational focus, mutuality, restraint of power, and conflict resolution were included in the dependent variable denoted as ***Co-operative relation***. The other dimensions were excluded as a result of the validation process.

Contract mechanisms, antecedents (uncertainty) and control variables

Scale	Item-to-total correlations	Coefficient alpha
Requirement specifications (3 of 7 items)		**0.8112**
Requirement_3	0.5941	
Requirement_5	0.7718	
Requirement_6r	0.6255	
Performance specifications (5 of 9 items)		**0.8599**
Performance_3	0.6984	
Performance_5	0.5556	
Performance_6	0.6848	
Performance_7	0.7423	
Performance_8	0.7062	
Dynamisms (3 of 4 items)		**0.8925**
Dynamism_1	0.7633	
Dynamism_2	0.8461	
Dynamism_3	0.7955	
Complexity (3 of 4 items)		**0.8027**
Complexity_2	0.5762	
Complexity_3	0.7964	
Complexity_4	0.6169	
Relational investments (6 of 9 items)		**0.9178**
RSI_1	0.8715	
RSI_2	0.8461	
RSI_3	0.7044	
RSI_4	0.7972	
RSI_5	0.7340	
RSI_9	0.7061	
Contract importance (4 items)		**0.8982**
Importance_1	0.8466	
Importance_2	0.7754	
Importance_3	0.8364	
Importance_4	0.6586	
Available alternatives (4 of 5 items)		**0.8688**
Alternatives_1	0.8133	
Alternatives_2	0.8204	
Alternatives_3r	0.7415	
Alternatives_4r	0.5442	

Contract length, **degree of fixed price**, **price penalty**, and **contract age** were used as single item constructs.

APPENDIX 6

REGRESSION ANALYSIS

We used three incremental Ordinary Least Square regression models in SPSS to test the ten hypotheses. We first regressed contract behavior on contract mechanisms and uncertainty, then we added the control variables, and finally we added the interaction terms.

We mean centered all the independent variables to avoid multicollinearity, and the VIF indexes ranged from 1.199 to 2.422.

The complete result is reported in this appendix.

Contract behavior regressed on contract mechanisms, uncertainty, control variables and interactions

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	,681[a]	,464	,406	,76119
2	,747[b]	,558	,478	,71336
3	,794[c]	,630	,548	,66400

a. Predictors: (Constant), Complexity centered, Contract length centered, Penalty centered, Fixed price centered, Dynamism centered, Performance centered, Requirement centered

b. Predictors: (Constant), Complexity centered, Contract length centered, Penalty centered, Fixed price centered, Dynamism centered, Performance centered, Requirement centered, Importance, Contract age, Alternatives, RSI

c. Predictors: (Constant), Complexity centered, Contract length centered, Penalty centered, Fixed price centered, Dynamism centered, Performance centered, Requirement centered, Importance, Contract age, Alternatives, RSI, Contract length*Complexity, Performance*Complexity

ANOVA[d]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	32,586	7	4,655	8,034	,000[a]
	Residual	37,662	65	,579		
	Total	70,248	72			
2	Regression	39,205	11	3,564	7,004	,000[b]
	Residual	31,042	61	,509		
	Total	70,248	72			
3	Regression	44,235	13	3,403	7,718	,000[c]
	Residual	26,013	59	,441		
	Total	70,248	72			

a. Predictors: (Constant), Complexity centered, Contract length centered, Penalty centered, Fixed price centered, Dynamism centered, Performance centered, Requirement centered

b. Predictors: (Constant), Complexity centered, Contract length centered, Penalty centered, Fixed price centered, Dynamism centered, Performance centered, Requirement centered, Importance, Contract age, Alternatives, RSI

c. Predictors: (Constant), Complexity centered, Contract length centered, Penalty centered, Fixed price centered, Dynamism centered, Performance centered, Requirement centered, Importance, Contract age, Alternatives, RSI, Contract length*Complexity, Performance*Complexity

d. Dependent Variable: Co-operative relation

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	3,560	,089		39,942	,000
	Contract length centered	-,020	,015	-,126	-1,286	,203
	Requirement centered	,148	,083	,223	1,787	,079
	Performance centered	-,201	,076	-,319	-2,650	,010
	Fixed price centered	,009	,023	,038	,407	,686
	Penalty centered	-,154	,047	-,352	-3,269	,002
	Dynamism centered	-,287	,070	-,396	-4,081	,000
	Complexity centered	,127	,088	,139	1,445	,153
2	(Constant)	4,918	,562		8,754	,000
	Contract length centered	-,034	,017	-,217	-2,003	,050
	Requirement centered	,167	,079	,251	2,108	,039
	Performance centered	-,232	,077	-,368	-3,014	,004
	Fixed price centered	-,015	,023	-,060	-,645	,522
	Penalty centered	-,102	,050	-,233	-2,023	,048
	Dynamism centered	-,211	,074	-,290	-2,844	,006
	Complexity centered	,147	,084	,161	1,746	,086
	RSI	,027	,084	,038	,324	,747
	Importance	-,089	,084	-,123	-1,063	,292
	Alternatives	-,258	,084	-,358	-3,090	,003
	Contract age	,092	,047	,209	1,952	,056
3	(Constant)	4,747	,526		9,031	,000
	Contract length centered	-,025	,016	-,157	-1,506	,137
	Requirement centered	,174	,074	,262	2,354	,022
	Performance centered	-,227	,078	-,360	-2,921	,005
	Fixed price centered	-,012	,021	-,051	-,591	,556
	Penalty centered	-,104	,047	-,237	-2,208	,031
	Dynamism centered	-,206	,069	-,284	-2,978	,004
	Complexity centered	,185	,079	,202	2,326	,023
	RSI	,076	,080	,107	,949	,346
	Importance	-,110	,079	-,152	-1,404	,166
	Alternatives	-,207	,079	-,287	-2,606	,012
	Contract age	,036	,047	,081	,755	,453
	Contract length*Complexity	,033	,013	,232	2,619	,011
	Performance*Complexity	-,102	,049	-,189	-2,069	,043

a. Dependent Variable: Co-operative relation