Citation for published version:
Kapsali, M, Roehrich, KJ & Caldwell, N 2013, The systemic contract: Measuring how effective contract rules are in organizing complex projects. in *EurOMA2013 conference, Dublin/Ireland .*

Publication date:
2013

Document Version
Early version, also known as pre-print

Link to publication

University of Bath

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Download date: 12. Nov. 2024

The systemic contract: measuring how effective contract rules are in organizing complex projects

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Theory in operations and project management is engaged in both the application of complexity theory in projects and the use of contracts, but it offers limited insights into complexity in contracts. Drawing on classical and neo-classical/relational contracting theory, we measure the efficacy of contract rules in resulting in compliant behaviour in contracts of complex program settings. We use 23 case studies and fuzzy-set Qualitative Comparative Analysis. Our findings illustrate the bridging of classic and relational contracting theories, offering a contract that combines both approaches based on simpler control structures and a combination of practical and emancipatory rules.

Keywords: Contract rules, complex projects, analytic induction, QCA

Purpose

Complex projects and/or procurement arrangements often face problems delivering on contractually stipulated levels (Standish, 2004). For instance, the failures of the National Health Service's National Program for IT, multimillion European Union funded and large Private Public Partnership projects have lost billions and led to the poor delivery of services. These complex projects and procurement arrangements were governed by contracts with rule structures which lacked enforcement or predictive power, and ended up in frequent renegotiations or project failures (Turner, 2004; Williams, 1999; Segal, 1999).

In line with practice, extant classical and relational contracting theories have not yet managed to provide effective rule structures. Instead there is a steady increase in the variety of contract regulation (i.e. 'more' control rules) to reduce unpredictable behaviour in complex project settings. Although studies have mentioned that contracts are often too complex to be effective, extant literature offers no empirical evidence that measure which contract rules are actually effective in complex project settings. As an effect, contract managers do not know which rules cause which types of behaviour and which the optimal level of contract complexity is.

We argue that this lack of knowledge is because methods in extant studies do not sufficiently explain the *causal complexity* between contract rules and the emergent complexity within project activities. Causal complexity is the entanglement among cause and effect which is characteristic in social systems: when the relation between cause and effect is asymmetrical, non-deterministic and non-linear (Goertz, 2006). Our study addresses exactly this lacuna since we *measure the effectiveness of contract rules to produce compliant behaviour within complex projects.*

Conceptual background

Contracts in complex projects

Extant literature offers limited guidance for research and for practice into the governance of complex projects (Hass, 2009; Curlee and Gordon, 2008), especially in ways to cope with complexity instead of containing it as an organizing mechanism. Complexity governance is value-driven and moves away from the milestone-driven linear perspective in project governance (Curlee and Gordon, 2011). While we acknowledge the importance of milestone-driven governance, this study zooms in on the holistic role of contracts in complex project-based settings.

Contracts in projects are used as a tool to reduce and contain complexity. While contracts manage complexity to an extent, the contract itself is also a cause of complexity. Bosch-Rekveldt et al., (2011) found that the *type of contract* is amongst the 40 sources of complexity identified in studies of projects, and in fact it is the 6th most frequent mentioned.

Extant research comparing different types of contracts in project-based settings (Turner, 2004) has focused on rules that are designed to reduce and control complexity. These rules target the governance of boundary relations, and they are usually focused on risk transfer and risk sharing, goal alignment and cooperation through incentives by contract pricing (Turner and Simister, 2001, van Marrewijk et al., 2008), alliances, partnering and procurement (Winch, 2010), agent relationships (Müller and Turner, 2005) and relational incompleteness (Dyer and Singh, 1998). There is also work on the key classical and relational 'ingredients' of contracts (see next section) are substitutes or complements (Poppo and Zenger, 2002) and various forms of trust (Klein Woolthuis Hillebrand and Nooteboom, 2005). This work applied mostly transaction cost, agent theory, information processing (Winch, 2010) and relational thinking (Dyer and Singh, 1998). Outcome-based contracts and their equivalent of performance-based contracts, in particular, were found to pose immense difficulties on delivery since they depend on co-production practices in an effort to align risks and incentives between suppliers and customers (Remington, 2011). However co-production practices raise a host of coordination problems. The focus is on the value delivered or the benefit realized to the customer but the participation of the customer co-productive processes is problematic. Perspectives of value or benefit are subjective and so are the standards of service

behaviour and skills, as well as understanding of capacity. Projects governed by outcome-based contracts have usually faced problems at the interfaces between parties because they depend not only on the capacity of the members to understand each other's interpretations but to co-predict the course of the project as well (ibid).

Whatever their type, what project contracts actually do is that they prescribe the project's decomposition in component parts, the ways in which each part is buffered or sealed-off in various degrees and the relations between parts in order to minimize risk and standardize their exchanges. This is a very effective way to reduce complexity and costs and it relies on modularity practices (such as information 'hiding', substitution, augmentation, exclusion, inversion parting, splitting and partial invalidity and severability), however decomposition through modularity practices is a hindrance to integration within a complex project for two reasons.

The first reason is because more modularity rules in the contract add complexity in activities which overwhelms the supervisory level (Ng, Maull and Yip, 2009). Secondly, modularity rules in project contracts raise the ability for mutual adjustment between project parts and the project managers have to perform an integrator role that requires of them to act outside contract specifications and compensate for the temporality and the restriction in relational ties between project parts (Martinsuo and Ahola, 2010). Thirdly, modularity practices are envisaged as top-down enforcements, where the contract rules are recipes of rewards and penalties. However, given the problems of complexity in activities, weakening of supervision and lack of integration, modularity rules often open windows for non-compliant behaviour- in this sense they are '*incomplete*' (see nest section). Often the incompleteness in the contract results in renegotiations, writing and unforeseen contingency costs, reducing the benefit of modular rules and raising the costs of writing them (Segal, 1999).

However, contractual governance should be more about directing evolution, not only about controlling action (Remington, 2011). Therefore what the contracting of complex projects needs is to create rules to enable an environment in which mutually dependent actors act around collective problems, in other terms that they can self-organize (Koppenjan and Klijn, 2004). Buuren, Boons and Tisman (2012) speak of two forms of self-organizing: the conservative form, which reproduces and standardizes patterns of behaviour to support structure; and the dissipative form that allows the system to transform and change structure to meet external conditions. We still lack a contract type which could accommodate both within complex projects.

The obstacle to construct a more effective project contract is that contract theories (see next section) have institutionalized the idea that contracts are enforcers of purposive top-down modular rules and not of self-organizing processes in a complex social system. In complex social systems however meaning of action is constructed from within and when an outside agency creates rules to enforce top-down then these rules will be overridden by an emergent reaction (Luhmann, 1996). This opposing logic stems from the classical or the neo-classical/relational contracting theories, which still produce complex contract structures without providing a middle-way solution. In the next section we discuss the two approaches, to understand the basis of the problem.

Classical and neo-classical contracting theories-incomplete and non-optimal

Classical contract theories usually discuss how to produce a complete and optimal contract. Complete is a contract that stipulates control responses to every possible type of opportunistic behaviour and future contingency (*complete*) at the lowest transaction cost relative to outcome (*optimal*) (Lyons and Metha, 1997). Modular control responses

usually take the form of cost and quality management rules, customer interaction rules, or supplier and interface management rules, which are often standardised (Smith, 2006). Complexity in rule structures elevates with the complexity in the transaction - for example, the specificity in customized transactions increases the number and type of rules devised for it (Joskow, 1988).

Classical contract studies argue that complex rule-structures are unavoidable (Eggleston et al. 2000) because the result of a complete contract that prepares for uncertainty is *inevitably* a complex one. However, in practice, contracts are actually *not as complex as they should be*, because the levels of complexity in contracts do not actually correspond to the complexity within real transactions (Eggleston et al., 2000). The high levels of complexity in classical contracts make them too rigid to deal with change in organizational practices, and often end in high (re)negotiation costs, asymmetric information, inadequacy to monitor performance effectively, conflicts, defensive behaviour (Esser, 1996; Gaski, 1984; Hirschman, 1984) and weakness in enforcing rules (Joskow, 1988).

An opposite approach comes from Macneil (1978) and Henisz et al., (2012) who argued that the discreet transaction logic is *incomplete in its entirety*, because classical contracts are actually *more complex than necessary*, paradoxically, because of a process of simplification by legal reasoning (Lewis, 1982). Neo-classical contracts introduced mediation through 'third party assistance' for resolving disputes or performance problems (Williamson, 1996; Macneil, 1978). Although beneficial, this solution did not reduce complexity. Later, relational contracts suggested mechanisms of trust and the development of a network of social ties that guarantee exchange-specific investments (Poppo and Zenger, 2002; Baker et al., 2002; Klein et al., 2005) and commitment to obligations that affect power and dependence (Provan and Gassenheimer, 1994).

Relational contracts replace risk allocation mechanisms under the classical approach with risk sharing ones which facilitate continuity and promote efficient adaptation. However, it has been argued that relational governance depends more on the absence or vagueness of regulation because we do not know which types of rules can effectively regulate long-term and dense social networks (North, 1990).

In an attempt to overcome incompleteness in both approaches, scholars argue that classical, neo-classical and relational contracting need to be deployed in a complimentary fashion in order to deal with the trade-off between completeness and optimality in contracts (Poppo and Zenger, 2002; Zheng et al., 2008). However, extant literature does not offer conclusive empirical evidence of how this kind of combination can be done in a contract structure (Aulakh and Gençtürk, 2008) as there have been only a few studies that have done empirical analysis on the comparative properties of formal contracts vis-à-vis relational contracts (Carson et al., 2006; Luo, 2002). In reality different modes of organizational settings are governed by either a classical or a more relational contract (Hagedoorn and Hesen, 2007) and not by a middle-way that incorporates both types of rules.

Research design

Based on our review of classical, neo-classical and relational contracting theories we contend that the lack of knowledge about effective contract rules stems from extant methods. Extant quantitative and qualitative methods do not sufficiently explain the *causal complexity* between the multitude of contractual rules and the emergent behaviour within complex settings. Causal complexity is the asymmetrical, non-deterministic and non-linear entanglement among causes and effects which is characteristic in social systems (Goertz, 2006).

Conventional deductive and inductive approaches have not explained causal complexity between contract rules and complexity within project activities (Goertz, 2006). we use fuzzy-set Qualitative Comparative Analysis ((fsQCA) of multiple case studies (Ragin, 2008) which investigates different combinations of conditions that generate an outcome, whilst sensitivity to interactions between variables is retained because QCA can combine '*the best features of the case-oriented approach with the best features of the variable-oriented approach*' (Ragin, 1987: 84).

We conducted 132 semi-structured interviews across 23 case studies, and collected project reports and contracts to triangulate our rich primary with secondary datasets. The case studies consist of projects that belong to three programs: six large UK Public Private Partnership construction projects, 3 Public Health and 14 ICT EU projects. We constructed an analytic frame from theory (table 1) using the conjunctural method (Yamasaki and Rihoux, 2009), where we used three types of contract variables (linkage-practical-emancipatory conditions) to categorize contract rules to measure project activities (from Smith, 2006). Then we used this frame to perform comparative fuzzy-set analysis.

Table 1: The analytic frame for fsQCA

Conditions	***Outcomes***
Linkage rules	Compliant (1)
Practical rules	Mostly compliant (0.75)
Emancipatory rules	-Ambiguous- (0.50)
	Insufficiently compliant (0.25)
	Non-compliant (0)

Linkage control rules to contain with opportunistic behaviour

Practical rules about communication and decision-making for generating all possible control responses

Emancipatory authority to self-organize to contingency

Values attributed to conditions

0	0.25	0.50	0.75	1
Not significant	*less significant*	*cross-over point*	*mostly significant*	*highly significant*
		the point of maximum ambiguity		

Analysis into steps: identifying cases, constructing the truth table and internal validity testing

In order to analyse data we followed a three step structured approach (Ragin, 2008). In a first step, set measures are used to construct a 'truth table'. The truth table enlists displays the causal conditions and their calibrated measures in each case together with their relative scores, and their logically possible configurations or *causal recipes* (Ragin, 2008). For this purpose, we reviewed the case studies through content analysis using NVivo (Marx and Dusa, 2011) and found evidence supporting the values we attributed to the conditions and outcomes according to the value scale in Table 1 (analytic frame) and constructed the truth table (see Table 2).

Table 2: The truth table with values attributed to conditions (contract rules) and outcomes (compliant-non compliant behaviour) according to the analytic frame

	Linkage	*Practical*	*Emancipatory*	*Outcome*
EARSS	0.75	0.75	0.75	1
	0.75	0.25	0.75	0.5
	0.5	0.75	0.5	1
IST - eTEN	1	1	0.5	0.75
	0.75	0.5	0.5	1
	1	0.5	0.25	0.25
	1	0.5	0.25	0.75
	1	1	0.5	0
	1	1	0.5	0.25
	1	0.5	0.25	0
	1	0.25	0.25	1
	1	0.25	0.25	0.75
	1	0.5	0.5	0.5
	1	0.25	0.5	0
	1	0.5	0.25	1
	1	0.25	0.5	0.25
	1	0.5	0.75	0
PPP	0.75	1	0	0.25
	0.75	0.75	0.25	0
	0.5	0.5	0.25	1
	0.75	0.75	0	0.5
	0.5	0.5	0.25	1
	0.5	0.75	0.25	0.75

In the second step, we selected two criteria to reduce the truth Table cases: a) the minimum consistency level of a solution. The first criterion ensures that the cases analysed are empirically important; and b) the minimum number of cases for a solution to be considered relevant for the analysis (coverage or degree of frequency). The first criterion, consistency, shows us what proportion of observed cases is consistent with the pattern (in other words consistency shows the degree to which cases correspond to the set relationships expressed in a configuration). We set the minimum consistency threshold to 0.75, which is a refined measure of consistency developed by Ragin (2006, 2008). We decided to investigate cases with compliant (1 or 0.75) outcomes in each truth Table and set the minimum number of cases for a solution to be considered relevant (Ragin, 2008).

The analysis proceeds to logically reduce the truth table to combinations of causal recipes that are significantly consistent and covered (Ragin, 2008). Therefore the third step was to analyze the truth tables and generate the most parsimonious configurations using the Quine-McCluskey minimization procedure in the fsQCA2.5.

Lastly, from the resultant list of configurations, we selected the ones with the highest consistency (>75%) and coverage to identify the configurations that are *significantly* repeated in the majority of successful cases and therefore indicate a general pattern. We interpreted these final configurations by looking back into the cases, unpacking their

dynamics to explain how these configurations led to the outcomes (see Discussion section). In fsQCA analysis, both the presence and absence of a condition or outcome are meaningful, therefore we interpreted both instances.

Results: The efficacy of contract rules on project behaviour

After following the steps outlined in the previous section, we arrived at a list of the significantly significant configurations of conditions which show us which combinations of conditions produced a compliant outcome in each contract (Table 3).

Table 3: The resulting configurations for each contract

	Positive Behaviour			
	Significant minimized configurations	*consistency*	*coverage*	*combined*
EARSS	~linkage*~practical	1	0.200000	0.444972
	practical	1	0.700000	0.832466
	linkage*~practical*emancipatory	0.8	0.400000	0.565685
	linkage*practical*~emancipatory	1	0.400000	0.629285
IST-eTEN	~linkage*emancipatory	1	0.038462	0.195133
	~linkage	1	0.038462	0.195133
PPP	~linkage*practical*emancipatory	0.750000	0.214286	0.376070
	~linkage*~emancipatory	0.888889	0.571429	0.736788
	~practical*~emancipatory	0.857143	0.428571	0.624500
	~linkage	0.888889	0.571429	0.736788

To conclude we calculated the configurations for the whole truth table and after minimization we were left with these cross-case parsimonious solutions:

~linkage
~linkage*(emancipatory + practical + practical * ~emancipatory + ~practical *emancipatory)

Our findings show that the simpler contracts were successfully linked to desirable behaviour, not just because they provided fewer controls to comply with, but because they provided a combination of communication and decision rules that acted as platforms for adaptable decision making and action in the project level.

The findings raise two issues. First, the successful combinations of rules differed according to the priorities in each program. In programs where cooperation and interdependence was needed, practical rules were devised in combination with less control rules; in the case of programs where self-adaptation and flexibility was needed at the project core, then emancipatory rules were provided with less control rules regarding specific activities and obligations.

Second, there is evidence that the levels of nestedness, modularity and time of relating partners pose specific requirements to contract rule structures. For example, the more layered or nested PPP program had a wider variety of rule combinations that still required less control rules but showed that there is an invert proportionate relation between linkage and practical/emancipatory rules and also between practical and emancipatory rules. To create the right balance in contract rule structure in a systemic contract might not be a simple task as there lays a conflict in *the obvious link between contract rules regarding risk and devolution*.

Therefore it was not that the existence of only practical and emancipatory rules which is the answer to our question and that the existence of linkage rules which was the cause of all trouble. There is an invert proportionate relation between these rules

which does not necessarily makes them mutually exclusive. It was rather obvious that there is a balancing act between the rules. In a sense we can envisage that we do not need neither a classical nor a relational contract but a middle ground between the two: a *systemic contract* with a bespoke combination of linkage, practical and emancipatory rules, which is the answer to bridge the classical-relational differences. The systemic contract allows adjustment to change in diverse contingencies since only a limited range of pre-specified control rules are needed; in this way projects could generate their own successful responses to deal with their own complex contingencies.

Conclusions and Implications

Classical, neo-classical and relational contracting theories have explicitly suggested the importance of a middle-way contract in order to handle behaviour in complex organizational settings. We therefore took a step further to investigate which are the most successful contract rules to include in a contract. In order to achieve this we had to use analytic induction to explore causal complexity between contractual rules and behaviour. In the process we offered firstly, one of the first comprehensive empirical examinations of the efficacy of contract rules; and secondly, we propose a recipe for rule structure that combines classical and relational rules in a middle-way *systemic contract* that allows adjustment to complexity.

We provide a solution to the either/or mentality that contract practices are subjected to: platforms can include control (linkage), partnership and joint decision making (practical) and action determining (emancipatory) rules. Therefore, we offer an explanation how both types of contracting can be deployed in a complimentary fashion, since different types of contracts need not be deployed in different phases of collaboration, or need not be deployed for specific types of relational exchange (Hagedoorn and Hesen, 2007; Aulakh and Gençtürk, 2008). We also add to the studies of empirical investigation of contracts vis-à-vis relational contracts (Carson et al., 2006; Luo, 2002; Poppo and Zenger, 2002). Our final theoretical contribution is to provide an example of analytic induction, a method that can merge the mode of *confirmatory* analysis used in management approaches with the *exploratory* nature of work in complexity theories (Phelan, 1998) showing a way in which complexity can be examined in management research.

We also learnt from our study that the systemic contract *refutes the idea of internalized complexity* (Ashby, 1958) into the contract structure. In this sense, the argument that a complex contract is unavoidable (Eggleston et al., 2000) is refuted. In fact, findings illustrate that we actually need different or bespoke designs for different types of complex settings. However, these designs should be simple enough to include the rules that suit the priorities and characteristics of the organizations and therefore should not include all types of rules to a standardized measure. Therefore the middle-way systemic contract substitutes the idea of a complete and optimal contract into one that is *flexible and enabling*.

The application of the systemic contract would have a positive effect on the work of managers and project workers, as their implementation is not as time consuming or complicated and the rules are not inhibiting or interfering with their daily work-platforms can be used in the ways that people choose to do so. The findings can also help contract managers in complex program environments avoid complex and unmanageable contracts.

References

Ashby, W. R. (1958), "Requisite variety and its implications for the control of complex systems ". *Cybernetica*, Vol. 1, pp. 83-99.
Aulakh, P. S. and Gençtürk, F. E. (2007), "Contract formalization and governance of exporter–importer relationships ". *Journal of Management Studies*, Vol. 45, No. (3), pp. 457-479.
Baker, G., Gibbons, R. and Murphy, K. J. (2002). "Relational Contacts and the theory of the firm ". *Quarterly Journal of Economics*, Vol. 117, No. 1, pp. 39–84.
Bosch-Rekveldt, M., Y. Jongkind, H. Mooi, H. Bakker and Verbraeck A. (2011), "Grasping project complexity in large engineering projects: The TOE (Technical, Organizational and Environmental) framework ". *International Journal of Project Management*, Vol. 29, pp. 728-739.
Buuren, van A., F. Boons and G. Teisman (2012), "Collaborative Problem Solving in a Complex Governance System: Amsterdam Airport Schiphol and the Challenge to Break Path Dependency ". *Systems Research and Behavioral Science*, Vol. 29, pp. 116-130.
Carson, S. J., Madhok, A. and Wu, T. (2006), "Uncertainty, opportunism and governance: the effects of volatility and ambiguity on formal and relational contracting ", *Academy of Management Journal*, Vol. 49, pp. 1058–77.
Curlee, W., Gordon, R.L. (2011), *Complexity theory and project management*, Wiley and Sons Inc, USA, New Jersey
Eggleston, K., Posner, E. A., and Zeckhauser, R. (2000), "Design and Interpretation of Contracts: Why Complexity Matters ", *Northwestern University Law Review*, Vol. 95, pp. 91.
Dyer, J. H. and H. Singh (1998), "The Relational View: Cooperative Strategy and Sources of Interorganizational Competitive Advantage ", *The Academy of Management Review*, Vol. 23, pp. 660-679.
Esser, J. P. (1996), "Institutionalizing Industry: The Changing Forms of Contract ". *Law and Social Inquiry*, Vol. 21, No. 3, pp. 593-629.
Gaski, F. F. (1984), "The theory of power and conflict in channels of distribution ". *Journal of Marketing*, Vol. 48, No. 3, pp. 9–29.
Goertz, G. (2006), "Causal Complexity and Qualitative Methods", *Political Analysis*, Vol.14, No.3, pp.223-226.
Hass, K. B. (2009), *Managing Complex Projects: A New Model*, USA, Management Concepts Inc.
Hagedoorn, J. and Hesen, G. (2007), "Contract Law and the Governance of Inter-Firm Technology Partnerships–An Analysis of Different Modes of Partnering and Their Contractual Implications", *Journal of Management Studies*, Vol. 44, No. 3, pp. 342-366.
Henisz, W. J., Levitt, R. E., and Scott, W. R. (2012), "Toward a unified theory of project governance: economic, sociological and psychological supports for relational contracting ". *Engineering Project Organization Journal*, Vol. 2, No. 1-2, pp. 37-55.
Hirschman, A. O. (1984), "Against parsimony: three easy ways of complicating some categories of economic discourse ", *Academy of Management Review*, Vol. 15, No. 3, pp. 500–513.
Joskow, P. L. (1988), "Asset specificity and the structure of vertical relationships: empirical evidence", *Journal of Law, Economics, and Organization*, Vol. **4,** pp. 95.
Klein Woolthuis, R., Hillebrand, B., and Nooteboom, B. (2005), "Trust, Contract and Relationship Development ", *Organization Studies*, Vol. 26, pp. 813-840.
Koppenjan, J. F. M., and Klijn, E. (2004), *Managing uncertainties in networks: a network approach to problem solving and decision making*, Routledge, London .
Lewis, R. (1982), "Contracts between Businessmen: Reform of the Law of Firm Offers and an Empirical Study of Tendering Practices in the Building Industry ", *Journal of Law and Society*, Vol. 9, No. 2, pp. 153-175.
Luhmann, N. (1996), *Social Systems*, Stanford University Press.
Marrewijk van, A., S. R., Clegg, T. S., Pitsis and M. Veenswijk (2008), "Managing public–private megaprojects: Paradoxes, complexity, and project design ", *International Journal of Project Management*, Vol. 26**,** pp. 591-600.
Martinsuo, M. and T. Ahola (2010), "Supplier integration in complex delivery projects: Comparison between different buyer–supplier relationships ", *International Journal of Project Management*, Vol. 28**,** pp. 107-116.
Müller, R. and J. R. Turner (2005), "The impact of principal–agent relationship and contract type on communication between project owner and manager ", *International Journal of Project Management*, Vol. 23**,** pp. 398-403.
Luo, Y. (2002), "Contract, cooperation, and performance in international joint ventures ", *Strategic Management Journal*, Vol. 23, pp. 903–19.

Lyons, B., and Mehta, J. (1997), "Contracts, opportunism and trust: self-interest and social orientation ", *Cambridge Journal of Economics*, Vol. 2, No. 12, pp. 239–257.
Macneil, I. R. (1978), "Contracts: Adjustment of Long-Term Economic Relations under Classical, Neoclassical and Relational Contract Law", *North-western University Law Review*, Vol. 72, pp. 854.
Marx, A., and Rihoux, B. (2013), "QCA, 25 Years after "The Comparative Method": Mapping, Challenges, and Innovations", *Political Research Quarterly*, Vol. 66, pp. 167-235.
Ng, I. C., Maull, R., and Yip, N. (2009), "Outcome-based contracts as a driver for systems thinking and service-dominant logic in service science: Evidence from the defence industry", *European Management Journal*, Vol. 27, No. 6, pp. 377-387.
North, D.C. (1990), *Institutions, Institutional Change and Economic Performance*, Cambridge: Cambridge University Press.
Phelan, S. E. (1998), "A Note on the Correspondence Between Complexity and Systems Theory", *Systemic Practice and Action Research*, Vol. 12, pp. 10.
Poppo, L. and T. Zenger (2002), "Do formal contracts and relational governance function as substitutes or complements?", *Strategic Management Journal*, Vol. 23**,** pp. 707-725.
Provan, K. G., and Gassenheimer, J. B. (2007), "Supplier commitment in relational contract exchanges with buyers: A study of interorganizational dependence and exercised power", *Journal of Management Studies*, Vol. 31, No. 1, pp. 55-68.
Ragin, C. C. (2008), *Redesigning social inquiry: Fuzzy sets and beyond*, US: University of Chicago Press.
Ragin, C.C. (1987), *The Comparative Method*, Regents of the University of California, Los Angeles, CA.
Remington, K. (2011), *Leading complex projects*, Burlington, VT, Gower Pub.
Segal, I. (1999), "Complexity and Renegotiation: A Foundation for Incomplete Contracts", *The Review of Economic Studies*, Vol. 66**,** pp.27.
Smith, H.E. (2006), "Modularity in Contracts: Boilerplate and Information Flow", *University of Michigan Law Review*, Vol.104, pp.1175.
Standish Group. (2004), *CHAOS Report. West Yarmouth*, The Standish Group International, Inc., MA.
Turner, J.R. (2004), "Farsighted project contract management: incomplete in its entirety", *Construction Management and Economics*, Vol. 22**,** pp.75–83.
Turner, J. R. and S. J. Simister (2001), "Project contract management and a theory of organization", *International Journal of Project Management*, Vol. 19**,** pp. 457-464.
Williams, T.M. (1999), "The need for new paradigms for complex projects", *International Journal of Project Management*, Vol. 17, pp.269-273
Williamson, O. E. (1996), *The mechanisms of governance*. USA, Oxford University Press.
Winch, G. (2010), *Managing construction projects: an information processing approach*, Chichester, Blackwell Pub.
Yamasaki, S., Rihoux, B. (2009), "A commented review of applications", in Rihoux, B. and Ragin, CC. (Eds.), *Configurational Comparative Methods: Qualitative Comparative Analysis (QCA) and Related Techniques.* Sage: Thousand Oaks, CA, pp.123–46.
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 and supply management*, Vol. **14**, No. 1, pp. 43-54.