

INFLUENCE OF THE MACRO-ECONOMY ON TRUST IN CONSTRUCTION SUPPLY CHAIN CHAINS

Emmanuel Manu¹, Nii A. Ankrah¹, Ezekiel Chinyio¹ and David G. Proverbs²

1 School of Technology, University of Wolverhampton, Wulfruna Street, WV1 1LY, Wolverhampton, UK

2 Faculty of Environment and Technology, University of West of England, BS16 1QY, Bristol, UK

It has often been claimed that developing trustful relationships across the construction supply chain is likely to yield higher project performance outcomes. However, most recently, it has been suggested that there seems to be an apparent retreat by some of the earlier advocates of the relational agenda through trust development given the economic turbulence. Such claims raise important questions regarding the influence of macroeconomic factors/environment on relationship-based approaches and hence trust development. Was the promotion of such relational agenda purely driven by the burgeoning economy as claimed by some at the time or was this the right direction for the construction industry if higher project performance outcomes were to be delivered to clients? This study aims to explore from literature, the current state of the relational agenda in the UK construction industry with particular emphasis on trust development so as to gain an insight into what the future outlook is likely to be. Literature on trust in construction and other team-based industries are synthesised to identify any links between trust development and themes that relate to or can be influenced by the macro-economy. From this, it is argued that perhaps, the macroeconomic environment exerts a considerable influence on trust. There is a higher tendency for firms to display higher levels of competence trust and relatively lower levels of integrity trust during economic downturns. For high levels of project performance to be maintained, clients may switch between different governance modes underpinned by 'collaborations with and without integrity trust' depending on the project life cycle and macro-economic outlook. This could influence overall procurement and managerial strategies on projects such that the use of transactional approaches could become more prominent during periods of economic downturn.

Keywords: macro-economy, construction supply chains, Trust.

INTRODUCTION

Trust has often featured in construction management literature as a construct which underpins the success of collaborative relationships within construction supply chains (Munns, 1995; Kadefors, 2004; Smyth *et al.* 2010). Construction management researchers have discussed the meaning of trust in the construction project context (Smyth, 2003); investigated how trust develops in construction (Wong *et al.* 2000;

¹ E.Manu@wlv.ac.uk

Kadefors, 2007; Khalfan *et al.* 2007; Smyth, 2008; Laan *et al.* 2010); investigated barriers to trust development (McDermott *et al.* 2004) and interrogated the value/functional consequence of trust in construction (Munns, 1995; McDermott *et al.* 2004; Smyth *et al.* 2010).

The aim of this study is to explore whether the promotion of relational approaches through trust development was a paradigm driven primarily by the buoyant nature of the UK economy at the time it gained prominence or if there is a genuine acceptance by construction industry players that this is the right way forward for improving project delivery through collaborative working.

The next section discusses trust and how it develops in inter-organisational relationships. This is followed by a synthesis of literature on themes relating to macro-economic factors and how these have influenced the need for and process of trust development across the supply chain on projects. The implications of these macroeconomic influences on the management of construction supply chains are also presented before wider conclusions are drawn.

THE RELATIONAL AGENDA AND TRUST

Promotion of the relational agenda has led to relationship based approaches via trust development being touted as an appropriate strategy for enhancing construction project performance (Munns, 1995; Kadefors, 2004; Kumaraswamy *et al.* 2010; Smyth *et al.* 2010; Cheung *et al.* 2011). Kumaraswamy *et al.* (2008) have referred to trust as an operational derivative of relational contracting whereas Davis and Love (2011) claimed that trust was very key to the assessment, commitment and enduring phases of relationship development. The role of trust in the generic three staged process of inter-firm relationship development has been illustrated in Figure 1.

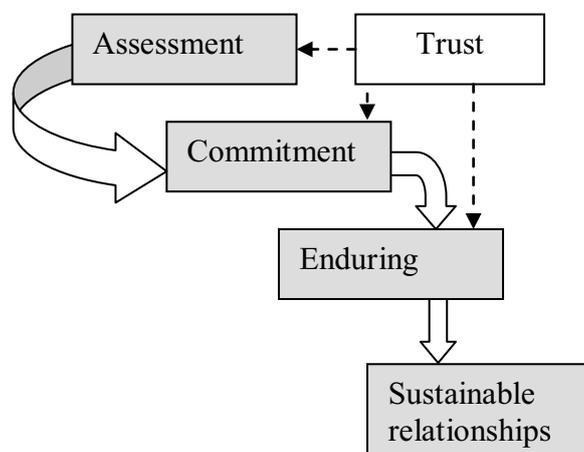


Figure 1: Relationship development process and the role of trust (Adapted from Davis and Love, 2011)

Trust development especially in the construction project context has however been described as a daunting task (Wong *et al.* 2005) and branded an elusive subject by researchers in other disciplines (Atkinson and Butcher, 2003). But if trust is a fundamental ingredient required for achieving sustainable relationships for better collaborative working (McDermott *et al.* 2004), and if its absence is a major failure factor in collaborative relationships (Akintoye and Main, 2007), then it is worth gaining a deeper insight into what trust means, how it develops amongst construction

supply chain members on projects and how this process is influenced by changing macro-economic situations.

Definitions of trust have emerged from different academic disciplines such as economics, psychology, philosophy, sociology and most recently construction management. Though some slight differences exist in the conceptualizations of trust across these different disciplines, the two critical components reflected in most definitions are that trust entails confident expectations and a willingness to accept vulnerability (Rousseau *et al.* 1998). Rousseau *et al.* (1998) suggested that trust should be viewed as a meso-concept that integrates micro-level psychological processes and macro-level institutional arrangements. Trust involves accepting some form of vulnerability based on the positive expectations we develop regarding the behaviour or conduct of others – their integrity or competence (Das and Teng, 2001). Integrity trust has to do with a party's moral obligation and responsibility to act in the interest of the relationship above their own individual interest even when there is a perceived chance and incentive for opportunistic behaviour whereas competence trust is the expectation that a party has the expertise/technical ability to perform their role successfully (Das and Teng, 2001). Arriving at such positive expectations can thus be influenced by psychological processes (Colquitt *et al.* 2007), sociological processes (Sztompka, 1999), institutional arrangements e.g. legal framework (Leslie, 2004) and economic incentives (Williamson, 1993).

In construction, research has focussed on how trust develops amongst project teams (e.g. Wong *et al.* 2000; Kadefors, 2007; Khalfan *et al.* 2007; Smyth, 2008; Laan *et al.* 2010) and some barriers to trust development (cf. McDermott *et al.* 2004). Although trust development in construction has been described as a daunting task (Wong *et al.* 2005), the following suggestions have been presented in construction management literature as a means of improving trust across the supply chain:

1. Providing better alignment of incentives through the use of more collaborative procurement approaches can improve calculative forms of trust (Laan *et al.* 2010);
2. Co-location, frequent informal interactions, increased transparency through shared administrative system for recording project events can improve trust from psychological sources (Laan *et al.* 2010);
3. Communicating openly and effectively improves trust (Wong *et al.* 2005);
4. Increased performance by displaying problem-solving ability and competence of work can improve trust (Wong *et al.* 2005);
5. Lower focus on price and authority and the use of informal social control e.g. usage of collaborative tools, self-policing as a means of performance evaluation, joint objectives and profit sharing (Eriksson and Laan, 2007) can promote trust;
6. Use of contracts underpinned by fairness principles e.g. NEC3 contracts where early warning signals are provided to clients in a spirit of mutual trust and cooperation (Gerrard, 2005; Klimas, 2011; Rowlinson, 2011)

INFLUENCE OF MACRO-ECONOMY ON TRUST

Interestingly, previous studies which have sought to investigate how macroeconomic factors influence the development of trust have resulted in ambivalent findings. Khalfan *et al.* (2007) revealed from their case study that interviewees expressed divided opinions regarding macroeconomic influences on trust development. Whilst

some felt trusting relationships should be the basis of collaborative working regardless of the state of the economy, others held a view that the buoyant nature of the economy was the main driver of trust-based approaches. A statement from an interviewee which was presented by Khalfan *et al.* (2007) is particularly striking. The interviewee was quoted as follows:

“I think we are riding on a wave of prosperity at the moment so we can afford the luxury of trust and working together. When it gets down to it if someone [does] a job for £50 and someone else [does it] for £30 the trust will disappear. I think that has happened in the past. At the moment it is reasonable and if you don’t get work, no-one will starve”.

This is very interesting particularly because the case study investigation by Khalfan *et al.* (2007) was undertaken during the period just before the global financial crisis emerged in 2008. However, does the promotion of trust-based strategies ride on luxury such that during economic downturns, a trust focus becomes a thing of the past? To explore this assertion more carefully, a comparison of trust-based strategies as against traditional transactional approaches is presented in Table 1.

In difficult economic times when construction clients’ have heavily constrained budgets, there is less work to be executed and the competition for survival amongst contractors intensifies. Consequently there is a higher tendency for ‘cost savings’ to become a more dominant criterion during contractor/subcontractor selection. This situation can be illustrated very clearly by taking a look at recent recommendations on procurement put before the UK government by a procurement and client task group which aims to save 20% from cost of public sector projects (CIOB, 2012a). The procurement options which have been proposed in line with achieving such cost savings are cost-led procurement, open-book two-stage tendering and integrated project insurance. Though these recommendations could still be used in the context of a framework or one-off contract, it is the focus on cost that may signal a slight shift from previous trust-based guidelines such as the now defunct “achieving best value” guide. The adoption of Building Information Modelling (BIM) has also gained centre stage in the UK construction industry as a tool to improve efficiency. Although the full potential of BIM has not been realised (Barlish and Sullivan, 2012), research has revealed that BIM can improve efficiency and collaboration through information management, sharing and flow, better co-ordination amongst stakeholders, and alignment of project stakeholder expectations (Aranda-Mena *et al.* 2009).

It is therefore not surprising that Kumaraswamy *et al.* (2010) claimed the recession has re-introduced a cost focus even amongst clients who were major advocates of industry reforms in line with the relational agenda. However, this cost focus is perhaps what has stimulated the need for leaner and more efficient processes across the supply chain. Interestingly, and rather significantly, it has been observed that construction firms in the UK have come to accept the reality of lesser workloads, higher client expectations, lower prices and lesser margins and have adapted to this by working more jointly and efficiently to ensure that they do not further forfeit such low profits (Knutt, 2012). Knutt (2012) revealed that adversarialism is presently less pronounced amongst construction supply chain members given that they have to work together more efficiently to cut out waste and get things right first time. This may suggest that the present economic downturn – with recovery taking longer than initially envisaged – has arguably contributed towards the increase in competence trust amongst supply chain members.

Table 1: Trust-based versus traditional contractual approaches on projects.

Project factors	Trust-based approach	Traditional contractual approach
Main contractor and subcontractor selection	Limited bid invitation where soft-parameters are key	Competitive bidding with much more focus on price
Delivery modality	Partnering, PFI, BOOT	Design-bid-build, design and build
Contract form	NEC 3 and PPC contracts underpinned by fairness principles	JCT and ICE forms of contract
Supervision/management on site	Self-policing for performance evaluation, collaborative tools and promoting openness e.g. joint administrative system	Exercise of authority through strict enforcement of contract conditions e.g. penalties for non-performance.
Payment mechanisms/arrangements	Target cost plus fee (pain share-gain share arrangements) to serve as an incentive for parties	Lump sum or cost reimbursement following re-measurement of quantities
Dispute resolution	Negotiation and adoption of ADR mechanisms e.g. arbitration and mediation.	Dispute resolution through litigation and adjudication.

Note: PFI – Private finance initiative; BOOT – Build, own, operate and transfer; ADR – Alternate dispute resolution; NEC - New engineering contract; PPC – Project partnering contract.

Interestingly, and rather significantly, it has been observed that construction firms in the UK have come to accept the reality of lesser workloads, higher client expectations, lower prices and lesser margins and have adapted to this by working more jointly and efficiently to ensure that they do not further forfeit such low profits (Knutt, 2012). Knutt (2012) revealed that adversarialism is presently less pronounced amongst construction supply chain members given that they have to work together more efficiently to cut out waste and get things right first time. This may suggest that the present economic downturn – with recovery taking longer than initially envisaged – has arguably contributed towards the increase in competence trust amongst supply chain members.

However, there is still the increased tendency for payment and cashflow problems to become more pronounced across the supply chain during recession periods. This is perhaps fuelled in part by lower profit margins that contractors and other supply chain members have to cope with during recession periods as well as difficulties in accessing credit (Paunov, 2012) due to more stringent requirements by financial institutions. Research has revealed that one in ten large construction firms are reliant on high risk suppliers (CIOB, 2012b) given that such cash flow problems intensify further down the supply chain. It has been claimed that tier 1 contractors have sometimes improved their margins by squeezing their supply chain through prolonged payment periods (Knutt, 2012). Akintola *et al.* (2011) also revealed that claims and disputes in the UK construction industry have been mainly due to poor payment practices – a situation which would only result in loss of trust amongst supply chain members – specifically integrity trust.

It would have been expected that in economic climates pervaded by such payment and cashflow problems, there would be an increase in the number of construction disputes. Rather, fewer disputes have been reported since the recession set in especially because

people are more prepared to negotiate on projects so as to meet the high demands for greater efficiency (Knut, 2012). Thus the increased need for greater efficiency arising from the recession is arguably improving the extent to which supply chain members collaborate and negotiate on projects when problems arise even under circumstances where the integrity of some supply chain members are questionable. Propositions that trust will disappear across the supply chain during economic downturns have failed to materialise at least for now as it seems the prolonged nature of the current economic downturn has created a stable tendency for higher degrees of competence trust to thrive. Supply chain members have come to appreciate the need for more competence trust so as to cope with the new environment dominated by lower profit margins, higher client expectations and less work. However, working in an environment where firms generally display higher degrees of competence trust and relatively lesser degrees of integrity trust due to financial pressures, there may be the need for more understanding on collaborations that thrive with and/or without integrity trust depending on factors such as the project lifecycle and the nature of collaboration required.

Collaborations with and without integrity trust

The above discussions re-introduce previous arguments by Cox and Thomson, (1997) who went to the extent of questioning the relevance of trust in construction even though others (e.g. Munns, 1995; Kadefors, 2004; Eriksson and Laan, 2007; Laan *et al.* 2010; Smyth *et al.* 2010) have claimed that developing trust across the supply chain is the best strategy for achieving project success. Perhaps, more research is required in construction to explore how the industry can rotate between different governance strategies depending on prevailing project and macro-economic circumstances. This has been evident in the US automobile industry (MacDuffie, 2010). MacDuffie (2010) described how automobile companies in the US became “efficiently fickle” by switching between transactional, relational and intermediate or hybrid patterns of inter-firm governance. A key argument which was raised was that the very fragile nature of trust must be reinforced with the reality that at the inter-organisational level, many factors undermine the possibility of a consistent relationship over time. Factors such as changes in business cycle and the state of the economy were claimed to have resulted in extreme pressures such that even trustworthy automobile companies abandoned long-term suppliers in search of low-cost sources. MacDuffie (2010) cited the dramatic switch in supplier management by Nissan from a relational to a transactional approach after a previous alliance with Renault in the late 1990’s. Benefits that ensued from the era of enduring, high trust and socially embedded relationships did not end after this switch and this enabled Nissan to emerge from financial crises back to profitability. This is an example which demonstrates a switch between “collaboration with trust” to “collaboration with less integrity trust” which still resulted in the desired level of output performance.

Hybrid patterns of governance have also been observed in the US context where increasing interdependence of automakers was very high for product design activities that required high levels of interaction and collaboration between automakers and supplier engineers during component development - collaboration with trust (Mudambi and Helper, 1998, Kenworthy *et al.* 1996). At the same time, low-trust actions such as pressuring suppliers to provide up-front guarantees of future price reductions and further requesting that those cost savings be passed on to automakers - a manifestation of collaboration without trust – was evident at the production stage (Mudambi and Helper, 1998). This was a kind of intermediate mode of inter-

organisational governance that thrived through cycles of trust and distrust. These hybrid forms of supplier relationships combined collaboration with and without integrity trust – a portfolio of relationships, some transactional and some relational - to achieve the intended performance levels.

POTENTIAL IMPLICATIONS FOR RESEARCH AND PRACTICE

If trust management across the construction supply chain is to an extent influenced by the macro-economic environment as argued in this study, then this clearly has some likely implications for the practice of construction management. Khalfan *et al.* (2007) claimed that if more thought were to be given to trust in construction projects, then this could perhaps impact on procurement strategy. Rahman and Kumaraswamy (2005) also revealed that relational selection based on trust and business ethics related factors are more helpful for collaborative working arrangements. Wandahl *et al.* (2011) have even proposed that trust be applied as a competitive tool in the tendering process by introducing a trust index which would be an addition to existing key performance indicators used to evaluate contractors. However, these efforts could be hampered if price – driven by the macro-economic environment - is gradually re-emerging as a very key criterion for contractor/subcontractor selection.

It can be argued that with the current situation of lower profit margins, less work, and high client expectations, there is a higher tendency for contractors/subcontractors who can operate leaner processes by cutting out the most waste to become more competitive on the market. This could be reflected in the procurement process whereby rather than the integrity of a contractor/subcontractor, their level of competence that ensures that client's needs are achieved with the cheapest and most efficient option, would be mostly desired. Thus, during procurement, it would be prudent for contractors/subcontractors to increase their competitive edge on the market by focussing more resources on how to deliver cost savings to their clients as this would be more attractive to budget restricted clients. Also, there is the need for research on the influence of BIM on trust across the supply chain given its potential to facilitate greater collaboration and co-ordination amongst project stakeholders, as well as improve efficiency by reducing re-work. There is also the need for further empirical investigation on how inter-firm relationships can be switched between transactional, relational and intermediate or hybrid patterns of governance without compromising on project success. This is because the potential influence of macroeconomic situations on integrity trust could sometimes provoke clients to sometimes adopt more transactional strategies especially during recession periods. Thus as part of a larger on-going research on the commercial realities of supply chain management in construction and the dynamics of trust, the influence of the current economic turbulence on the switch between relational, transactional and hybrid modes of inter-firm governance on projects is being researched.

CONCLUSIONS

In this study, a synthesis of literature on trust in construction and other team-based industries has been undertaken to explore the likely influence of the macro-economy on trust development efforts in the UK construction industry. It has been argued that restricted client budgets, lesser profit margins and increased client expectations that have been driven by the current global economic downturn have contributed to increased efficiency across the supply chain. This increase in efficiency is required across the supply chain to ensure that low profit margins are not forfeited altogether. This has arguably contributed to an increase in competence trust across the supply

chain such that firms even have to continuously propose alternative solutions that result in cost savings to clients so as to give them a competitive edge on the market. On the contrary, the economic downturn has arguably exerted a seemingly negative influence on integrity trust due to cashflow and payment problems across the supply chain.

These relatively lower levels of integrity trust during economic downturns are likely to result in the use of more transactional rather than relational approaches for the selection and management of construction supply chains on projects. Revelations from the US automobile industry where relational, transactional and hybrid forms of governance were used to govern inter-firm relationships at different times and for different phases of the production process could therefore stimulate more empirical research on inter-firm governance in construction. Perhaps, it would be more plausible for different governance approaches to be used at both the design stage and construction stage depending on the extent of demand for collaboration with or without integrity trust. It may be more profitable to maintain high levels of project performance by switching between different governance modes underpinned by 'collaborations with integrity trust' and 'collaborations without integrity trust' depending on the project life cycle and macro-economic outlook. The prospects of these need to be further interrogated given that this study is based purely on a synthesis of literature.

This current economic downturn also presents a good opportunity for further research on how the UK construction industry is coping in terms of adherence to relational approaches through trust and/or the existence/emergence of different patterns of inter-firm governance – with or without integrity trust - on projects. This is being undertaken as part of a larger on-going research project. The need for research on the influence of BIM on trust across the supply chain has also been proposed.

REFERENCES

- Akintola, A., Suresh, R. and Hamish, L. (2011) Perception of the UK on the 'new 2009 construction act': an empirical study. In: Ruddock, L. and Chynoweth, (eds.) Construction and Real Estate Research Conference (COBRA). University of Salford, 607-620.
- Akintoye, A. and Main, J. (2007) Collaborative relationships in construction: the UK contractors' perception. *Engineering, Construction and Architectural Management*, **14**(6), 597-617.
- Aranda-Mena, G., Crawford, J., Chevez, A. and Froese, T. (2009) Building information modelling demystified: does it make business sense to adopt BIM? *International Journal of Managing Projects in Business*, **2**(3), 419-434.
- Atkinson, S. and Butcher, D. (2003) Trust in managerial relationships. *Journal of Managerial Psychology*, **18**(4), 282-304.
- Barlish, K., Sullivan, K. (2012) How to measure the benefits of BIM – A case study approach, *Automation in construction*, **24**, 149-159
- CIOB (2012a) Procurement options unveiled, *Construction Manager Magazine*, February 2012 issue, 5
- CIOB (2012b) Research reveals supply chain risk, *Construction Manager Magazine*, March 2012 issue, 6

- Colquitt, J.A., Scott, B.A. and LePine, J.A. (2007) Trust, trustworthiness, and trust propensity: A meta-analytic test of their unique relationships with risk taking and job performance. *Journal of applied psychology*, **92**(4), 909.
- Cox, A. and Thompson, I. (1997) [] Fit for purpose'contractual relations: determining a theoretical framework for construction projects* 1. *European journal of purchasing & supply management*, **3**(3), 127-135.
- Das, T. and Teng, B. (2001) Trust, control, and risk in strategic alliances: An integrated framework. *Organization studies*, **22**(2), 251-283.
- Davis, R. and Love, (2011) Alliance contracting: Adding value through relationship development. *Engineering, Construction and Architectural Management*, **18**(5), 2-2.
- Egan, J (1998) *Rethinking construction: the report of the Construction Task Force to the Deputy Prime Minister, John Prescott, on the scope for improving the quality and efficiency of UK construction*, London: Department of the Environment, Transport and the Regions Construction Task Force.
- Egan, J. (2002) *Accelerating change: a report by the strategic forum for construction*. Construction Industry Council, London.
- Eriksson, and Laan, A. (2007) Procurement effects on trust and control in client-contractor relationships. *Engineering, Construction and Architectural Management*, **14**(4), 387-399.
- Gerrard, R. (2005) Relational contracts-NEC in perspective. *Lean Construction Journal*, **2**(1), 80-86.
- Kadefors, A. (2004) Trust in project relationships--inside the black box. *International Journal of project management*, **22**(3), 175-182.
- Kadefors, A., Laan, A (2007) Modes of trust production in project-based industries. In: Atkin, B., Borgbrant, J. (ed.) *Proceeding of Proceedings of the 4th Nordic conference on construction economics and organisation*. Lunea University of Technology, Sweden, 47-58.
- Khalfan, M.M.A., McDermott, and Swan, W. (2007) Building trust in construction projects. *Supply Chain Management: An International Journal*, **12**(6), 385-391.
- Kenworthy, L., Macaulay, S. and Rogers, J. (1996) "The More Things Change...": Business Litigation and Governance in the American Automobile Industry. *Law & Social Inquiry*, **21**(3), 631-678.
- Klimas, E. (2011) A general duty to co-operate in construction contracts? An international review. *International Journal of Law in the Built Environment*, **3**(1), 83-96.
- Knutt, E. (2012) Welcome to the new normal, *Construction Manager Magazine*, March 2012 issue, 15-17.
- Kumaraswamy, M., Anvuur, A. and Smyth, H. (2010) Pursuing "relational integration" and "overall value" through "RIVANS". *Facilities*, **28**(13/14), 673-686.
- Kumaraswamy, M., Anvuur, A.M., Mahesh, G. (2008) Contractual frameworks and cooperative relationships. In: Smyth, H., Pryke, S. (ed.) *Collaborative relationships in construction: developing frameworks and networks*. Oxford: Wiley-Blackwell, 78-104.
- Laan, A., Noorderhaven, N., Voordijk, H. and Dewulf, G. (2010) Building trust in construction partnering projects: An exploratory case-study. *Journal of Purchasing and Supply Management*, 98-108.
- Latham, M. (1994) *Constructing the team*. HMSO London.

- Leslie, C.R. (2004) Trust, Distrust, and Antitrust. *Texas Law Review*, **82**(3), 515-680.
- MacDuffie, J. (2010) Inter-organizational trust and the dynamics of distrust. *Journal of International Business Studies*, **42**(1), 35-47.
- McDermott, , Khalfan, M.M.A. and Swan, W. (2004) An exploration of the relationship between trust and collaborative working in the construction sector. *Construction Information Quarterly*, **6**(4), 140-146.
- Mudambi, R., Helper, S. (1998) The close but adversarial model of supplier relations in the US auto industry, *Strategic management Journal*, **19**, 775-792.
- Munns, A. (1995) Potential influence of trust on the successful completion of a project. *International Journal of project management*, **13**(1), 19-24.
- Paunov, C. (2012) The global crisis and firms' investments in innovation. *Research Policy*, **41**(1), 24-35.
- Rahman, M.M. and Kumaraswamy, M.M. (2005) Relational selection for collaborative working arrangements. *Journal of Construction Engineering and Management*, **131**, 1087.
- Rousseau, D.M., Sitkin, S.B., Burt, R.S. and Camerer, C. (1998) Not so different after all: A cross-discipline view of trust. *Academy of management review*, **23**(3), 393-404.
- Rowlinson, M. (2011) *A Practical Guide to the NEC3 Engineering and Construction Contract*. Wiley Online Library.
- Smyth, H. (2003) *Developing client–contractor trust: a conceptual framework for management in project working environments* CRMP Working Paper, The Bartlett Faculty of the Built Environment, UCL, London.
- Smyth, H. (2008) *Developing trust*. In: Smyth, H., Pryke, S. (ed.) *Collaborative relationships in construction: developing frameworks and networks*. Oxford: Wiley-Blackwell, 129-160.
- Smyth, H., Gustafsson, M. and Ganskau, E. (2010) The value of trust in project business. *International Journal of project management*, **28**(2), 117-129.
- Sztompka, (1999) *Trust: A sociological theory*. Cambridge Univ Pr.
- Wandahl, S., Bejder, E. and Ussing, L.F. (2011) Trust as a competitive parameter in the construction industry. In: Ruddock, L. and Chynoweth, (eds.) *Construction and Real Estate Research Conference (COBRA)*. University of Salford, 1130-1141.
- Williamson, O.E. (1993) Calculativeness, trust, and economic organization. *JL & Econ.*, **36**, 453-486.
- Wong, E., Then, D. and Skitmore, M. (2000) Antecedents of trust in intra-organisational relationships within three Singapore public sector construction project management agencies. *Construction Management and Economics*, **18**(7), 797-806.
- Wong, S., Cheung, S.O. and Ho, K.M. (2005) Contractor as Trust Initiator in Construction Partnering—Prisoner's Dilemma Perspective. *Journal of Construction Engineering and Management*, **131**, 1045-1053.