CIB2007-080

Introducing Innovative Procurement Methods for Supply Chain Integration – Implementing the Challenge

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ABSTRACT

Introduction of innovative procurement approaches within the UK construction industry has challenged the traditional practices, behaviours, and stagnant mindsets within the industry. Those who do not like change are constantly resisting; but for dynamic people within the industry it is good news that the Government policies are encouraging to bring about the changing procurement environment within the industry and helping in general and specifically to the local governments and other governmental departments to overcome the problems in achieving the introduction of new practices within the industry. There are some courageous examples emerging within the industry, which have set patterns for others in overcoming the barriers and achieving the pre-set challenging outcomes.

This paper will introduce some of the initiatives and policies within the UK, and give a few examples from the industry, which were part of the case studies undertaken within the supply chain integration project at the University of Salford to show how some construction clients and contractors are leading the industry to the new ways of procurement which result into long term supply chain integration.

Keywords: Supply Chain Integration, Innovative Procurement Strategies, UK Construction Industry

1. INTRODUCTION

The drive to change and promote innovation in the construction sector including how to procure in better and more efficient ways in order to bring improvements within the construction industry (McDermott *et al.* 2004), was provided by government supported reports(Latham 1994) and Egan (1998, 2002) . The Egan Report, for example, stressed the importance of innovation within the industry, and proposed that continuous service and product improvement and company profitability can only be achieved through innovation. Other benefits include improved leadership, customer focus, integrated processes, integrated project supply chain, improved quality, and firm commitment of parties involved.

The public sector has been seen to embrace new procurement methods based on partnering concepts in recent years, following strategy documents such as Achieving Excellence (HM Treasury, 1999), and direction from both the Office of Government Commerce (OGC Report, 2003) and the National Audit Office (NAO Report, 2001). In the wake of the Egan Report, Rethinking Construction (Egan, 1998), which highlighted partnering as one of many options to improve the construction industry as discussed earlier, the UK Government Construction Client's Panel responded with Achieving Excellence (HM Treasury, 1999), which laid down targets for the number of projects which should be procured through integrated supply chain and partnering. This has been followed by the National Audit Office identifying new procurement routes based on partnering approaches as a key tool in delivering better public projects (NAO Report, 2001). It later followed this report up with a data that suggested that innovative procurement approaches, which tend to encourage partnering and supply chain integration, had a demonstrable benefit within the public sector (NAO Report, 2005).

Despite, the growing realization among forward looking clients and contractors, the establishment of procurement systems and processes to promote innovation within construction organizations is still at a developing stage. The paper discusses emerging innovative procurement trends within the industry. It presents two case studies, showing how leading public sector clients, and forward looking contractors/service providers established innovative procurement processes on innovation, and innovative thinking in management and integration of their supply chain.

2. INNOVATIVE PROCUREMENT

In the UK, the National Audit Office (NAO report, 2001) has endorsed the public sector moves away from lowest cost and adversarial approaches towards the newer forms of procurement. In particular, it calls for the entire supply chain, including clients, to be integrated. Through Achieving

Excellence (HM Treasury, 1999), the Government had already committed all government departments to:

- To work with industry to reduce waste in all aspects of construction procurement and management;
- To enter co-operative relationships with their suppliers to ensure an open and mutually productive environment, and
- To ensure an integrated supply chain.

At the same time, Building Down Barriers (Holti et al., 2000) has investigated the Ministry of Defence Prime Contracting procurement policy, another innovative procurement route. While concerned with project specific partnering, it suggested that there was some anecdotal evidence that the members of the successful project teams had kept together and moved on to other projects with other clients.

The Department of Health response to Achieving Excellence came through NHS Estates. They established NHS ProCure 21, a strategy for Supply Chain Management and Integration that involves developing long-term relationships with those companies that will be their major suppliers of products and services.

One of the main purposes of the government push towards above mentioned new partnering arrangements is to motivate organisations within the construction industry to take advantages of the long term relationships with public clients that would result in, not only business benefits for them, but a better performing industry.

In order to study the changes occurring within the industry, the introduction of innovative ways of procuring the construction works, the motivation to adopt these new procurement models, the potential benefits and bottlenecks experienced during the whole process, and changes within organisational cultures and personal attitudes; the SCRI Research Centre is carrying out a research project the Supply Chain Integration Project.

The project is to investigate the changes that are occurring in the supply of consultancy and contracting services in response to clients' innovative procurement initiatives. The main aim of this research proposal is to determine if there are ways of integrating the supply chain that will ensure service and product quality whilst still supporting the government and client initiatives, aimed at increasing the competitiveness of the construction sector (Khalfan and McDermott, 2006).

3. CASE STUDIES

The case studies attempted to uncover the perceptions of firms within the construction industry with regard to the existing partnering arrangements they currently undertake. The research used multiple methods to collect qualitative and quantitative data. Basic quantitative data and company documentation were used to provide research context while qualitative

data, collected in the form of a number of unstructured interviews, sought to understand how innovative procurement was viewed by different supply chain partners. The case study approach followed the protocol developed by Yin (2003) in order to improve the validity of the research. As a result, the research included a number of key elements such as clear and concise research objectives, research propositions, case study selection criteria, unit of analysis, a structured questionnaire, unstructured questionnaire for interview, a predetermined case study procedure, and an interview guide (Yin, 2003). The study involved multiple visits to each organization involved, including an average of three interviews with the Managing Directors of these companies and other staff and a few other interviews their supply chain members in North West of England. All interviews lasted for at least 1 hour. An assumed name for each company has been adopted for the purpose of confidentiality, when reporting the case studies.

Two of four case studies from the project are reported here. Since, all case studies are ongoing and are at different stages (two of them are at data collection stage and other two are at data analysis stage) when this paper is written; therefore, the conclusions present here are based on findings to-date. The first case study explores the initiatives taken by a public sector client to motivate main contractors and their supply chain participants to adopt innovative ways of working within a project team. The second case study examines a contracting organisation, which under a motivated leadership, has fully subscribed to the innovative procurement methods and supply chain integration.

3.1. Case study 1

The first case study was done with a public client, a local council, having a portfolio to deliver new and/or refurbished public facilities to the residents. This includes refurbishments of social housing stock, building primary and secondary schools within the area, etc. through its in-house development team which act as client by developing the specifications and allocating budget for different facilities. The council has developed a Framework Agreement to construct educational buildings (primary school in the first phase) in the value range £500,000 to £5 m. For this client-led innovative and new way of developing educational infrastructure, which basically aims at the process of getting product developed, three Constructor Partners were appointed. Since the appointment, a number of educational projects have already been started and some of them are in the early stages of design.

Benefits from the Innovative Framework

The core values of framework agreement, which are based on the partnering concept, agreed by the client and all other participants, include: Trust; Honesty; Openness; Commitment; Co-operation; and Respect. The

council's vision is that this framework agreement will deliver good quality school buildings that will lead to:

- Better educational results;
- Greater inclusion within the community;
- Better safety and environmental performance; and
- Reduced demand on future school budgets by addressing whole life cycle costing at the inception of the projects.

The major benefits are being and would be achieved in the following broad area by adopting the strategic partnering framework for the development of Primary Schools:

- Improved design;
- Less waste and duplication;
- Improved delivery;
- Greater quality;
- Greater certainty of cost;
- Better whole life cycle costing;
- Building of trusting relationships; and
- Bringing of all "project knowledge" together at the inception of a project.

Examples of innovation

The council has changed the mechanism of selection for contractors and sub-contractors. It used to be the case that the small companies were rejected based on their turnover. Now the turnover figure is not used as part of the selection criteria and is considered afterwards when the percentage of the work is being allocated. Therefore, those companies, which used to be left out (specially the SMEs) because of their small turnover, are now able to pass through the initial two-stage selection process of the council, and then they are awarded work which is equivalent of 25 % of their turnover (irrespective of how much it is!). On the other hand, the selection is now moved from traditional to Quality-Price Mechanism. The council uses 70% - 30% respectively for the selection. The council also uses a specific quality and performance criteria to select the companies for the framework agreement during the selection process.

General Conclusion

To-date, the results from the school projects are showing savings in time and cost. To maintain the momentum of these gains there must be a continuation of the positive attitude amongst the partners in sharing their knowledge and experiences on future projects. By this approach, further benefits will be passed onto the client and end users. At this point, there is a positive approach by all partners to take this Framework forward to achieve its targets. All the partners in the supply chain are committed to the

innovative ways of solving problems, and new methods of working with each other as an integrated team. The services' suppliers and especially the main contractors are highly motivated to the framework agreement because of the continuity of work, agreed profit margin, long- term relationship with client and other supply chain members, and recognition of their quality services in response to the invitation to work with the council, fully subscribed to innovate the processes related to procurement and supply chain integration within the construction industry. Money saving through reducing cost is another motivating factor for being part of such framework agreements especially for main contractors and subcontractors. One of the biggest cost reductions is achieved through not incurring cost in tendering for jobs for the same client for a period of say 3 – 5 years. Once part of the framework, the main contractor is awarded work now based on the quality of the service provided, and their capacity to deliver. Similarly, subcontractors are motivated because once they are part of a supply chain for the main contractor and perform well, they get selected without going through any selection processes.

3.2. Case study 2

The second case study, presented in this paper was undertaken with a contracting organisation, which is in operation for last 150 years and is one of the top five private contracting organisation within the UK. It used to have international operations in the past, but now it has presence only within the UK within around 1500 full time employees and 25 offices. The organisation is part of a group, which also provides services within housing and development sectors, with major activities within property maintenance. Just around the time of the publication of Latham Report in 1994, the company started aligning itself according to Sir Michael Latham's suggestions and became one of the first companies to respond to the changing environment, and demand for the supply chain integration through innovative procurement methods. The incentive and motivation of realigning the mind set of all the employees and partners regarding supply chain integration and partnering around ten years ago was the recognition as leaders in innovative procurement and supply chain integration within the industry and also to have market advantage which could result in winning more work. The efforts resulted in people understanding and practicing the ethics of partnering within construction projects. This then resulted into setting up examples of new methods of procuring and working, and one of the very first partnering projects in the UK. The above initiative also resulted into development of supply chain, one by one for each key trade, which has resulted into development of integrated supply chain that could be seen now as part of company's operations.

Achieving supply chain integration

There were 3 steps taken to achieve the current performance level and supply chain integration:

Phase 1: concentrating on low cost, but high impact trade, including brickwork, carpentry, plastering, painting, etc.

The company adopted a strategy to include either a limited number or in some cases, single source organisation as part of their supply chain within their each regional hubs. They spent lot of time and resources to interview all traders (for example brickwork) in order to develop a list of selected sub-contractors and suppliers. These selected organisations were then invited to tender. In return, they are now offered continuous work with the company; list of forthcoming jobs; and it seems that they have virtually become part of company's operations. The other advantage of supply chain integration for the company is the transparency of cost/price, quoted by the supplier/sub-contractor.

The biggest advantage and the transformation from the traditional way of working is that the sub-contractors and suppliers are given continuity of work and an increased level of certainty about the future work; and their input is taken into account in planning the future work. They are told in advance about the resource requirements, so that they can plan their resources ahead in time (sometimes two years in advance!). Isn't this enough to motivate local subcontractors and suppliers, especially SMEs?

The above has now resulted into another transformation: the sub-contractors, e.g. brickwork contractors have now started employing bricklayers/labours directly as part of their company which has resulted in improved quality of work and development of more skilled labours over a specific period of time in a specific locality/community. The employees of the subcontracting organisations also virtually become part of the company and attend training sessions, social activities, etc. In some case, for some SMEs, the company is helping in growing and reviving their businesses. Sometimes, up to 80% of turnover of these SMEs comes from their work with the company. This confidence and cooperation have resulted into the development of personal relationship with the management of those SMEs, and they get to know about each other and about their businesses better than before.

Phase 2: constructive cooperation with the supply chain participants.

For each trade work, the company has selected either one or a limited number of suppliers e.g. suspended ceilings. The selection is made after PQQ, interview, references, and quality checks for each trade organisation. Therefore, once there is a new job, invitation is sent for tender/quotation to all those selected organisations on the list, and the job is then awarded to the best among them, evaluated on the basis of quality-price mechanism. However, this list of suppliers and subcontractors is a static list in terms that it evolves slowly over a period, and does not change regularly. But it

also has the name of the potential organisations, in case if someone pulls out. Each regional operation of the company has its own list of selected suppliers and sub-contractors.

***Phase 3: one to one relationship with supply chain partners*.**
As mentioned above, each region/hub of the business in the UK has its own list of selected suppliers, manufacturers, and sub-contractors. This list varies and is based on the type of work, the value of work and the location of work. E.g. M & E work for school is different than the M & E work for a hospital. In some cases for the material suppliers, the company has a national agreement for buying a specific material, e.g. timber, doors etc. the company also promotes/recommends products and services of some specialist manufacturers/suppliers to its clients, and gets early design advices from them, e.g. windows, control system, etc. As a result of this inter-dependency, the supplier becomes part of the integrated supply chain. In reality, these suppliers are growing as the company grows.

Innovation in services
The present scenario has also helped in development of a new department in the company called Pre-construction department, with a team of people who look at project management, financial and productivity issue at the inception of any project. This new structure of the company heavily relies on the supply chain participants/partners, and all partners play their role within the supply chain at the pre-project phase. The above restructuring also resulted into clients approaching the company for integrated services including pre-construction services. In some cases, a few clients only come for the Pre-construction service. Example is one of the local authorities within the North West of England. If projects are of less value (less than £ 1m), then the company does the pre construction work and hand it back to the authority, and authority then assign it to a small regional contractor. If the work is of more than £ 1m then the company is selected to deliver the whole project including the pre-construction services. Whatever, the company is doing with respect to partnering, new ways of procurement, and supply chain integration; its clients are getting benefits and advantages by achieving reduction in waste due to single point of contact; work is carried out quickly and with improved quality, and within the assigned budget; and above all trust is being developed among all the partners.

Motivating the supply chain
Mostly, the sub-contractors run the site and the company manages them. Because of the continuity and mostly static flow of work, and even/flat resource requirements for different trades (such as brick layers), the company tends to attract and motivate competitive subcontracting companies. Because of the above mentioned continuity, the subcontractor can afford to retain good quality and skilled staff for a longer period of time, resulting in quality products and services. Although, it costs bit higher with

selected subcontractors than the open market, but Quality is guaranteed! Not only quality due to continuity, but also improved delivery time, and more understanding and better relationship among the supply chain partners can also be achieved. On the other hand, long term relationship with suppliers result into more transparency in financial terms, resulting into reduced price and good quality product because of continuation of demand of product/products.

M for money and M for motivation

The company is in partnership with a few local authorities. The current turnover of the company is around £300 m, and it is envisaged that it will rise up to £450 m by 2010. Growth in the business is one of the biggest motivating factors for the company, resulting from promoting and practicing new ways of procurement in order to achieve supply chain integration.

The company has got an added advantage over their competitors because of the adoption of modern procurement methods within their company. This result into good value for clients, betters quality products and services, and reduced price. On the other hand, since lots of public clients now moving towards quality-price mechanism for the selection of main contractor and supply chain for their new construction projects, the company is now among the selected contractors for few local authorities because of their image as a forward thinking contractor who could provide clients what they needed.

Challenges

Sometimes, from contractor's point of view, it is hard to justify the new way of working to some traditional clients including some of the local authorities (e.g. some of them still use standing order, and lowest price tendering). Sometimes clients resist and ask to work in traditional manner. Even sometimes, there are questions to justify the use of partners/selected suppliers and subcontractors. In some cases, clients nominate a supplier or subcontractor with which they have worked over a long period of time. The company does the quality checks, get references, etc. before taking them on board. Generally, clients, and especially local authorities are moving to realise this new way of working! Best practices related to partnering are spreading very quickly because of some of the successful projects done by forward-looking contractors in the UK including the company studied.

For each of their project, the company organises a partnering workshop for all the supply chain participants for a specific project. This helps them to align every body to a specific objective of that particular project. Because of their forward looking approach, in some instances, the company teaches this new way of working to their new clients. This could result into restructuring within the new client organisation and sometimes resistance to the change! But slowly and gradually, the company gets success in informing new clients and develops their understanding about

partnering phase by phase. This then results into an informed client, who then introduces this new way of working to his/her other main/sub-contractors, working on other projects. This cycle then further carried on in a way when the informed client teaches these new ways of working to their contractors, those contractors then take these learning back to their new/existing clients and so and so forth!

4. CONCLUSIONS

This paper presented two case studies, showing how different organisations established their procurement processes on innovation, and innovative thinking in management and integration of their supply chain. The paper also focused on the factors that contribute towards motivating people to introduce innovative procurement methods. From a construction industry perspective it is widely believed that due to the continuously changing conditions, construction innovation may become a fourth performance dimension in the future in addition added to the traditional dimensions of cost, quality and time (Newton, 1999). Innovative thinking has become essential for construction organisations because of increasing pressures from clients to improve quality, reduce costs and speed up construction processes (Gann, 2000). Innovation can also result in increased organisational commitment and higher organisational motivation (Dulaimi et al, 2002, 2003). Considering this fact it is important for the construction organisations to involve in the innovative procurement practices in order to take advantage of changes in market economy in the UK; build long-term relationships with clients and other participants within the supply chain; increase motivation among the supply chain partners through new innovative contractual arrangements; and make improvements to the procurement systems and processes (Asad *et al.* 2005).

The case studies reveal that the role, that innovation procurement plays to integrate the supply chain participants within the construction industry. Additionally, it also suggests that contractor-client co-operation can act as a catalyst to promote innovative thinking and collaborative culture. The benefits demonstrated through the case studies are consistent with previous research findings (Rothwell and Gardiner, 1985; Dodgson et al, 2002; Gann, 2004), namely that innovation can lead to the successful exploitation of new ideas and can be used to introduce small-scale organisational changes. The innovative procurement methods have resulted in the improvement of existing processes within the companies studied, and also resulted into development of innovative solutions by different supply chain partners to different problems with an integrated approach. The findings also indicate that both clients and his/her innovative procurement methods can help promote the culture of innovation within the industry. The case studies second the idea of Walker et al. (2003), who

have emphasized on the presence of well – integrated team resulting because of the use of procurement as a driver for innovation.

The research is part of an on going portfolio within the research Centre, and already contributed to the development of a few new work packages as well as the experience has already been taken back to at the national level through consultation within policy documentations.

5. REFERENCES

Asad, S.; Fuller, P.; Pan, W. and Dainty, A. R. J. 2005: Learning to innovate in construction: a case study, ARCOM 2005, 7 – 9th September 2005, London, Khosrowshahi, F (Ed.), Vol. 2 pp. 1215 – 1224.

Cox, A and Townsend, M. 1998: Strategic procurement in construction, Thomas Telford Publishing, London.

Dodgson, M, Gann, D M and Slater, A J. 2002: The intensification of innovation, International Journal of Innovation Management, 6(1), 1-31.

Dulaimi, M F, Ling, Y Y and Bajracharya, A. 2002: Enhancing integration and innovation in construction, Building Research and Information, 30 (4), 237 – 47.

Dulaimi, M F, Ling, Y Y and Bajracharya, A. 2003: Organizational motivation and inter-organizational interaction in construction innovation in Singapore, Construction Management and Economics, 21, 307-18

Egan, J. 1998: Rethinking Construction: The Report of the Construction Task Force on the Scope for improving the Quality and Efficiency of UK Construction. Department of the Environment, Transport and the regions, HMSO, London.

Egan, J. 2002: Accelerating change, A Report by Strategic Forum for Construction, 2002, London.

Gann, D M. 1994: Innovation in the Construction Sector. In Dodgson, M and Rothwell, R (Eds.), The Handbook of Industrial Innovation. Aldershot Hants: Edward Elgar

Gann, D M. 2000: Building Innovation: Complex Constructs in a Changing World. London: Thomas Telford.

Gann, D M. 2004: Housing Futures. In Housing Forum – Constructing Excellence Conference, 3rd Feb 2004, Britannia International Hotel, London.

HM Treasury. 1999: Achieving Excellence – Constructing the Best Government Client, HM Treasury.

Holti, R, Nicolini, D. and Smalley, M. 2000: The handbook of supply chain

management: The Essentials, CIRIA Publication C546 and Tavistock Institute.
Khalfan, M. M. A., Anumba, C. J., Siemieniuch, C. E. and Sinclair, M. A. 2001: Readiness Assessment of the Construction Supply Chain – A Necessity for Concurrent Engineering in Construction, European Journal of Purchasing and Supply Management, Volume 7, Issue 2, pp. 141-153. Khalfan, M. M. A., and McDermott, P. 2006, Innovating for supply chain integration within construction, Construction Innovation Vol 6, p 1–15.
Latham, M. 1993: Trust and Money, Interim Report of the Joint Government/ Industry Review of Procurement and Contractual Arrangements in the United Kingdom Construction Industry.
Latham, M. 1994: Constructing the team, Final Report on Joint Review of Procurement and Contractual Agreements in the UK Construction Industry, HMSO, London.
Ling, F Y Y. 2003: Managing the implementation of construction innovations. Construction Management and Economics, 21, 635 – 649.
McDermott, P., 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.
McDermott, P., Khalfan, M. M. A. and Swan, W. 2005: Trust' in Construction Projects, Journal of Financial Management of Property and Construction, Volume 10, Number 1, pp19 – 31, March 2005.
NAO Report. 2001: Modernising construction, The Stationary Office, London.
NAO Report. 2005: Improving Public Services through better construction, National Audit Office: 87, London.
Newton, P.W. 1999: Modelling Innovation in AEC: Understanding the Fourth Dimension of Competition. Accessed on 31 January 2005. Available online: http://www.ce.berkeley.edu/~tommelein/CEMworkshop/Newton.pdf
OGC Report. 2003: Building on Success, Office of Government Commerce, London.
Rothwell, R. and Gardiner, P. 1985: Invention, innovation, re-innovation and the role of the user, Technovation, Vol 3, p 168.
Schermerhorn, J.R., Hunt, J.G. and Osborn, R.N. 1994: Managing Organization Behavior, 5th Ed. John Wiley and Sons, Inc.
Vecchio, R.D. 1995: Organizational Behavior, 3rd ed. Harcourt Brace College Publishers.
Yin, R. K. 2003: Case study research: Design and methods, 3rd ed. London: Sage Publications.