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THE IMPACT OF THE RECENT ECONOMIC RECESSION ON THE NEC CONTRACT IN NORTHERN IRELAND: A PRELIMINARY STUDY

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In comparison to the rest of the United Kingdom (UK) the Northern Irish Construction Industry was disproportionately affected by the recent economic recession. During this period, use of the New Engineering Contract (NEC) has proliferated in the public sector, however no study has been undertaken to examine the impact of the recession on this contract in Northern Ireland. The aim of this paper is to explore NEC contract implementation in Northern Ireland and the impact of the recession on its operation. A qualitative methodology is adopted using a literature review and semi structured interviews with six construction professionals. Qualitative analysis identifies themes and issues arising exploring connections between them using thematic coding. The initial findings are that the introduction of the NEC contract in Northern Ireland makes demands of contractors and consultants in terms of additional resources and training. Some consultants show a clear lack of understanding of the contract. Whilst there is general agreement that the contract does help to stimulate good project management, the interviewees find the contract time consuming and complicated to administer, describing it as *“unforgiving for the architect and unforgiving to the contractor.”* Due to the impact of the recession, both contractors and consultants are still reporting a drop in income from pre-recession levels. Project resourcing levels have dropped significantly since the onset of the recession. Adversarial and opportunistic behaviour has increased. Many consultants and contractors are struggling to adequately administer the NEC contract at current income levels. The introduction of the NEC contract and the economic recession have exerted opposing forces on the implementation of the contract, hindering its execution. As the pressures exerted by the economic recession abate and a greater understanding of the contract develops, these opposing forces will ease leading to a more consistent implementation of the contract.

Keywords: NEC, procurement, recession.

INTRODUCTION

The New Engineering Contract ('The NEC Contract') was originally drafted with a view to increasing the efficiency of the Construction Industry in the United Kingdom (UK) and promoting and delivering a new culture of cooperation and openness across the industry (Eggleston 2006). The NEC contract requires parties to act in a spirit of trust and mutual cooperation. In prosperous times this is difficult to achieve as often contractor and client want different project outcomes, but when profits are scarce and resources restricted, relationships can be impelled towards adversarial behaviour (Williamson 1975).

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In May 2006 the NEC contract was introduced as the public sector preferred contract in Northern Ireland, coinciding with a time of unprecedented economic growth (Verick and Islam 2010). This was followed shortly by the collapse of the US Subprime mortgage market in 2007, which in turn led to the 2007 - 2009 recession; the worst in six decades (Verick and Islam 2010). Since this economic downturn, Northern Ireland is slowly starting to emerge from recession. The results of the economic contraction have been particularly pronounced and impacted profoundly on the Construction Industry (Eadie *et al.* 2013). Although the negative impact of the immediate recession is receding in some areas, its effects are still being keenly felt in Northern Ireland (DFPNI 2014).

In light of this, this study aims to explore the effect of the economic recession on the operation of the NEC contract by exploring (1) early experience of the NEC contract in NI; (2) the contract's impact on resourcing, trust and cooperation; (3) experience of the recent economic recession; (4) the effect of the recession on resourcing, trust and cooperation.

This study will lead to a better understanding in academia and industry of situations where implementation of the NEC contract may be hindered, due to financial and resourcing constraints. Although only a preliminary study, this will form the basis for a future quantitative study, which is currently on going. Whilst some research has examined the impact of the recession on the construction Industry (Tansey *et al.* 2013; Eadie *et al.* 2013; Lowe and Moroke 2010) and others have looked at the implementation of the NEC contract (Broome 1997; Hughes and Maeda 2002; and Meng 2014), none have specifically examined the interaction of the two factors thereby creating a knowledge gap in the field. Although this study is based in Northern Ireland, it has wider applicability as the constraints imposed on resources by the economic recession were experienced across the UK and further afield.

THE NEC CONTRACT

The first NEC contract was published by the Institution of Civil Engineers (ICE) in 1993 with three aims: to have clarity and simplicity, flexibility of use and to act as a stimulus to good management (Gerrard 2012). It was intended to herald a new approach to construction contracts, discouraging adversarial behaviour and promoting cooperation (Eggleston 2006).

Writing in the aftermath of the early 1990s recession, Latham found that a lack of resources could lead to a dearth of trust (Latham 1994). He observed that the construction industry was inefficient, fragmented and held back by persistent problems. His recommendations to improve performance and teamwork included, among others, the use of the NEC contract, which most closely matched the principles he was espousing. He recommended the NEC contract be amended, stating that, in order to be effective, a modern contract should have “*a specific duty for all parties to deal fairly with each other...in an atmosphere of mutual cooperation*” (Latham 1994: 37). The NEC contract was duly amended and the second edition published in 1995.

In the early years of its use, studies, many funded by the ICE, observed that users found the contract easy to understand and agreed that its use encouraged greater cooperation (Broome 1997, Broome and Hayes 1997). However not all research was positive; Hughes and Maeda's study for the RICS (2002) called into question some of the founding principles of the contract, finding win-win contracts impractical and that reliance on trust introduces ambiguity. Members of the Law profession also found issue with the radically simplified language used (Eggleston 2006).

The NEC contract was amended a third time and published as the NEC3 suite of contracts in 2005. In this instance, the NEC3 contract was specifically endorsed by the UK Governmental Office of Government Commerce, for use in projects in the Public Sector. The delivery of the Olympic games facilities in 2012 using the NEC contract has been hailed as a success and held up as a precedent for its use; however not all NEC contracts have run as smoothly. Following the problems relating to the Cambridge guided busway project, Paul Blackburn in Stimpson (2011) argues that contract choice should be project specific. According to Doherty (2012) where the NEC contract fails, it does so in spectacular fashion. EC Harris (2013) and Doherty (2012) agree that failure to follow contract procedures, to provide resources to properly administer the contract and failure to understand the contract are major reasons why NEC contracts fail. In fact, the pro NEC lobby agrees broadly with this point, asserting that when NEC contracts fail, it tends to be due to the people operating it, not the contract itself (Gerrard 2012).

Bingham (2013) and Minogue (2013) criticise the incorporation of the requirement to work in a spirit of 'mutual trust and cooperation' as unenforceable; however Mason (2008: 4) argues that the 'good faith' clause in the NEC contract seeks to “*influence, rather than mandate*” behaviour. Without trust, it is difficult to achieve cooperation (Kadefors 2004). Trust is developed iteratively throughout a project (Smyth *et al.* 2010). 'Trust' has a different meaning to contractor and client groups and cannot be achieved through coercion or sanction (Pinto, *et al.* 2008). Good project 'chemistry' might lead to a reduction in the social distance between project participants, reducing the level of conflict, enhancing mutual understanding, motivation and morale (Nicollini 2002). The development of trust is dependent on the attitude of key individuals; it is difficult to build trust during one-off, short-term projects (Bresnen and Marshall 1998). Rooke and Seymour (1995: 2) describe the difficulty of building trusting relationships in a fragmented industry, illustrating it as fraught with “*mistrust suspicion and cynicism*”.

The socio economic environment has a large bearing on the development of trust within projects (Manu *et al* 2012). Rousseau *et al* (1998) linked trust with vulnerability, whilst Loosemore (1988) found during times of crisis, project participants attempt to minimise risk and reduce vulnerability. “*People do not perform well under prolonged conditions of insecurity and fear*” (Smyth *et al.* 2010) p120). Trust is undermined by socio economic conditions, which lead to adversarial, game- playing behaviour (Bresnen and Marshall 1998.) Khalfan *et al* (2007) found that, where the contract price does not relate equitably to the amount of work to be done, mistrust and suspicion are introduced to a contract. Taking a wider perspective, Tang and Koveos (2008: 1046) observed that societal cultural values are altered by prevailing economic conditions, finding that “*individualism, power distance and long term orientation*” have a relationship with GDP per capita on a national scale. These studies confirm Latham's hypothesis from 1994 that “*It is not easy to create teamwork in construction when everyone is struggling to avoid losses*” (Latham 1994: 9).

THE ECONOMIC RECESSION

The NEC 3 Contract was introduced as the public sector contract of choice in Northern Ireland in May 2006 during a historically high period of growth (Verick and Islam 2010). However, this was followed by a period of unprecedented volatility in the global and the UK economy.

On the 8th February 2007, the HSBC bank warned of losses incurred in the USA subprime mortgage market. Following a run on the bank, the Northern Rock received emergency support from the Bank of England in September 2007 and on the 15th September 2008, Lehman Brothers was declared bankrupt. The financial meltdown had spread from the US subprime market and led to the worst global recession in 60 years (Verick and Islam 2010)

In common with the rest of the UK, Northern Ireland experienced a sustained period of growth from 2002 to 2006. This period was followed by a prolonged period of contraction from 2007 to 2014. The quarterly construction statistics report released by the Office for National statistics in the third quarter of 2014 show that construction output in Northern Ireland peaked in 2007 and was 45.3% down on that level by late 2014. The number of jobs in construction fell by 37% between 2007 and the end of 2013. Construction Output in 2014 was at 86% of its average 2011 output, compared with 99% in Great Britain - thus reinforcing the point that Northern Ireland's construction industry experienced a longer lasting decline following the recession relative to the UK. Although there have been increases in output in some sectors, the decreases to other areas have outweighed the gains.

During previous recessions, the failure rate for construction companies has been double that of other types of company (Lowe and Moroke 2010). Insolvency lags behind economic recovery and Lowe and Moroke found that construction firm insolvency rates were still rising in 2010. Northern Irish construction companies tend to pursue cost leadership, leading to cost minimisation and cost reduction as a recession survival tactic (Tansey *et al* 2013).

Markets act imperfectly, not least because they are determined by human decisions, particularly in times of economic difficulty (Buchanan 2001.) Uncertainty in the marketplace, combined with bounded rationality, leads to opportunism and game playing (Williamson 1975). Opportunism - a lack of honesty and openness in transactions, springs from "*self-interest seeking with guile*" (Williamson 1975: 9). Due to bounded rationality and information impactedness decisions must be made using approximate information (Simon 1972: 170). Cousins *et al* (2008: 31) describes opportunism as "*achieving one's goals through calculated efforts of guile, lying, stealing, cheating, passing false information, distorting or disguising information and generally misleading the other party*". The main barrier to unfettered opportunistic behaviour which remains nevertheless lawful, is reputational damage.

Porter (1980) found that rivalry intensifies during periods of low economic growth and competitors are numerous. Competitors in a market are interdependent; in order to survive, price cuts by one company must be replicated by competitors leading to a race to the bottom. High exit barriers in the construction industry keeps firms trading when profitability is low, include reputation, history, reluctance to fold a family business and loyalty to an existing workforce. When a number of competitors 'hang on' in an industry where profitability is low, long term value in the entire industry can be driven down as a consequence (Porter 1980).

RESEARCH METHODOLOGY

In order to meet the aim of this research, it is necessary to identify and catalogue the required information, and thus lead to an informed discussion and conclusion. A qualitative approach is used in order to investigate the research aims identified by discussing the topic with those who have first-hand experience. This approach allows detailed exploration of the respondents' own experience in their natural context. It

permits complex factors to be probed and gives access to rich, deep data (Cresswell 2003) which can help to explain how the recession has affected the respondents, how they have reacted and why.

In order to gain grounding in the research area in focus, to ascertain a gap in knowledge and identify underlying literature and associated factors for consideration, a comprehensive desk based review of recent peer reviewed works is undertaken. Sources include peer reviewed journal publications, conference proceedings, books, web pages and articles regarding the NEC contract and economic theory. A review of published industry productivity statistics from 2005 to 2014 is combined with the literature review to inform questions asked during the semi-structured interviews and to support the data analysis.

To complement the literature and statistical review in addition to further explore the factors identified, in depth semi-structured explorative interviews are held. Semi structured interviews allow a focussed investigation of previously identified factors whilst permitting flexibility to explore issues arising from the respondents' experience which are not yet reflected in the literature. The interviews are carried out in person with six construction professionals in Northern Ireland between November 2013 and April 2014. Each interview lasts between 40 and 60 minutes. The prepared questions asked are developed from the literature and statistical review. The aim of the interviews is to probe issues relating to the respondents' experience of the recession, its impact on resourcing levels, competition and on the implementation of the NEC contract. The interviewees represent a broad cross section of the construction industry in Northern Ireland: an Architect, a Structural Engineer, a Contracts Manager, a Client who formerly worked for a large contractor, a Construction Adjudicator / Arbitrator and a representative of the Construction Employers Federation (CEF). This sample of convenience was formulated in an attempt to probe differing perspectives in the industry. The generalisability of the study is limited by the sample size and the qualitative approach used. Further research is ongoing using a mixed methods approach to substantiate the findings herein.

DATA ANALYSIS

To accurately catalogue the individual interviews, each is digitally recorded and transcribed verbatim. The transcribed interviews yield a total of 64 pages and 28,404 words of information which is analysed using NVivo version 10. The interviews are coded and sorted with emerging themes and relationships developed. Axial Coding (Strauss and Corbin 1998) is then used to relate codes to one another, to refine and develop categories and explore connections and links between them. These codes underline the main issues arising from the data.

Through the process of analysis and coding of the data, two main categories 'NEC Contract' and 'Recession' emerged, with nine sub categories and 34 further sub categories associated with the central themes.

DISCUSSION

The NEC Contract

Experience of the NEC Contract

Reception of the contract is balanced, with discussion of advantages and disadvantages. A single form of contract used across the public sector is hailed as a victory for consistency by the CEF representative, whereas the arbitrator feels that unsuitable projects were being 'shoehorned' into the NEC contract. Some contracts are

so heavily amended that the Z clauses are longer than the contract itself, and that the contracts are NEC in name only.

Several interviewees refer wistfully to the familiarity and comfort of old, familiar contracts and resistance to change to a contract where *“they don't know the intricacies, don't know which clauses are important...”* The Architect describes it a contract *“for painting lampposts”* whilst the arbitrator calls it *“an engineers' conceit.”*

Trust and cooperation

Most interviewees take the requirement to act in a spirit of trust and mutual cooperation with a pinch of salt, for example the arbitrator memorably describes it as *“absolute drivel.”* The Contracts Manager, Arbitrator, Architect and public sector client agree that trust and cooperation on a project depends more on the personalities involved in the contract than on the contract used (as also found by Bresnen and Marshall in 1998). The Contracts Manager finds that if you come across someone *“...who wants to be confrontational all the time well there's not much you can do about that.”* Regarding the stipulation to act in a spirit of trust and cooperation, he says *“It's very nice words but it means nothing. Means nothing at all.”*

Stimulation of good project management, more onerous contract administration

It is felt that the contract does encourage better project management across the board, with an appreciation of the value of early warning and compensation event mechanisms; however this leads to more onerous contract administration. The CEF representative feels that the NEC contract puts responsibility onto the client and consultants in terms of compliance with timescales, giving more power to contractors. The architect finds that the NEC is a very 'admin intensive' contract, describing it as *“unforgiving for the architect and unforgiving to the contractor.”* The Contracts Manager cites more frequent programme submissions and the architect dealing with early warning and compensation event claims as the main generators of additional paperwork in comparison to other contracts.

New contract, lack of understanding

The CEF representative describes a 'race' between contractors and consultants to train for the introduction of the contract, with a commercial advantage accruing to those who are better prepared. In the experience of several interviewees, there exists a significant minority of consultants who do not understand the contract nor operate it as it was intended. The maturity and depth of understanding of the contract in Great Britain is contrasted with that in Northern Ireland - as one interviewee puts it *“we're feeling like abused children because here contractors are getting mistreated by people abusing their role and authority...The consultants then aren't on top of it...”* The Contracts Manager describes a contract which *“...had absolutely no resemblance to NEC whatsoever it was run completely like a JCT contract, because none of the consultants had any idea about the NEC.”* This factor is troubling, as Gerrard (2012), EC Harris (2013) and Doherty (2012) agree that lack of knowledge of the NEC contract is a major contributory factor when it fails. Although this state is dissipating with time and experience, this indicates a need for more widespread NEC training particularly for consultants.

The recent economic recession

Experience of the recession

All of the interviewees are still suffering as a result of the recent economic recession. During the recession many clients became cost focussed *“when the market gets tighter*

and tighter and clients have the whip hand ...and they know they can squeeze the price down and that's all they're interested in." Some clients concentrated on price at the expense of long term value. This downward pressure, exerted by clients and contractors alike is described by the CEF representative as 'industrial suicide'. In 2014 a policy was introduced in Northern Ireland to exclude Abnormally Low Tenders on below EU threshold public sector tenders, however this was described as a legal 'grey area' (Golden, 2013) and after several legal challenges the wording of this policy has been watered down.

Reduction in income, resources and staff - consultants

Porter (1980) found that competition intensifies during periods of low economic growth, leading to income reduction and long term value suppression. In accordance with Porter's theory, the consultants report a drop in fee income. The fees on education projects are thought to be particularly low, with the combined team fee of a recent large school using the NEC contract rumoured to be as low as 2.5%. Over the last 7 years the Structural Engineer's fees have dropped by 30% and his staff have dropped from 17 in the office to 6, with the loss of his whole civil engineering department. Work in Great Britain and Africa is keeping his business afloat. The architect, working primarily in social housing, finds that fees have been squeezed yet at the same time clients have introduced stringent sustainability targets and the NEC contract. Exacerbating the problem, many individuals made redundant from large consultant firms have set up in business with very low overheads, competing for smaller scale projects and further driving down fees. This has led some consultants to cut corners - *"if consultants were to do the job properly they'd not be competitive – they'd never win the job."*

Reduction in income, resources and staff - contractors

Contractors fare no better. In 2013 several prominent contractors went out of business, having exhausted the last of their capital reserves. The CEF representative talks of the 'implosion' of the industry with members fighting for survival, with 'crazy' tender prices. Late payment is rife and fair payment charters seem to have little or no effect, with some of the biggest culprits being Public sector clients. This has led to a situation where *"prices are at an all-time low, profit margins are non-existent."*

Contractors maximising profit by any means as a survival tactic

Contractors will lose money if they have to stick to their tender figure. Corner cutting by consultants when assembling tender documentation has opened the door to claims by contractors. This situation has led contractors to aggressively squeeze contracts to gain profit as a survival tactic. The normal 'give and take' and 'letting mistakes go' in the interests of maintaining long term relationships has more or less stopped. Subcontractors are exploited and the consultants do not always have the resources to check or correct aggressive behaviour. The public sector client finds this means *"the spirit of trust of partnership is gone"* and that contractors are taking advantage of the contract and contract discrepancies *"by any means that you possibly have, because it's the survival of your business."* The arbitrator remarks that this had led to an increase in disputes. The interviewees' experience bears out the findings of Bresnen and Marshall (1998), Khalfan *et al* (2007) Loosemore (1988) and Manu *et al* (2012), that adversarial behaviour tends to increase and trust to decrease in times of economic difficulty.

Adversarial nature of the construction industry in Northern Ireland

All of the interviewees at some time mention the adversarial nature of the construction industry in Northern Ireland. Although Northern Ireland is a small market with much repeat business between project participants, it 'leads the way' in public sector procurement challenges. According to the public sector client: *“When we don't get our piece of the pie, we kick up a fight and scream. And that is inherent to this corner of the island.”*

These emerging themes can be amalgamated and summarised in the preliminary model shown in figure 1.

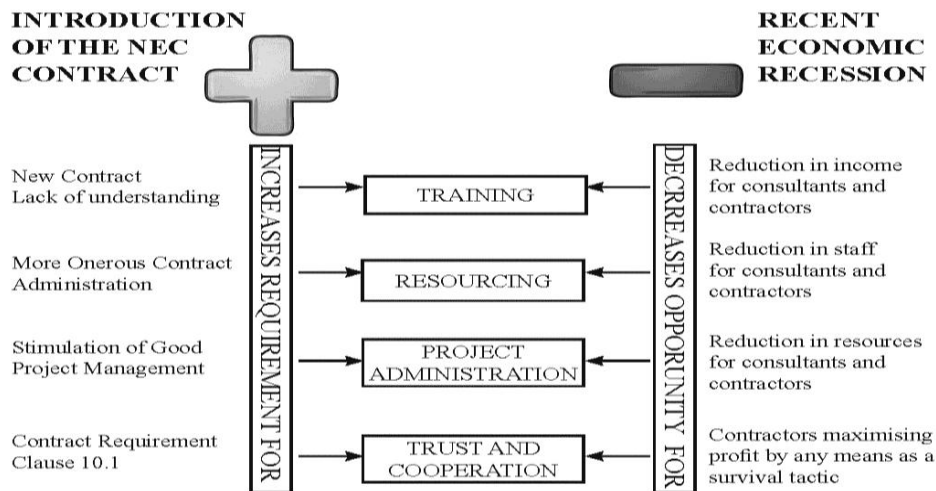


Figure 1: A preliminary model of the forces exerted by the introduction of the NEC contract and the recent economic recession

CONCLUSIONS

When they first designated the NEC contract as their contract of choice in Northern Ireland in 2006, the Northern Irish Central Procurement Directorate could not have known that the province was on the brink of the worst recession in living memory.

The aim of this research was to explore NEC contract implementation in Northern Ireland and the impact of the recession on its operation. The initial findings of this study, summarised in Figure 1, indicate that in the experience of those interviewed, the operation of the contract has been restricted by two counteracting forces. The introduction of the NEC contract to Northern Ireland increased the requirement for training, increased project administration, increased the requirement for project resourcing and introduced a contractual requirement to act in a spirit of trust and mutual cooperation. The onset of the recent economic recession exerted opposing pressures, reducing project resourcing, increasing adversarial behaviour and opportunism; thus hindering the implementation of the contract. This echoes Latham's hypothesis that a lack of resources will lead to a reduction in trust, a view endorsed by Williamson (1975) and Cousins *et al* (2008). These opposing pressures are dissipating with time as the economic situation improves and a greater understanding and experience of the contract develops.

Generalisable findings cannot be drawn from this size of sample; however it does give an insight into the experiences, perceptions and concerns of a number of construction professionals working with the NEC contract. Preliminary conclusions and implications for practice can be identified from the research whilst indicating the need

for further research. These findings will form the basis of a follow on quantitative analysis of the issues raised with a much larger sample using a questionnaire informed by this study. This will aim to test whether these findings can be applied more widely within the Northern Irish construction industry and further afield.

REFERENCES

- Bingham, T (2013) Recognising the principle of good faith. *"Building"* March 2013
- Bresnen, M and Marshall, N (1998) Partnering strategies and organizational cultures in the construction industry. In: Hughes, W (Ed.), *"14th Annual ARCOM Conference"*, 9-11 September 1998, University of Reading. Association of Researchers in Construction Management, 465-76.
- Broome, J (1997) Best practice with the New Engineering Contract. *"Proceedings of the Institute of Civil Engineers"* Issue 120, 74–81.
- Broome, J and Hayes, R (1997) A comparison of the clarity of traditional construction contracts and of the New Engineering Contract. *"International Journal of Project Management"* 15(4) 255-261
- Buchanan, J (2001) Game theory, mathematics, and economics. *"Journal of Economic Methodology"*, 8(1), 27-32
- Cousins, P Lamming, R Lawson, B and Squire, B (2008) *"Strategic Supply Management"* London: Pearson Education
- Cresswell, J.W. (2003) *"Research Design"* (2nd Ed) Thousand Oaks California: Sage
- DFPNI, (2014) *"Northern Ireland Construction Bulletin Output in the Construction Industry – Q1 2014"*, Belfast: DFPNI / Northern Ireland Statistics and Research Agency.
- Doherty, M., (2012) *"When NEC Contracts fail"*, Belfast: Quigg Golden Insight.
- Eadie, R McKeown, C and Anderson, K (2013) The impact of recession on construction procurement routes. *"International Journal of Procurement Management"*, 6(1), 25-38.
- EC Harris, (2013) *"Use NEC contracts with caution, warns EC Harris"* [Online] Available at: www.construction-manager.co.uk/news/use-nec-contracts-caution-warns-ec-harris [Accessed 1 October 2013]
- Eggleston, B (2006) *"The NEC 3 engineering and construction contract"*. Oxford, UK: Blackwell.
- Gerrard, R (2012) *"History of the NEC"* [Online] Available at: <http://www.neccontract.com/About-NEC/History> [Accessed 3 August 2013].
- Golden, J (2013) *"Abnormally Low Tenders in Public Sector procurement"*, Belfast: Society of Construction Law
- Hughes, W and Maeda, Y (2002) Construction contract policy: do we mean what we say? *"RICS Research Papers"*, 4(12), 1-25.
- Kadefors, A., (2004) Trust in project relationships—inside the black box. *"International Journal of Project Management"*, Issue 22,175–182.
- Khalfan, M, McDermott, P and Swan, W (2007) Building Trust in construction projects. *"Supply Chain Management"*, 12(6), 385-391.
- Latham, M (1994) *"Constructing the team: the final report of the government / industry procurement and contractual arrangements in the UK construction industry"* London: HMSO.
- Loosemore, M (1988) The three ironies of crisis management in construction projects. *"International Journal of Project Management"*, 16(3), 139-144.

- Lowe, J G and Moroke, E (2010) Insolvency in the UK construction sector. In: C. Egbu, ed. "26th Annual ARCOM Conference", 6-8 September 2010. Leeds: Association of Researchers in Construction Management, 93-100.
- Manu, E Ankrah, N A Chinyio, E and Proverbs, D G (2012) Influence of the macroeconomy on trust in construction supply chain chains. In: S. Smith, ed. "28th Annual ARCOM Conference". Edinburgh: Association of Researchers in Construction Management, 665-674.
- Mason, J (2008) Delivering improvements in ethical behaviour in the construction industry through the implementation of contractual good faith provisions. In: P. Fewings, ed. Ethics for the Built Environment. Bristol: Taylor and Francis, 3-10.
- Meng, X (2014) Is Early Warning Effective for the Improvement of Problem Solving and Project Performance? "Journal of Management in Engineering", 30(2), 146-152
- Minogue, A (2013) Leap of faith, "Building" April 2013
- Murdock J and Hughes W (2000) "Construction Contracts: Law and Management" 3rd Edition. London: Spon Press
- Nicolini, D (2002) In search of 'project chemistry'. "Construction Management and Economics", Issue 20, 167-177.
- Pinto, J K Slevin, D P and English, B (2008) Trust in projects: An empirical assessment of owner/contractor relationships. "International Journal of Project Management", Issue 27, 638-648.
- Porter, M E (1980) "Competitive Strategy - Techniques for Analysing Industries and Competitors." New York: The Free Press.
- Rooke, J and Seymour, D (1995) The NEC and the culture of the industry: some early findings regarding possible sources of resistance to change. "Engineering", 2(4), 287-307.
- Rousseau, D M, Rousseau, S B and Camerer, C (1998) Not so different after all: A cross-discipline view of trust. "Academy of Management Review" Issue 23, 393- 404.
- Simon, H A (1972) Theories of Bounded Rationality. In: C. M. a. R. Redner, (ed.) "Decision and Organisation." New York: American Elsevier Publishing Company, 161 - 176.
- Smyth, H Gustafsson, M and Ganskau, E (2010) The value of trust in project business. "International Journal of Project Management", Issue 28, 117-129.
- Stimpson, J (2011) "Success or failure of an NEC contract is all in the mindset." [Online] Available at: <http://www.nce.co.uk/opinion/jo-stimpson/success-or-failure-of-an-nec-contract-is-all-in-the-mindset> [Accessed 28 January 2014].
- Strauss, A and Corbin, J (1998) "Basics of qualitative research: Techniques and procedures for developing grounded theory". 2nd ed. Thousand Oaks, CA: Sage.
- Tang, L and Koveos, P (2008) A framework to update Hofstede's cultural value indices: economic dynamics and institutional stability. "Journal of International Business Studies", 39(1), 1045-1063.
- Tansey, P, Meng, X and Cleland, D (2013) A critical review of response strategies adopted by construction companies during an economic recession. In: S. a. A. D. Smith, ed. "29th Annual ARCOM Conference", 2-4 September. Reading: Association of Researchers in Construction Management, 679 - 689.
- Verick, S and Islam, I (2010) The great recession of 2008-2009: causes, consequences and policy responses. "Forschungsinstitut zur Zukunft der Arbeit", No 4934
- Williamson, O (1975) "Markets and Hierarchies: Analysis and Antitrust Implications." New York: Free Press.