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TOWARDS A MODEL OF GOVERNANCE IN COMPLEX (PRODUCT-SERVICE) INTER-ORGANISATIONAL SYSTEMS

Jens K. Roehrich^{a,*} and Michael A. Lewis^b

^a Innovation and Entrepreneurship Group, Imperial College Business School, Tanaka Building, South Kensington Campus, London SW7 2AZ, UK

*Author for correspondence. E-mail: j.roehrich@imperial.ac.uk

^b School of Management, University of Bath, Claverton Down, Bath BA2 7AY, UK

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Abstract

Traditional business models coped with the complexity inherent in buying complex capital assets that will be operated and maintained over many years by a division of labour based on sub-sets of the value chain. Recently, customers in a wide range of sectors are not buying sub-contract production or construction capacity but procuring business 'solutions'. As a result, inter-organisational interactions are changing in terms of their scale, scope and dynamic, requiring us to reconsider those mechanisms that co-ordinate inter-organisational behaviour. Correspondingly, a conceptual model is developed that explores how contractual and relational mechanisms interact across different levels of analysis and over time. Reflecting on the implications of the model highlights how contractual and relational governance mechanisms are *distinct* but *inseparable* parts of a governance continuum, involving multi-level interactions and transitions. Given that these interactions/transitions influence the behaviour of exchange partners and impact the effectiveness of the overall governance mix these, albeit conceptual, insights should be beneficial to academics, practitioners and policy makers involved in complex product-service systems.

Keywords

Product-Service Systems, Inter-organisational Governance, Contracts, Trust, Complexity

Introduction

The relationship between buyer and supplier has never been simple when what is being bought/delivered is a complex capital asset that will be operated and maintained over many years. Organisations traditionally coped with this complexity by a division of labour based on sub-sets of the value chain; that is some actors designed and/or built things while others maintained and supported them once operational. Increasingly however, more and more public and private sector buyers seek 'strategic' contributions from their supply chains. The creation of Build-Operate-Transfer (BOT) infrastructure projects in the public sector (Kumaraswamy and Zhang, 2001) for example – buyers optimistically seeking better value *and* performance – created the need for construction firms to develop their complex performance provision capabilities (Gann and Salter, 2000; Caldwell et al., 2009). Similarly in a range of other sectors, customers of firms like Flextronics (electronics sector) and Li and Fung (garment sector), are not buying sub-contract manufacturing capacity but procuring business 'solutions'. As a result, many suppliers that traditionally generated the majority of their income from the design and production of complex capital assets (e.g. construction firms) are facing significant challenges as they seek to capture service-based revenue; a phenomenon that has attracted increasing scholarly attention (e.g. Mathieu, 2001a; Mathieu, 2001b; Van der Valk, 2008; Wise and Baumgartner, 1999; Brady et al., 2005; Davies et al., 2007; Leiringer et al., 2009). Inevitably, these shifts mean that inter-organisational interactions are also changing - in terms of their scale, scope and dynamic (Lindberg and Nordin, 2008). For example, the relationship between

buyer and supplier of a complex product-service system is essentially *interactive*, that is characterised by open-ended design and manufacturing parameters and constant knowledge exchange leading (hopefully) to joint learning (Araujo et al., 1999) [1]. This type of interaction requires a reconceptualisation of both the traditional 'make or buy' decision (Holcomb and Hitt, 2007) and those mechanisms that co-ordinate subsequent inter-organisational behaviour (Lewis and Roehrich, 2009). Given this backdrop, the paper develops a novel conceptual perspective on the governance of these complex, interactive, supply arrangements. Specifically it builds a model of how contractual and relational governance mechanisms (Poppo and Zenger, 2002; Vandaele et al., 2007) interact over time, influencing the behaviour of exchange partners and ultimately impacting performance.

The Conceptual 'Building Blocks'

This section sets out the initial structure (see Figure 1) for conceptualising inter-organisational governance mechanisms - those contractual and relational rules of exchange between partners (North, 1990; Zenger et al., 2002) - and their interplay in a dyadic buyer-supplier relationship over time.

Insert 'Figure 1 Initial framework' about here

Contractual Governance

Contracts are those explicit (usually written, often detailed) and formal artefacts that specify the legally binding obligations and roles of both parties in

a relationship (Lyons and Mehta, 1997). Contracts are intended to (a) reduce uncertainty by providing a clear specification of what is and what is not allowed within a relationship (Lui and Ngo, 2004), (b) minimise the risk of opportunism by enforcing legal rules, standards and other remedies implied in law (Achrol and Gundlach, 1999) and, (c) provide a safeguard against *ex-post* performance problems (Luo, 2002). There is a substantial literature that explores how contracts are used to “govern the ways in which units can cooperate and/or compete” (Davis and North, 1971, pp.6-7) in turn highlighting that control through formal contracts depends on three underlining conditions (Bijlsma-Frankema and Costa, 2005):

1. Codification. Formal contracts are reliant on the programmability of tasks and behaviours and the measurability of outcomes *ex ante*. Thus, the transaction process and outcome between two parties need to be predictable and codifiable.
2. Monitoring. Formal contracts require monitoring to determine actors’ behaviour with regards to the rules set out in the contract.
3. Safeguards. For effective control, there needs to be institutional structure in place to enforce the contract.

Given this context, the optimal contract is generally assumed to be the most ‘complete’ contract (i.e. one that covers the greatest number of contingencies) with the lowest design, monitoring and enforcement costs relative to a given outcome.

The classical model of contractual governance involves a risk-averse agent who produces an output that is precisely observable by the risk-neutral principal and the agent, thus giving both parties symmetric information. The assumption of 'complete contracts' based on perfect "information with respect to the variables and functions determining the relationship, and with respect to identities and behaviour" of both parties (Macho-Stadler and Pérez-Castrillo, 2001, p.37) is seldom representative of any 'real' interaction. Empirical studies illustrate that both partnering organisations face imperfect and incomplete information about the other party's preferences and characteristics (Plambeck and Zenios, 2000). Information asymmetry arising from behavioural uncertainty due to opportunism hinders the writing of complete, contingent contracts, thus leading to incomplete contracts. Table 1 summarises the problems that can arise as a result of asymmetric information in relationships.

Insert 'Table 1 Types of asymmetric information' about here

Moreover, organisations that aim to specify everything *ex ante* will inevitably face high transaction costs and this may delay project execution (Bijlsma-Frankema and Costa, 2005). In other words, whatever the specific cause [2], in most exchanges one party has an unavoidable informational advantage over another that – in purely contractual terms - could potentially be exploited to the benefit of that party at the expense of the partner (Salanié, 1997). This reinforces the tendency to incur additional costs such as *ex ante* search costs

(associated with adverse selection risk) and/or *ex post* monitoring and enforcement costs (associated with moral hazard and hold-up risks).

Relational Governance

Relational governance refers to those inter-organisational exchange mechanisms that are not sanctioned through formal contractual positions – although, as we have just discussed, they may be heavily influenced/framed by contracting - but are manifest in custom and practice (e.g. regular 'how is it going' calls). They include social processes that promote norms of flexibility, solidarity, personal bonding and implicit understandings. These socially constructed, emergent, arrangements are not readily accessible through written documents and cannot be directly observed.

Arguably the central component of relational governance is the notion of trust (Lui and Ngo, 2004). There are many definitions of trust but the concept (see Table 2) is typically presented with two core elements: positive expectations regarding the intentions or actions of others and voluntary vulnerability towards another actor (Rousseau et al., 1998). In other words, the notion encompasses an acceptance of the partnering organisation's ability to fulfil a task, in combination with a belief in the goodwill and positive intention of the organisation (Mayer et al., 1995). Building on definitions by Anderson and Weitz (1989) and Anderson and Narus (1990) we define trust as the expectation that an *actor* can be relied on to fulfil obligations, will behave in a predictable manner, and will act and negotiate fairly when the possibility for opportunism is present.

It is also important to distinguish between inter-personal and inter-organisational notions of trust.

- *Inter-personal* trust is “the extent of a boundary-spanning agent’s trust in her counterpart in the partner organisation” (Zaheer et al., 1998, p.142). It is established among individuals of the contracting organisations based upon close interaction and personal ties (Macaulay, 1963; Kale et al., 2000).
- *Inter-organisational* trust is “the extent of trust placed in the partner organisation by the members of a focal organisation” (Zaheer et al., 1998, p.142).

Insert ‘Table 2 Representative literature on trust conceptualisation’ about here

In a variety of studies conducted over the last 20 years, management scholars (n.b. many studying supply networks, like the auto industry, with structural inertia) have placed a great deal of emphasis on the need to develop long-term relationships that are characterised by higher levels of trust [3]. In general terms, the existence of trust is assumed to reduce the risk of opportunistic behaviour and pragmatic recognition of this has led many exchange parties to move towards more collaborative relationships (Ghoshal and Moran, 1996). The effects of trust on performance have been identified as reduced transaction costs, greater openness and flexibility, closer collaboration and

coordination, inter-organisational learning, improved conflict management and enhanced capacity for innovation (Sako, 1992; Ganesan, 1994; Powell, 1996; Lane, 1998). In addition, studies have found that information sharing increases as perceptions of a partner's trustworthiness increases (Dyer and Chu, 2003). Another direct effect that reliance on trust has is an increase in learning and knowledge sharing between collaborating organisations (Dirks and Ferrin, 2001). Consequently, long-term relationships and trust are seen as encouraging effective communication, information sharing and joint pay-offs (Ring and Van de Ven, 1992; Dwyer et al., 1987) and may create strong social bonds between the actors involved (Barney and Hansen, 1994). Moreover, parties who trust each other are more willing to engage in cooperative activity through which further trust may be generated (Putnam, 1993).

Interactions between Contractual and Relational Governance

Given that "virtually every commercial transaction has within itself an element of trust, certainly any transaction conducted over a period of time" (Arrow, 1972, p.357) it is clear that, regardless of the specific advantages and disadvantages of contractual and relational governance (or indeed the constructs of classical and neoclassical contract theory) as stand-alone mechanisms, they are actually strongly complementary (if not indivisible) mechanisms.

Contractual Governance and Relationships

What comes first, the contract or the trust? Studies have shown that trusting relationships support open communication and this can have a significant impact on contract negotiations (Klein Woolthuis et al., 2005; Zheng et al., 2008). Equally, information sharing initiated by trusting relationships (Dyer and Singh, 1998), "enables organisations to record aspects of their relationships in formal contracts" (Vlaar et al., 2007, p.414). Even if, in practice, most companies involved in complex exchange understand that they are deploying incomplete contracts - containing non-legally enforceable and/or poorly specified intentions and conditions that may easily be misinterpreted by the courts (Deakin and Wilkinson, 1998) - that "go beyond what is verifiable" (Chen, 2000, p.211), this can have advantages (Bernheim and Whinston, 1998). As an illustration, although ambiguity may increase the likelihood of conflict and hinder the ability to coordinate activities and resources (Goldberg, 1976), gaps in an incomplete contract that are filled as contingencies arise can offer contracting organisations more flexibility in the execution of the agreement (Klein Woolthuis et al., 2005). Indeed incomplete contracts could be seen as offering more protection *in the presence of trust* because these social processes can fill the gaps that exist in the contract (Arrow, 1974).

Moreover, non-legally enforceable elements of a contract can still yield elements of formal control, by indicating limits of acceptability. Moreover, in a context where interactions take place over an extended timeframe (such as is common in a complex service-led asset acquisition process), the benefits of contractual governance are often presented as being quite 'informal': for example, as a means of cementing business relationships (Arrighetti et al.,

1997), or, as they represent promises or obligations to the future (Macneil, 1978), they can thus promote the emergence of mutual trust (Parkhe, 1993).

This is supported by Deakin et al.'s (1997) study where contracts are used as planning and incentivisation tools in long-term business relationships.

Contracting parties draw up contracts with the intention to safeguard the relationship against outside contingencies and not to safeguard against opportunism (Klein Woolthuis et al., 2005). Other key features of contractual governance relate to its role in the termination of an exchange and conflict resolution. Relationship dissolution has been found to be particularly challenging when there is no written contract in place and when the relationship is of an exclusive, long-term nature, involving substantial investments by suppliers (Harrison, 2004).

Reflecting this interaction, a number of authors argue that 'relational contracts' can help to circumvent the difficulties involved in 'complete' complex (product-service) contracting (Macneil, 1980, p.4; Baker et al., 2002). Specifically, rather than seeking to detail a contract "ex ante in terms that can be verified ex post by the third party, a relational contract can be based on outcomes that are observed by only the contracting parties ex post, and also on outcomes that are prohibitively costly to specify ex ante" (Baker et al., 2002, p.40; Rahman and Kumaraswamy, 2002).

Relational Governance and Contracts

Advocates of the transaction cost economics [4] (TCE) perspective on inter-organisational behaviour present a great deal of evidence to support the

assertion that calculation, not trust, determines cooperative behaviour (Williamson, 1996). Kern's (1998) study of low- and high-trust in the German Economy for example, suggested that overly trusting situations can lead to stagnation as a result of "lock-in situations" between firms, and subsequently to risk-avoidance and the drying up of innovation.

Moreover, Poppo et al. (2008) point out that trust not only binds, but also blinds parties. This view is supported by Uzzi (1997), arguing that long-standing, relationally embedded relationships may suffer from sub-optimal information search. That is, organisations will become "locked-into" those relationships and thereby neglect to obtain other relevant information from the market. Such information may, for instance, prove vital for spotting shifting market trends or emerging innovative technology.

Similarly, although trust resolves uncertainty about partners' motives (Gulati et al., 2005), complex contracts clearly offer some protection from coordination failures and as a result, contracts might provide the foundation for future interaction and cooperation: Bachmann's (2001) study revealed that detailed and lengthy contracts are not necessarily interpreted as signalling distrust, but can function as a reaffirmation of expectations.

In summary, like contractual governance, relational governance (with trust as its key component) is equally unreliable as a stand-alone safeguard and therefore some form of formal control is needed to reduce the hazards of opportunism in relationships. In the next section, we will use these building blocks to start constructing an integrative model of the governance process in interactive relationships.

Discussion: Refining the Conceptual Model

Using these building blocks, this section will refine a more comprehensive model of governance in complex (product-service) inter-organisational systems. Specifically it will explore the interactions between complex contracts and inter-organisational and inter-personal trust over time.

Contracting for Complex (Product-Service) Arrangements

Contracts occupy a crucial role at key stages in nearly all commercial interactions but for those organisations entering into product-service arrangements, necessarily encompassing complex future contingencies, there is a natural tendency for any contracting process to become more expensive, more complex and, paradoxically, more 'incomplete'. Although there has been – surprisingly perhaps - limited longitudinal research exploring the role of contracts (Halldórsson and Skjøtt-Larsen, 2006), it seems likely that, given that most of these are long-term arrangements, subsequent contract variations, arranged to reflect inevitable changes over time, will reinforce the complexity. Interestingly of course, although a product-service exchange may be heavily reliant on contractual mechanisms, this endogenous complexity and/or incompleteness may mean the arrangement lacks meaningful enforcement capabilities. Noting that the perceived risk of sunk costs (i.e. expenditure to build social capital between buyers/suppliers who do not ultimately commit to a commercial exchange) and various exogenous legal requirements (e.g. EU procurement regulations) is likely to strongly influence the precise level of investment in the development of relational governance, it is crucial to accent

the significant benefits to all parties from greater emphasis on relational governance.

Building Trust in Complex (Product-Service) Arrangements

The process of constructing contractual 'artefacts' is the subject of extensive codification and formalisation whereas the development and maintenance of trust between exchange parties is a more ambiguous and collaborative endeavour - a cyclical process of recurrent bargaining, commitment, and execution events between partners (Ring and Van de Ven, 1994). As discussed earlier, the notion of trust also has to be considered at two different levels of analysis - personal and organisational - and consideration of how these interact will help to further structure the governance model.

Connecting Inter-personal and Inter-organisational Trust

Consider the beginning of a 'typical' complex product-service exchange: informal meetings between key 'boundary-spanning' individuals (e.g. procurement manager and key account manager) prove extremely useful for building up trust. Over time these strong inter-personal ties, allowing for the effective exchange of "fine-grained" information (Uzzi, 1997) that can help to create common norms and compatible cultures (Doz and Hamel, 1998), provide effective channels through which partners learn and share knowledge (Gulati and Gargiulo, 1999; Lawson et al., 2009). Moreover, 'openness' can help address sensitive ex-ante relationship issues such as relationship termination and contractual penalties. Contracts can prescribe the formation of formal

integrative mechanisms, such as meetings and teams, which have the potential to create/enhance social exchange (Lawson et al., 2009) they cannot enforce informal exchange and cannot mandate the eventual success of any such initiatives. Over time, establishing organisational frameworks, possibly supported by contracts, which 'translate' these routines of information sharing and knowledge exchange from an inter-personal level to an inter-organisational level is vital for the relationship. These more formal inter-organisational arrangements can then facilitate further formation of inter-personal trust. This is particularly significant if there will be changes in key personnel as the project moves from bid/negotiation to build/operate phases.

The Model

In combining these elements into a single model it is important to reflect on the nature of their interactions and in particular whether specific governance ingredients need to be deployed in a particular sequence? Three 'stages' are identifiable from the preceding arguments:

1. Encouraging individuals to engage in frequent boundary-spanning activities is arguably the critical initial stage (e.g. pre-contract and bid phases) (Malhotra and Murnighan, 2002). In the absence of inter-personal trust, all subsequent processes will be more challenging.
2. Effective contracts build on established inter-personal trust. Moreover, contracts should include explicitly 'relational' mechanisms for building inter-organisational trust: such as cross-organisation teams, regular

meetings, off-site 'away-days', etc. These should be deployed before key initial boundary spanners leave any project; as they will provide the basis for the next generation of inter-personal relationships.

3. Given the inevitability of subsequent contractual revisions, these should be treated as a stock take of the relationship and content relating to knowledge-transfer and learning mechanisms should be revised as logically as commercial terms.

Insert 'Figure 2 Governance of complex (product-service) inter-organisational system' about here

To reiterate, the conceptual model presents inter-organisational governance as a continuum of contractual and relational (itself a continuum from individual to organisational) mechanisms - different but mutually inter-dependent. It also draws out the dynamic interplay of these mechanisms over time - the three governance stages detailed above are labelled 1, 2 and 3 on the figure.

Conclusions and Implications

By deploying a range of extant theoretical resources in constructing a model of governance in these complex inter-organisational systems, this conceptual paper set out to generate new insights for the emerging debate around 'service-led' procurement arrangements. Key conclusions can be highlighted in three areas. First, having considered the advantages and disadvantages of contractual and relational governance as stand-alone mechanisms, it was clear

that they are actually distinct but inseparable parts of a governance continuum. For instance, contract negotiations should focus on clarifying assumptions and expectations towards the long-term relationship, rather than 'merely' focusing on the establishment of contractual safeguards. Second, enacting this notion of a governance continuum necessarily involves multi-level interactions and transitions. For example, inter-personal trust, as exercised by individual boundary-spanners, needs to be connected to the inter-organisational contracting process. These interactions are also driven by the differential dynamics of the two core components. Once a complex contract has been established at the outset of the relationship, its importance will only reduce marginally. However, relational governance (especially if based primarily on boundary-spanning relationships) can easily diminish if key individuals leave the project. Rebuilding these relationships is a slow sequential and incremental process. Finally, the deployed sequence for particular components has an impact on the effectiveness of the overall governance. For example, initiating any complex interaction without an early emphasis (i.e. investment) in building inter-personal trust is likely to create barriers to developing an appropriate contract.

Potential Lessons for Practice

Although always intended to be a conceptual paper, the following implications have practical resonance. First, capabilities for contractual governance should be seen as a crucial, but not sufficient 'qualifier' for effective product-service exchange. Effective inter-organisational governance requires a complementary

– not substitute - emphasis on pro-active relational governance. Second, investment in boundary-spanning individuals is likely to have a positive effect on interactive exchange relationships. These 'information rich' exchanges will inevitably be enhanced in both the short (i.e. during contract negotiations) and long-term by increased levels of relevant and trustworthy information flow. Third, ensuring the sustainability of any positive performance generated from developing inter-personal trust depends not only on establishing boundary-spanning relationships among individuals, but also on translating those relationships into formal inter-organisational frameworks. Inter-organisational frameworks overcome the fragility of individual relationships by manifesting, for instance, information exchange procedures. Thus, a central focus for exchange governance should be the maintenance and translation of inter-personal relationships into inter-organisational frameworks.

Limitations and Future Research

Any conceptual study has limitations, but it is important to stress that this model should not be seen as an end in itself but rather the point of departure for further theorizing and, crucially, empirical research (Melnik and Handfield, 1998). A range of different research questions and methods could be considered: for example, longitudinal empirical research considering DBO-type arrangements will help to investigate the interaction and roles of contractual and relational governance mechanisms over extended time periods. Rich empirical investigation would also help to describe the different paths of both governance mechanisms, their interplay over time and understand their impact

on overall performance. Equally, the product-service phenomenon has emerged in a wide range of areas and a cross-sectoral analysis (possibly using a large scale survey instrument) could illuminate important trends and lessons to be learnt.

References

- Achrol, R.V. and Gundlach, G.T. (1999) Legal and social safeguards against opportunism in exchange. *Journal of Retailing*, **75**(1), 107-124.
- Anderson, J.C. and Narus, J.A. (1990) A model of distributor firm and manufacturer firm working partnerships. *Journal of Marketing*, **54**(1), 42-58.
- Anderson, E. and Weitz, B. (1989) Determinants of continuity in conventional industrial channel dyads. *Market Science*, **8**(4), 310-323.
- Araujo, L.; Dubois, A. and Gadde, L. (1999) Managing interfaces with suppliers. *Industrial Marketing Management*, **28**(5), 497-506.
- Arrighetti, A.; Bachmann, R. and Deakin, S. (1997) Contract law, social norms and inter-firm cooperation. *Cambridge Journal of Economics*, **21**(2), 171-195.
- Arrow, K.J. (1972) Gifts and exchanges. *Philosophy and Public Affairs*, **1**(4), 343-362.
- Arrow, K.J. (1974) *The Limits of Organization*, New York: Norton.
- Bachmann, R. (2001) Trust, power and control in trans-organizational relations. *Organization Studies*, **22**(2), 337-365.
- Baker, G.; Gibbons, R. and Murphy, K.J. (2002) Relational contracts and the theory of the firm. *The Quarterly Journal of Economics*, **117**(1), 39-84.
- Barney, J.B. and Hansen, M.H. (1994) Trustworthiness as a source of competitive advantage. *Strategic Management Journal*, **15**(9), 175-190.
- Bernheim, B.D. and Whinston, M.D. (1998) Incomplete contracts and strategic ambiguity. *The American Economic Review*, **88**(4), 902-932.
- Bijlsma-Frankema, K. and Costa, A.C. (2005) Understanding the trust-control nexus. *International Sociology*, **20**(3), 259-282.

Bradach, J.L. and Eccles, R.G. (1989) Price, authority, and trust: from ideal types to plural forms. In: Scott, W.R. (ed.) *Annual Review of Sociology*, **15**, Palo Alto, CA: Annual Reviews, 97-118.

Brady, T., Davies, A. and Gann, D. (2005) Creating value by delivering integrated services. *International Journal of Project Management*, **23**(5), 360–365.

Caldwell, N.; Roehrich, J.K. and Davies, A.C. (2009) Procuring complex performance in construction: London Heathrow Terminal 5 and a Private Finance Initiative hospital. *Journal of Purchasing & Supply Management*, **15**(3), 178-186.

Chen, Y. (2000) Promises, trust, and contracts. *Journal of Law, Economics and Organization*, **16**(1), 209-232.

Currall, S.C. and Inkpen, A.C. (2002) A multilevel approach to trust in joint ventures. *Journal of International Business Studies*, **33**(3), 479–495.

Davies, A., Brady, T. and Hobday, M. (2007) Organizing for solutions: systems seller vs. systems integrator. *Industrial Marketing Management*, **36**(2), 183–193.

Davis, L.E. and North, D.C. (1971) *Institutional Change and American Economic Growth*, Cambridge, UK: Cambridge University Press.

Deakin, S. and Wilkinson, F. (1998) Contract law and the economics of interorganisational trust. In: Lane, C. and Bachmann, R. (eds.), *Trust Within and Between Organisations: Conceptual Issues and Applications*, Oxford: Oxford University Press, 146-172.

Deakin, S.; Lane, C. and Wilkinson, F. (1997) Contract law, trust relations, and incentives for co-operation: A comparative study. In: Deakin, S. and Michie, J. (eds.), *Contracts, Cooperation and Competition*, Oxford: University Press, 105-139.

Deutsch, M. (1958) Trust and suspicion. *The Journal of Conflict Resolution*, **2**(4), 265-279.

De Wever, S.; Martens, R. and Vandenbempt, K. (2005) The impact of trust on strategic resource acquisition through interorganizational networks: Towards a conceptual model. *Human Relations*, **58**(12), 1523–1543.

Dirks, K.T. and Ferrin, D.L. (2001) The role of trust in organizational settings. *Organization Science*, **12**(4), 450-467.

Doz, Y.L. and Hamel, G. (1998) *Alliance Advantage: The Art of Creating Value through Partnering*, Boston, MA: Harvard Business School Press.

- Dwyer, F.R.; Schurr, P.H. and Oh, S. (1987). Developing buyer-seller relationships. *Journal of Marketing*, **51**(2), 11-27.
- Dyer, J.H. and Chu, W. (2003) The role of trustworthiness in reducing transaction costs and improving performance: Empirical evidence from the United States, Japan, and Korea. *Organization Science*, **14**(1), 57-68.
- Dyer, J.H. and Singh, H. (1998) The relational view: Cooperative strategy and sources of interorganizational competitive advantage. *Academy of Management Review*, **23**(4), 660-679.
- Ganesan, S. (1994) Determinants of long-term orientation in buyer-seller relationships. *Journal of Marketing*, **58**(1), 865-886.
- Gann, D.M. and Salter, A.J. (2000) Innovation in project-based, service-enhanced firms: the construction of complex products and systems. *Research Policy*, **29**(7-8), 955-972.
- Geyskens, I.; Steenkamp, J.B. and Kumar, N. (1998). Generalizations about trust in marketing channel relationships using meta-analysis. *International Journal of Research in Marketing*, **15**(3), 223-248.
- Ghoshal, S. and Moran, P. (1996) Bad for practice: A critique of the transaction cost theory. *Academy of Management Review*, **21**(1), 13-47.
- Giunipero, L.C.; Hooker, R.E.; Joseph-Mathews, S.; Yoon, T. and Brudvig, S. (2008) A decade of SCM literature: Past, present, and future implications. *Journal of Supply Chain Management*, **44**(4), 66-86.
- Goldberg, V.P. (1976) Towards an expanded theory of contract. *Journal of Economic Issues*, **10**(1), 45-61.
- Granovetter, M.S. (1985) Economic action and social structure: The problem of embeddedness. *American Journal of Sociology*, **91**(3), 481-510.
- Gulati, R. (1995) Does familiarity breed trust? The implications of repeated ties for contractual choice in alliances. *Academy of Management Journal*, **38**(1), 85-112.
- Gulati, R. and Gargiulo, M. (1999) Where do interorganizational networks come from? *American Journal of Sociology*, **104**(5), 1439-1493.
- Gulati, R.; Lawrence, P.R. and Puranam, P. (2005) Adaptation in vertical relationships: Beyond incentive conflict. *Strategic Management Journal*, **26**(5), 415-440.
- Håkansson, H. (ed.). (1982) *International Marketing and Purchasing of Industrial Goods: An Interaction Approach*, Chichester: Wiley.

- Håkansson, H. and Ford, D. (2002) How should companies interact in business networks? *Journal of Business Research*, **55**(2), 133–139.
- Halldórsson, A. and Skjøtt-Larsen, T. (2006) Dynamics of relationship governance in TPL arrangements – a dyadic perspective. *International Journal of Physical Distribution & Logistics Management*, **36**(7), 490–506.
- Harrison, D. (2004) Is a long-term business relationship an implied contract? Two views of relationship disengagement. *Journal of Management Studies*, **41**(1), 107–125.
- Hart, O. (1988). Incomplete contracts and the theory of the firm. *Journal of Law, Economics and Organization*, **4**(1), 119–139.
- Holcomb, T.R. and Hitt, M.A. (2007) Toward a model of strategic outsourcing. *Journal of Operations Management*, **25**(2), 464–481.
- Johnston, D.A.; McCutcheon, D.M.; Stuart, F.I. and Kerwood, H. (2004) Effects of supplier trust on performance of cooperative supplier relationships. *Journal of Operations Management*, **22**(1), 23–38.
- Kale, P.; Singh, H.; Perlmutter, H. (2000) Learning and protection of proprietary assets in strategic alliances: Building relational capital. *Strategic Management Journal*, **21**(3), 217–237.
- Kern, H. (1998) Lack of trust, surfeit of trust: Some causes of the innovation crisis in German industry. In: Lane, C. and Bachmann, R. (eds.), *Trust Within and Between Organizations: Conceptual Issues and Empirical Applications*, Oxford: Oxford University Press, 203–214.
- Klein Woolthuis, R.K; Hillebrand, B. and Nooteboom, B. (2005) Trust, contract and relationship development. *Organization Studies*, **26**(6), 813–840.
- Kumar, N.; Scheer, L.K. and Steenkamp, J.-B.E.M. (1995) The effects of supplier fairness on vulnerable resellers. *Journal of Marketing Research*, **32**(1), 54–65.
- Kumaraswamy, M.M. and Zhang, X.Q. (2001) Governmental role in BOT-led infrastructure development. *International Journal Project Management*, **19**(4), 195–205.
- Lane, C. (1998) Introduction: Theories and issues in the study of trust. In: Lane, C. and Bachmann, R. (eds.), *Trust Within and Between Organizations: Conceptual Issues and Empirical Applications*, Oxford: Oxford University Press, 1–30.

- Lawson, B.; Petersen, K.J.; Coursins, P.D. and Handfield, R.B. (2009) Knowledge sharing in interorganizational product development teams: The effect of formal and informal socialization mechanisms. *Journal of Product Innovation Management*, **26**(2), 156-172.
- Leiringer, R.; Green, S.D. and Raja, J.Z. (2009) Living up the value agenda: the empirical realities of through-life value creation in construction. *Construction Management and Economics*, **27**(3), 271-285.
- Lewis, M.A. and Roehrich, J.K. (2009) Contracts, relationships and integration: Towards a model of the procurement of complex performance. *International Journal of Procurement Management*, **2**(2), 125-142.
- Lindberg, N. and Nordin, F. (2008) From products to services and back again: towards a new service procurement logic. *Industrial Marketing Management*, **37**(1), p292-300.
- Lui, S.S. and Ngo, H.-Y. (2004) The role of trust and contractual safeguards on cooperation in non-equity alliances. *Journal of Management*, **30**(4), 471-485.
- Luo, Y. (2002) Contract, cooperation, and performance in international joint ventures. *Strategic Management Journal*, **23**(10), 903-919.
- Lyons, B. and Mehta, J. (1997) Contracts, opportunism and trust: Self-interest and social orientation. *Cambridge Journal of Economics*, **21**(2), 239-257.
- Macaulay, S. (1963) Non-contractual relations in business: A preliminary study. *American Sociological Review*, **28**(1), 55-67.
- Macho-Stadler, I. and Pérez-Castrillo, J.D. (2001) *An Introduction to the Economics of Information: Incentives and Contracts*. Oxford: University Press.
- Macneil, I.R. (1978) Contracts: Adjustment of long-term economic relations under classical, neoclassical, and relational contract law. *Northwestern University Law Review*, **72**(6), 854-905.
- Macneil, I.R. (1980) *The New Social Contract: An Inquiry into Modern Contractual Relations*, London: Yale University Press.
- Malhotra, D. and Murnighan, J.K. (2002) The effects of contracts on interpersonal trust. *Administrative Science Quarterly*, **47**(3/4), 534-559.
- Mathieu, V. (2001a) Product services: from a service supporting the product to a service supporting the client. *The Journal of Business and Industrial Marketing*, **16**(1), 39-61.

- Mathieu, V. (2001b) Service strategies within the manufacturing sector: benefits, costs and partnership. *International Journal of Service Industry Management*, **12**(5), 451-475.
- Mayer, R.; Davis, J. and Schoorman, F. (1995) An integrative model of organizational trust. *Academy of Management Review*, **20**(3), 709-734.
- Melnyk, S.A. and Handfield, R.B. (1998) May you live in interesting times ... the emergence of theory-driven empirical research. *Journal of Operations Management*, **16**(4), 311-319.
- Morgan, R.M. and Hunt, S.D. (1994) The commitment-trust theory of relationship marketing. *Journal of Marketing*, **58**(3), pp.24-38.
- North, D.C. (1990) *Institutions, Institutional Change and Economic Performance*, Cambridge: University Press.
- Parkhe, A. (1993) Strategic alliance structuring: A game theoretic and transaction cost examination of interfirm cooperation. *Academy of Management Journal*, **36**(4), 794-829.
- Plambeck, E.L. and Zenios, S.A. (2000) Performance-based incentives in a dynamic principal-agent model. *Manufacturing & Service Operations Management*, **2**(3), 240-263.
- Poppo, L. and Zenger, T. (2002) Do formal contracts and relational governance function as substitutes or complements? *Strategic Management Journal*, **23**(8), 707-725.
- Poppo, L.; Zhou, K.Z. and Zenger, T.R. (2008) Examining the conditional limits of relational governance: Specialized assets, performance ambiguity, and long-standing ties. *Journal of Management Studies*, **45**(7), 1195-1216.
- Powell, W.W. (1996) Trust based form of governance. In: Kramer, R.M. and Tyler, T.R. (eds.), *Trust in Organizations: Frontiers of Theory and Research*, Thousand Oaks, CA: Sage, 51-67.
- Putnam, R.D. (1993) The prosperous community: Social capital and public life. *American Prospect*, **13**, 35-42.
- Rahman, M.M. and Kumaraswamy, M.M. (2002) Joint risk management through transactionally efficient relational contracting. *Construction Management and Economics*, **20**, 45-54.
- Rindfleisch, A. and Heide, J.B. (1997) Transaction cost analysis: Past, present, and future applications. *Journal of Marketing*, **61**(4), 30-54.

- Ring, P.S. and Van de Ven, A.H. (1992) Structuring cooperative relationships between organizations. *Strategic Management Journal*, **13**(7), 483-498.
- Ring, P.S. and Van de Ven, A.H. (1994) Developmental processes of cooperative interorganizational relationships. *Academy of Management Review*, **19**(1), pp.90-118.
- Rousseau, D.; Sitkin, S.; Burt, R., and Camerer, C. (1998) Not so different after all: A cross-discipline view of trust. *Academy of Management Review*, **23**(3), 393-404.
- Sako, M. (1992) *Prices, Quality and Trust: Inter-firm Relations in Britain and Japan*, Cambridge: University Press.
- Sako, M. and Helper, S. (1998) Determinants of trust in supplier relations: Evidence from the automotive industry in Japan and the United States. *Journal of Economic Behavior & Organization*, **34**(3), pp.387-417.
- Salanié, B. (1997) *The Economics of Contracts: A Primer*, London: The MIT Press.
- Sitkin, S.B. and Roth, N.L. (1993) Explaining the limited effectiveness of legalistic remedies for trust/distrust. *Organization Science*, **4**(3), pp.367-392.
- Uzzi, B. (1997) Social structure and competition in interfirm networks: The paradox of embeddedness. *Administrative Science Quarterly*, **42**(1), 35-67.
- Vandaele, D.; Rangarajan, D; Gemmel, P. and Lievens, A. (2007) How to govern business services exchanges: Contractual and relational issues. *International Journal of Management Reviews*, **9**(3), 237-258.
- Van der Valk, W. (2008) Service procurement in manufacturing companies: results of three embedded case studies. *Industrial Marketing Management*, **37**(1), 301-315.
- Vlaar, P.W.L.; Van den Bosch, F.A.J. and Volberda, H.W. (2007) On the evolution of trust, distrust, and formal coordination and control in interorganizational relationships: Toward an integrative framework. *Group Organization Management*, **32**(4), 407-429.
- Williamson, O.E. (1985) *The Economic Institutions of Capitalism*, New York: Free Press.
- Williamson, O.E. (1996) *The Mechanisms of Governance*, London: Oxford University Press.
- Wise, R. and Baumgartner, P. (1999) Go downstream: the new imperative in manufacturing. *Harvard Business Review*, **77**(5), 133-141.

Zaheer, A.; McEvily, B. and Perrone, V. (1998) Does trust matter? Exploring the effects of interorganizational and interpersonal trust on performance. *Organization Science*, **9**(2), 141-159.

Zand, D.E. (1972) Trust and managerial problem solving. *Administrative Science Quarterly*, **17**(2), pp.229-239.

Zenger, T.R.; Lazzarini, S.G., and Poppo, L., (2002) Informal and formal organization in new institutional economics. *Journal of Advances in Strategic Management*, **19**, 277-305.

Zheng, J.; Roehrich, J.K. and Lewis, M.A. (2008) The dynamics of contractual and relational governance: Evidence from long-term public-private procurement arrangements. *Journal of Purchasing & Supply Management*, **14**(1), 43-54.

Endnotes

[1] The authors classified four different types of relationships between buyers and suppliers: Standardised; Specified; Translation, and Interactive. This work builds directly on the Industrial Marketing and Purchasing (IMP) group's approach to interactions between customer and supplier (e.g. Håkansson, 1982, Håkansson and Ford, 2002).

[2] In addition to these structural factors, the bounded rationality of the human actors' involved (e.g. TCE and Agency Theory) also contributes to incomplete contracts (Hart, 1988).

[3] Giunipero et al.'s (2008) comprehensive literature review highlights that the number of research studies on trust in buyer-supplier relationships increased dramatically over the last decade.

[4] Assuming opportunism and bounded rationality (Rindfleisch and Heide, 1997), Transaction cost economics (TCE) asserts that firms attempt to minimise transaction costs by "assigning transactions (which differ in their attributes) to governance structures (the adaptive capacities and associated costs of which differ) in a discriminating way" (Williamson, 1985, p.18). As a result, firms only internalise activities where adverse costs might arise from operational difficulties in a market exchange, primarily uncertainty, frequency, and asset-specificity.

Tables and Figures

	Types of asymmetric information		
<i>Risk</i>	"Moral Hazard"	"Adverse Selection"	"Hold up"
<i>Asymmetric Information Problem</i>	Hidden Action /Information Problem	Hidden Characteristics Problem	Hidden Intention Problem
<i>Time</i>	Ex post (after signing a contract)	Ex ante (before signing a contract)	Ex post (after signing a contract)
<i>Principal</i>	Cannot completely control the activities undertaken by the agent (even if the principal can fully monitor the actions, he has limited ability to judge them properly).	Cannot judge the agent's "quality" indicated by productivity, soft skills, education etc. Cannot judge the plans of the agent if and how to maximise the agent's profit	Observes that an agent maximises his own profit instead of realising the principal's objectives Principal might still find it optimal to further employ the agent because of irreversible investments ("sunk costs")

Table 1 Types of asymmetric information

Source	Conceptualisation of Trust <i>(inter-personal and inter-organisational)</i>
Deutsch (1958)	An individual may be said to have trust in the occurrence of an event if he expects its occurrence and his expectation leads to behaviour which he perceives to have greater negative motivational consequences, if the expectation is not confirmed than positive motivational consequences, if it is confirmed.
Zand (1972)	Actions that increase one's vulnerability to another whose behaviour is not under one's control in a situation in which the penalty one suffers, if the other abuses that vulnerability, is greater than the benefit one gains if the other does not abuse that vulnerability.
Granovetter (1985)	Confidence in the general morality of individuals.
Bradach and Eccles (1989)	The positive expectation that reduces the risk that the exchange partner will act opportunistically.
Anderson and Narus (1990)	A firm's belief that partners will perform actions that will result in positive outcomes for the firm and will not take unexpected actions that would result in negative outcomes for the firm.
Sitkin and Roth (1993)	The belief, attitude or expectation that the actions or outcomes of another individual or organisation will be acceptable or will serve the partner's interest.
Morgan and Hunt (1994)	Confidence in the partner's reliability and integrity.
Gulati (1995)	The particular level of subjective probability with which agents assess whether another agent or group will perform a particular action both before they can monitor such action and in a context in which it affects their own action.
Kumar et al. (1995)	The belief that the partner is honest and benevolent.
Uzzi (1997)	The belief that an exchange partner would not act in self-interest at another's expense and operates not with calculated risk but uses a heuristic approach, having a predilection to assume the best when interpreting another's motives and actions.
Sako and Helper (1998)	Expectation held by an agent that its trading partner will behave in a mutually expectable manner (including an expectation that neither party will exploit the other's vulnerabilities).
Rousseau et al. (1998)	A psychological state comprising the intention to accept vulnerability based on positive expectations of the intentions or the behaviour of another.
Zaheer et al. (1998)	The leap of faith by placing confidence in a referent without knowing with absolute certainty that the referent's future actions will not produce unpleasant surprises.
Currall and Inkpen (2002)	Trust is the decision to rely on a partner with the expectation that the partner will act according to a common agreement.
Johnston et al. (2004)	Supplier's perception of buyer's dependability and supplier's perception of buyer's benevolence.
De Wever et al. (2005)	The willingness of a party to be vulnerable to the actions of another party, based on the expectation that the other will perform a particular action important to the truster, irrespective of their being the ability to monitor or control that other party.

Table 2 Representative literature on trust conceptualisation

(adapted from Geyskens et al., 1998, p.226)

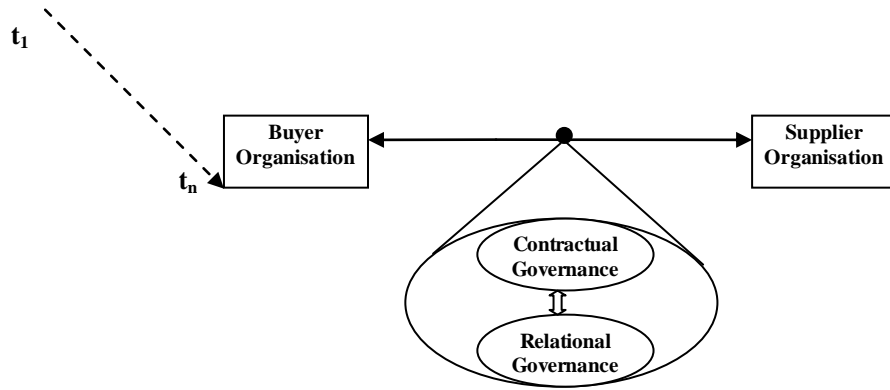


Figure 1 Initial inter-organisational conceptual framework

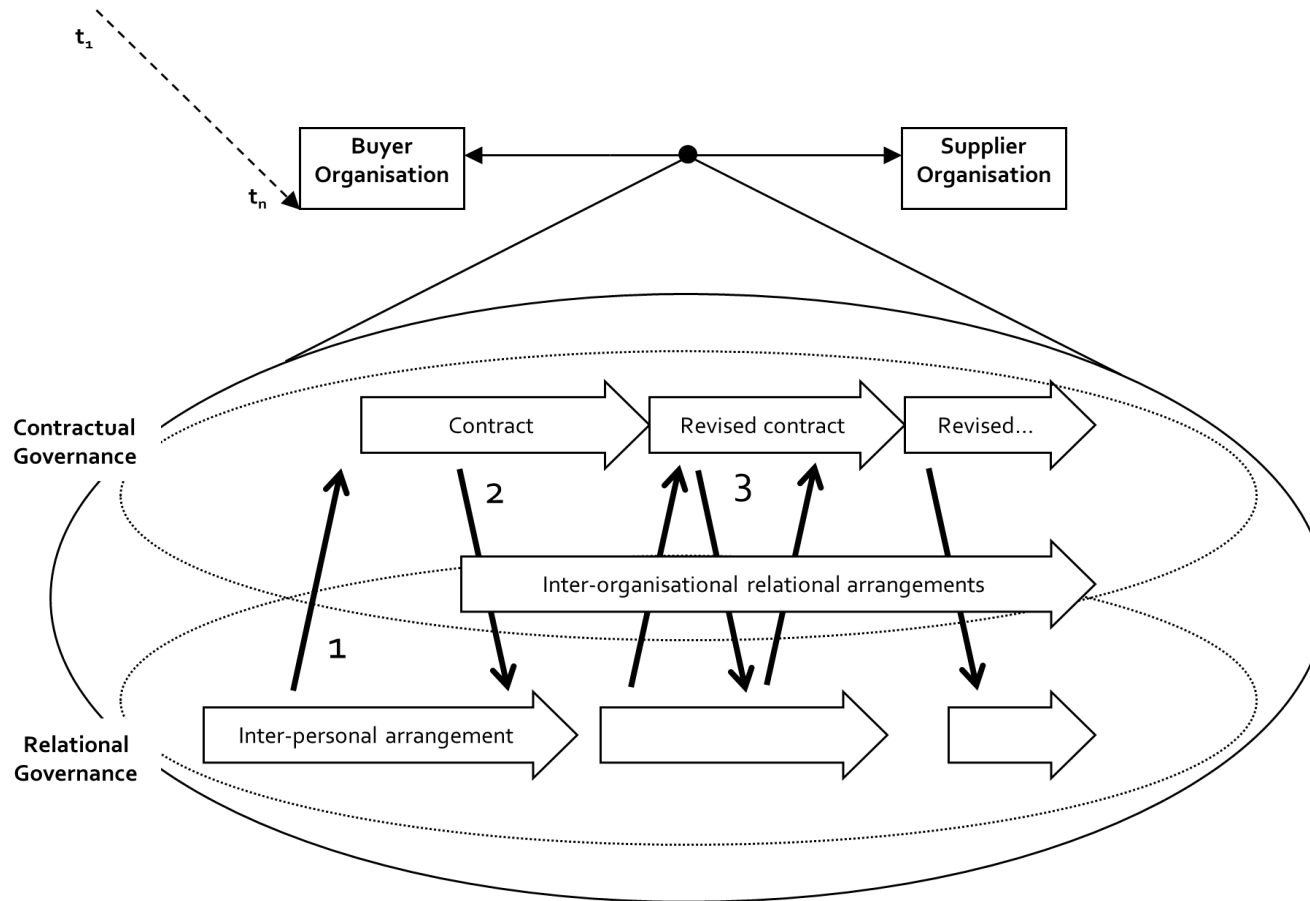


Figure 2 Governance of complex (product-service) inter-organisational system