

COLLABORATIVE SUPPLY CHAIN PRACTICES DURING SEVERE ECONOMIC DOWNTURN IN THE REPUBLIC OF IRELAND

Martin Taggart¹ Lauri Koskela and John Rooke

The University of Salford, School of the Built Environment, Salford, Greater Manchester M5 4WT. UK

Construction in the Republic of Ireland held a dominant position in the economy in the decade to 2007, at peak accounting for 24% of GDP. Given the scale of this contribution it is clear that leveraging even modest efficiencies in the supply chain could yield significant benefits. Recent literature in the field of construction supply chain management suggests such collaboration is far more difficult to achieve in times of austerity. Post 2007 the industry suffered a spectacular decline, a collapsing property bubble, exasperated by the world economic downturn in 2008 led to a circa 75% decline in output. A study commenced in 2011 to investigate the extent and nature of supply chain management practices in the industry and to record the impact of the prevailing austerity. A review of relevant literature showed a significant deficit of information pertaining to the Irish industry. As a consequence of this an exploratory questionnaire survey was undertaken to collect data on supply chain management attitudes and practices in the industry to inform and scope future research strands. The results indicate a high degree of understanding of supply chain concepts and strong industry support for collaborative supply chain management approaches. Respondents also have a reasonably clear grasp of the potential of collaborative approaches and the barriers that militate against its wider use. The survey results is compared to previous results from the UK, supporting the general conclusion of an increased focus on 'cost' related supply chain factors in Ireland at present. The generally supportive results of the survey towards collaborative approaches are also compared with evidence that suggests the industry is engaging in widespread opportunistic behaviours such as below cost tendering, claims and late payment that are contrary to collaborative approaches. This prompts the further conclusion that the industry is not practicing what it preaches.

Keywords: austerity, collaboration, Republic of Ireland, supply chain management

INTRODUCTION

Construction related property activity provided a substantial contribution to the recent boom in Ireland. At peak, in 2007 construction activity provided around 24% of GDP output. (DKM 2009) That figure was double the European average and was felt by many leading Irish economists (such as Kelly, McWilliams, Lee etc) to be

¹ martin.taggart@gmit.ie

unsustainable. Coupled with the global economic downturn in 2008, the bubble duly burst. In terms of contraction in the construction output (value of production) figures benchmarked at 2005 (100) peaked at 109.7 2006 (Q4) and then commenced a catastrophic descent. Data for 2012(Q1) provided a figure of 25.60 in terms of output the industry has shrunk to around one quarter of its 2006 peak. (CSO 2012a) By comparison, Tennant & Fernie (2010) report UK construction contracted from £110 billion in 2007 to £95 billion in 2010, a 14% contraction, described as 'unprecedented'.

Employment in the sector decreased rapidly. Definitions of employment categorization for construction are difficult. However taking official labour market definitions, employment peaked at around 269,900 in 2006 before declining to 105,700 by mid 2011 (CSO 2012b) anecdotal evidence suggests a further decline since, albeit at a slower pace.

Smyth (2011) makes a connection between austerity and the degree to which collaborative working practices will take hold. He concludes that during austerity, construction companies' focus on survival rather than collaboration, taking the form of lowering prices to secure turnover. He noted that a minority of companies preserve a collaborative approach, which leads to longer-term competitive advantage. Others support this view of construction in austerity. Green *et al.* (2005) speculated that collaboration would not withstand the next major recession. Ross (2011) confirms anecdotally that this is happening in the UK. Contractors are reverting to competing on lowest price to secure short-term survival.

Tennant and Fernie (2010) writing about frameworks, note that several (mainly private sector) clients have rejected the use of frameworks as the economic downturn enabled them to leverage better deals through traditional routes. They suggest the public sector is also demanding 'more for less' through existing frameworks. They conclude that clients and contractors are returning to 'type' and engaging in opportunistic behaviour in the changed environment.

A useful comparator for Ireland, Savolainen (1999) investigated the Finnish construction industry, after the collapse of the Soviet Union had tipped the Finnish economy into severe recession. Savolainen concluded that the decline resulted in the industry drawing inwards and focusing on survival strategies at the expense of collaboration, which had previously taken hold. Likewise, Lamming (2000) assessed the 1990s recession and austerity in Japan (Still ongoing to some extent) focusing on supply chain relationships. A key finding was a move towards more western open market practices than had previously been the case, moving away from historical collaborative practice.

Recent evidence from Ireland suggests that a similar approach is deeply embedded in construction. A survey by the Society of Chartered Surveyors Ireland (SCSI) (*Sister organisation of RICS*) shows that over half of tenders for construction projects are now below cost bids, a significant increase in such bids was noted over the past two years. (SCSI, 2011) The gap between the economic cost and the lowest bid submitted is -17%. Over half of the quantity surveyor respondents confirmed their experience of projects being delayed or not completed because they were below cost both in the public and private sector. They found that clients knowingly accept such bids on a below cost basis. On an optimistic note Davis Langdon (2011) confirmed the significance of the problem, but suggested that below cost tendering has reached its elastic limit and more sustainable pricing levels are taking hold.

COLLABORATION

A review of literature on collaborative practices generally and for the construction industry was undertaken in 2010. This provided a wealth of contextual information internationally, principally for the United States, United Kingdom, Australia, Asia and some parts of South America. There remains however a significant lack of information in the field of construction management research in Ireland. Chairman of the Construction Industry Council, Kevin C. Kelly noted in 2004 that;

'R&D investment is very low compared to every other industry. There is no investment in research into 'Process' or 'Management Practices'. (Kelly 2004)

This situation is surprising given the prominent position construction attained in the country, that little research was undertaken into a principal engine of the economy. The reasons behind this are outside the scope of this paper, however we may speculate that it has roots in the development of third-level education in Ireland and also in the size of the industry, limiting funding for such research.

Readers of Egan (1998) will note similarities between his description of the UK industry and that of the Irish industry. Aside from the obvious differences in scale, historical arrangements were similar in terms of operating methods and contractual arrangements. The industry is very fragmented, the 'census of building and construction' (CSO 2007) noted that over half of all those employed in construction worked in companies with less than 10 employees and under 17 percent worked for companies with over 50 employees.

The industry is reliant on a sub-contractor model, where shell main-contractor organisations provide coordination to sub-contractors. Normal contractual arrangements were traditional in nature. Standard forms of contracts for private and public sector were based on models produced by the professions and would be similar to UK Joint Contracts Tribunal (JCT)

The Government is perhaps the only client large enough to drive forward industry wide change. In 2007 they unilaterally introduced new public works contracts with the stated intention of bringing cost, time and quality certainty to public works (Finfacts, 2007a) This action was not well received by the industry (Finfacts, 2007b) who stated that prices would increase to meet the increased risks that contractors felt Government was transferring to them (Taggart, 2008). With the onset of recession (coincidentally) corresponding with the introduction of the new contracts, prices in fact reduced in the face of severe competition. Davis Langdon (2011) reported that the new contracts are leading to a large number of contractual disputes.

Following the economic downturns in the 1980s the industry engaged in a period of introspection, considering the possibilities for a step improvement in the industry as a whole as times improved. Following the Egan Report (1998) in the UK, researchers responded with a range of prescriptions that generally have a core value of collaboration. Suggestions included Supply Chain Management, Lean Construction, Agile Construction, Concurrent Engineering and Partnering to name but a few examples. The theoretical base for these philosophies emanate from manufacturing and was given impetus by Womack *et al.* (1990) which publicised the Toyota Production System, explaining how Toyota continuously sought to collaboratively focus on cost, quality and time in production. Much work in the literature seeks to adopt the core of these philosophies to construction. Some caution that these methods

are however very situational and cannot be applied in every environment. (Cox & Townsend 1998) (Ferne & Thorpe 2007)

In Ireland the Government and Industry initially embraced this change agenda, The Construction Industry Council (CIC) representing the industry, the professions and suppliers. (Finance 2011) and the Government established the forum for the construction industry in 1997. Although focused on the public sector, it was hoped that best practice would percolate through to the private sector. In 2000 the Government published plans to implement eighty-six recommendations made by the forum around the following themes,

- Improve efficiency and productivity in the industry
- Promote a competitive industry at home and abroad
- To secure as far as practicable stable construction demand
- Ensure fair, open and transparent procedures
- Reduce conflict between the parties and reduce resolution costs
- A regulatory environment to promote quality and safety

An analysis of their achievements is outside the scope of this paper, save to say, results have been somewhat mixed. It is however, clearly an agenda for cooperation and collaboration between the parties. In 2004 the Government announced the result of a further review was that issues of cost, time and quality would be addressed via the new public works contracts, which they developed unilaterally and introduced for mandatory use in 2007.

STATUS OF COLLABORATION IN IRELAND SURVEY

To address the lack of Irish literature an exploratory questionnaire study was carried out in 2011 to assess levels of collaboration in the industry. The principal objective was to identify useful future research strands. The study collected 46 usable responses from 114 possible respondents. (Valid return 40.36%) The respondents were industrial partners providing placements to third-level construction students. Respondents were based upon the student placement and random of the researcher. The data was collected by volunteer students and did not form part of their studies. The students posted data back to the researcher for analysis.

Respondents were categorized as: main contractor, sub contractor, supplier, designer or developer. The survey has not been examined for bias or statistical robustness since its objective was exploratory in nature and is not being portrayed as conclusive. The framing of the survey questions borrowed heavily from Akintoye *et al.* (2000) who carried out a much-cited survey of collaboration within UK large construction companies.

INITIAL DISCUSSION OF SURVEY RESULTS

The respondents categorised themselves as: Sub contractors (16 No) Main contractors (15 No) Supplier (10 No) Designer (4 No) and Developer (1 No) the survey document posed 11 questions covering attitudes towards collaboration, the extent of actual collaboration and the motivations and barriers at play. The questions were closed and provided various Likert scales and stated options for respondent selection. A final section allowed an opportunity to make comments.

Question one asked how importantly they rated the need for collaboration? Using a scale of critical, important, limited importance or not important. Thirty-seven

respondents (80.43%) felt that collaborative approaches to management of their supply chains were either Critical (36.96%) or Important (43.47%) to their organisations. Nobody felt it had no importance. This result was similar to the result obtained by Akintoye *et al.* (2000) who obtained a 90% support for important or critical.

Question two asked respondents if they had entered into any formal or informal collaboration or partnerships and if so with whom? The majority (54.35%) stated they had not so engaged, but a sizable minority (45.65%) claimed to have engaged. Some claimed to be in several arrangements. Their partners were; with Main Contractors, (12 No) with Designer (9 No) with Client (6 No) and with Sub Contractors (5 No) a supplementary question asked the length of their arrangements. Many did not address this part of the question, however those that did (11 No) reported that the average duration of collaboration or partnership had been just over 30 months. Akintoye *et al.* (2000) noted 65% of respondents engaged in collaborations. However their study solely looked at main contractors. If the main contractors, here is isolated only 40% claim to be engaged in collaborations, suggesting a lesser appetite in Ireland, for such arrangements, by main contractors than in the UK.

Question three highlighted a claim from literature that there is more desire for collaboration with clients than with suppliers. This hypothesis was supported to some extent by the results, showing that a slight majority, (22 No) respondents did indeed value client collaboration more highly than collaboration with suppliers. However nearly the same number (21) said both options would be equally valued. Mining down into the responses however shows that main contractors generally favoured client collaborations more (60%), whilst sub contractors (50%) and suppliers (20%) tended to value all collaborations more widely. Literature suggests that organisations align their strategies to maximise competitive advantage and the results here may reflect the wider needs of the latter organisations. A range of further questions was presented seeking attitudes and motivations for the respondent's organisation as to why they would potentially (if they had not already done so) or why they did in fact enter into collaborations and / or partnerships.

Question four looks at internal factors and arrangements within the organisation, the most important factors (using a five point scale from very important to not important) supporting collaboration were felt to be, Purchasing (80.04%) very important / important and the production planning (69.56%) very important / important, again chiming with Akintoye *et al.* (2000) who found strong support for these two functions. Other factors rated on very important / important responses, included transportation (63%), Stock / inventory (56.52%) and Storage (47.83%). Mining down into the data suggests that main contractors tended to rate their production planning and purchasing sections as being central to collaboration, whilst other respondent types tended to have broader views, seeing transportation, stock holding / inventory and storage being relatively more important than main contractors did. This is possibly a reflection of their relative position / needs in the supply chain.

Question five surveyed motivations for collaborating with suppliers / sub-contractors from an answer selection of better service levels, cost benefits, simplify the project process and simplify the order / bid process. Responses indicated strong support for cost benefits (91.30%) very important / important and, better service levels (80.13%) with lesser support for simplification of the project process (67%) and simplification of the order / bid process (63.04%) for very important / important responses. Isolating

the main contractor responses found universal support for cost benefits (100%) being either very important or important. Akintoye *et al.* (2000) found similar support orders, however, for Ireland, the two leading responses have changed places with a greater focus on cost benefits, whereas the UK survey found service levels to be the highest rated factor. This may reflect the severe economic conditions prevailing at this time.

In regard to collaboration with clients, Question six, the respondents still felt that the possible cost benefits (95.65%) very important or important, were the most attractive motivational factor to collaborate, however there was more regard to the potential to improve the construction process (78.26%) and simplify tendering procedures (71.73%). Simplification of the design process (58.69%) also received significant support suggesting that early involvement by all stakeholders could improve that process. The order and scale of responses was relatively well aligned with the previous results by Akintoye *et al.* (2000)

Question seven, sought responses for collaborating with main contractors, again cost benefits was highest response (80.43%) very important or important, Simplify the project process (60.86%) Simplify the tender process (65.21%) Simplify the design process (52.17%) and create a standard process (47.83%) (All responses shown are for very important / important.) The results generally suggest lesser potential support for possible benefits when compared to collaboration with clients as question seven.

Question eight addressed collaboration with designers. Again cost benefits was the highest factor (84.78%) but was closely followed by simplification of the construction process (78.26%) simplify the design process (69.56%) Simplify the design / build interface process (82.61%) and create a standard process (60.87%) All responses shown as rated very important or important. Although cost is predominant, the relative closeness of 'process' related factors suggests respondents feel there is some potential to address the disconnection between design and build elements found in the literature. Love *et al.* (2004) and Egan (1998) for example.

Question nine sought views on the general benefits of collaboration from a palette consisting of reduced supply chains, Improved quality, supplier benefits, increased competitiveness, reduced costs, increased profits, reduced bureaucracy, improved customer service and client benefits. In terms of very important responses, the leading responses were increased profits (67%) Reduced costs (52%) and Increased competitiveness (52%) The three leading responses obtained by Akintoye *et al.* (2000) were client benefits, improved customer service and reduced bureaucracy. This shows more support for 'cost' related matters in this study, as compared with 'process' type factors in the earlier UK survey. Again this may reflect the economic context of the Irish results.

Question ten canvassed opinions as to the factors that help build effective supply chain relationships, relationship enhancement being an area that has exercised many in the literature. (Meng, 2009) (Love *et al.* 2004) From a range of possible options, respondents were asked to select what was very important. The most favoured response was reliability of supplies (57%) Secondly come three factors receiving similar support levels, again all heavily discussed in the literature. These were the support of senior management (37%), free flow of information (37%) and the degree of 'trust' present. (35%) Other responses were, more meetings (7%) training / development (19%) integrated IT systems (15%) link supply & demand (15%) Joint business planning (24%) and mutual interests (19%) 'Trust' in various forms is often

cited in the literature as being a prevailing relationship factor and received highest ranking in Akintoye *et al.* (2000) In this survey trust level was ranked fourth, a considerable distance behind reliability of supply.

The final question (Q11) assessed opinions on the barriers, preventing closer supply chain collaboration; again this is a particular area that has been heavily investigated in literature from many jurisdictions. (Spekman 1998) (Boddy 1998) (Dainty *et al.* 2001) The most favoured responses (for very important) were lack of understanding of the concepts involved (37%) poor organisational structures (30%) lack of top management support (28%) Other responses included lack of integrated IT systems (8%), lack of understanding of what the potential benefits are (15%) general lack of commitment (17%) Generally these responses chimed with Akintoye *et al.* (2000) in terms of the leading three opinions,

Finally several respondents made useful contributions in the open, other comments section. These included: (*Negative comments far outweighed the positive as reflected in the selection below*)

- 'The Irish industry is too small to support supply chain collaboration'
- 'Collaborating with suppliers / sub-cons will not work as it will cause a lack of competitiveness'
- 'Below cost bidding is making competition very fierce, If you bid using fair collaborative prices you will not win any work'
- 'The new Government contracts are causing serious problems, costs are extending and you cannot claim them back, contractors are taking all the risks'
- 'Lowest cost is still the main factor in contract award on vast majority of contracts'
- 'We have worked on a new framework with the Health Service and won a lot of contracts from it'

CONCLUSIONS

Initial evidence for Ireland from this early research and indeed many cases from other places recorded in the available literature points towards a contradiction in what practitioners say about collaborative supply chain methods and concepts and what they subsequently go onto do in practice. The results of the exploratory survey reported here show strong support for collaborative approaches and indicate subtle and detailed understanding of the general concepts involved. On the other hand contemporary reports of empirical practice from SCSI and Davis Langdon amongst others, suggests large scale opportunistic behaviour is taking place in the industry and that collaboration is being ignored.

This contradiction may at first seem odd, but upon reflection has logical foundations to it. The concept of 'collaboration' between parties in a supply chain is a very seductive argument. Most people would instinctively feel that 'collaborating' would yield better results than being 'hands-off' or indeed further along the scale to 'adversarial'. Much of the published literature tends to support this, reporting positive perceptions of collaboration, suggesting that the industry feels that such collaboration is desirable and in its best interest. Available literature discussing empirical field studies also tends to acknowledge the difficulties involved with transforming these aspirations into reality, several suggesting this is a particular difficulty in construction situations. As Womack *et al.* (1990) suggested '*They know the words to the new song, but could not hold the tune*'

Many barriers to implementation have been identified, for example, scale of change needed and ill-defined benefits. (Boddy *et al.* 1998). Project based product, many small players and a wide geographical spread. (Briscoe & Dainty, 2005) Unrealistic programmes, late payments, poor contractual terms, poor site managers (Dainty *et al.* 2001) Economic environment, (Savolainen, 1999) (Lamming, 2000) the latter potentially having significant implications for Ireland and its embattled economy.

The analysis presented in this preliminary investigation in the Republic of Ireland gave rise to two questions, which are currently under further study:

Q1 Is there a significant difference between the views espoused by participants in the construction industry in regard to supply chain collaboration and the subsequent supply chain practices they engage in.

Q2 To what degree of influence has the current severe economic downturn impacted the construction industry with regard to the existing use and potential for supply chain collaboration in the sector.

Currently more detailed investigations are underway, using a construction project in the West of Ireland. Semi-structured interviews are being undertaken to assess, in more depth, attitudes and practices to SCM and the impact of recession upon those attitudes and practices.

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