

SUPPLY CHAIN SUSTAINABILITY – THE ROLE OF TRUST AND RELATIONSHIP

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ABSTRACT

This action research project aims to improve economic, social and environmental sustainability of the pre-cast concrete and construction and demolition waste supply chains through the development, trial and evaluation of an innovative supply chain management strategy. The long-term goals are to improve competitive behaviour and market sector performance and improve business process efficiency and effectiveness of public sector program delivery by influencing policy development, changing organisational behaviour and implementation development to achieve economic, social and environmentally sustainable markets. In order to facilitate this, the culture change brought about by implementing relationship management in the supply chain is investigated and this paper reports on this aspect of the project.

Keywords Australia; Culture; Relationship Management; Supply chain; Sustainability; Trust.

1. INTRODUCTION

Public sector clients have the opportunity to create improvements and develop economic, social and environmental sustainability in various market sectors which support their asset portfolio, organisational and whole of government industry development objectives; through supply chain management. There are numerous activities that asset owners can and do undertake to achieve strategic alignment of their objectives to selected supply chain management strategies as illustrated in Figure 1 below.

industry development, empowerment, work life balance and a sustainable industry (Cheung et al. 2006). Relationship management is a sustainable approach to the industry in terms of people, environment and economics and can provide a positive contribution to sustainability and help to satisfy client and stakeholder interests (Blau 1963; Darwin 1994; Darwin et al. 2000; MacNeil 1978; MacNeil 1985; Rousseau and Parks 1993). It provides the means to achieve sustainable, ongoing relationships in long and complex contracts by an adjustment process of a more thoroughly transaction specific, ongoing, administrative kind (Kumaraswamy and Matthews 2000). Clients and contractors can potentially make savings in their operations under a relationship management regime through sharing and exchanging technical and managerial knowledge of the project.

Rowlinson and Cheung (2002) give a working definition of relationship contracting:

“Relationship contracting is based on a recognition of and striving for mutual benefits and win-win scenarios through more cooperative relationships between the parties. Relationship contracting embraces and underpins various approaches, such as partnering, alliancing, joint venturing, and other collaborative working arrangements and better risk sharing mechanisms. Relationship contracts are usually long-term, develop and change over time, and involve substantial relations between the parties and development of trust.”

The implicit link between organisational culture and organisational performance has long been recognised in both mainstream management literature (Handy 1985; Hofstede 1980) as well as in the construction management literature (Liu and Fellows 2001; Rowlinson 2001). Within the construction research domain, the impact of culture and organisation on project performance is becoming an increasingly important topic for the development of sustainable practices in the built environment. A number of characteristics have been identified in recent studies e.g. Rowlinson (2001), Winch *et al.* (2000; 1997). These studies addressed innovation and change in the context of the working relations in project organisations. A number of main parameters identified as being significant in shaping how an organisation performed and the spirit within the organisation are:

- Organisational culture and structure – organisational culture and structure must be matched if participants are to retain commitment to the organisation (Rowlinson and Root 1996);
- Commitment – commitment to the goals and objectives of the organisation is crucial in implementing new approaches to contract strategy (Cheung and Rowlinson 2005);
- Individual motivation, work process and organisation structure – autonomy at work, work coordination and work control along with job satisfaction, motivation and feedback instrumental in ensuring effective cooperation and collaboration (Winch et al. 1997); and
- Individual Culture and Value - shared values between members in an organisation play a crucial part in linking people together (Wood et al. 2001).

3. METHODOLOGY

Action research method is adopted in this project. The aim of this research project is to develop, exam and evaluate an innovative supply chain management strategy in two public organisations in Queensland, to bring about changing organisational behaviour, influencing policy development and implementation. In order to facilitate this, the change of culture by implementing relationship management in the supply chain sector was investigated and initial findings are presented in this paper.

Relationship management in the supply chain sector was examined using questionnaires, interviews and assessment of project/organisation documentations. The four variables mentioned in the section above already has well developed measurement instruments that have been adapted to the Queensland supply chain industry to study the collaboration process between the client and supply chain groups. This part of the research is broken down into two distinct phases:

- Investigation of the impact of the various cultural variables on project performance (questionnaire and follow up interviews); and
- Analysis of the variables influencing the success of relationship management in the supply chain (interviews and case studies).

Both qualitative and quantitative approaches have different strengths and logics, and are best used to address different questions and purposes (Maxwell 1996). The qualitative approach derives primarily from its inductive approach and its emphasis on words rather than numbers. It focuses on specific situations or people. By involving inductive, theory-generating, subjective and non-positivist processes (Lee 1999), the qualitative approach seeks to gain insights and to understand people's perceptions of 'the world', as individuals and as groups (Fellows and Liu 1997). Qualitative methods allow selected issues to be studied in depth and detail. Approaching fieldwork without being constrained by predetermined categories of analysis contributes to the depth, openness and detail of qualitative inquiry (Patton 1990). On the other hand, the quantitative approach tends to relate to positivism and to gather factual data, then studying the relationships between facts and how such facts and relationships accord with theories and any previous research findings (Fellows and Liu 1997). Hence, the research methodology adopted for investigating relationship management in the supply chain is a triangulated approach.

By using independently collected data, it is possible to verify the thinking of key individuals in the public sector agencies as to the strengths and weaknesses of the systems currently in place. The basic concepts and variables relating to cooperation, collaboration, organisational issues and performance are investigated through the interview process with the organisations. The existing system is re-engineered to take account of the study findings. Data collection will be conducted through a questionnaire survey and in-depth interviews, with assessments of project/organisation documentation. The questionnaire survey combines four well-developed instruments which measure variables on organisational culture and structure (assessed using Handy's instrument), commitment (assessed using Allen & Meyer's instrument), work process (assessed using Van de Ven and Ferry's instrument) and individual value (assessed using Schwarz's instrument).

By way of example, these are the sorts of issues that can be formulated into hypotheses for the research: organisational culture and organisation structure must be matched if participants are to retain commitment to the organisation (Cheung 2006; Rowlinson 2001). In recent research conducted by Cheung (2006), the degree of match and mismatch between organisation culture and structure is found to have an impact on staff's commitment levels. Findings also point out that mismatches exist between actual and perceived organisational culture and structure in the public sector organisations. The reasons for these mismatches appear to be different cultures between parent organisation and intra-organisation (project).

4. RESULTS TO DATE

Recent research findings suggest relationship management suits the Australian culture very well (Rowlinson and Cheung 2004). So, how does this translate into the supply chain, where relationship management is vitally important for the success of all parties? It has been shown by Cheung (2006) that Australian professionals prefer physical interactions and direct confrontation while dealing with matters. Getting the right mix of people in the team has been identified as one of the most crucial elements for the success or failure of relationships and the supply chain. In order to maintain harmony and an effective working atmosphere, senior management and/or parent organisation must be prepared to identify unsuitable member(s) in the team and take appropriate measures to assist them to fit in.

5. STRUCTURE

Through a structured context, relationship management, when applied to the supply chain, increases both formal and informal communications amongst participants. Higher frequency of communication does not necessarily lead to better relationships or more collaborative problem solving behaviour. Instead, good working relationships and collaborative behaviour are found where respect and acknowledgments are expressed amongst supply chain members. The organisational cross-sectional nature of the participants taking part in meetings in the supply chain appears to have a positive impact on the quality of communication and information flow, and is a stimulus to timely and appropriate action.

6. ORGANISATIONAL CULTURE, STRUCTURE AND COMMITMENT

This research suggests the degree of match and mismatch between organisation culture and structure has an impact on staff's commitment levels. This study corroborates previous work (Cheung 2006) in that the fundamental element for successful implementation of changes is strong buy-in from top management. This research indicates buy-in is crucial from all levels for successful implementation. In this case, the relationship management concept needs to filter down to all levels in the supply chain if team members are to retain commitment and buy-in to the relationship.

7. ORGANISATION AND SUPPLY CHAIN CULTURES

This research also corroborates previous research (Cheung 2006) and points out that mismatches between client organisation and supplier organisation cultures (including the temporary, intra-organisation links down the supply chain) must be recognised and accepted by organisation staff. In the research carried out by Cheung (2006), mismatches existed between the organisation culture as perceived by the professionals and the organisational structure – a developmental group mode is seen to be most suitable for the organisation but a systematised impersonal/discretionary personal mode was more closely followed.

Table 1 Hypothesised Patterns of Systematized, Discretionary and Developmental Modes of Structure in Complex Organisations (extracted from Van de Ven and Ferry, 1980, pp. 368-369)

	Systematized Impersonal Mode	Discretionary Personal Mode	Developmental Group Mode
Difficulty & Variability of Tasks, Problems, Issues Encountered by subsystem –	Low	Medium	High
Salient Dimensions of Managerial Subsystem			
1. Organizational Referent	Central information systems	Hierarchy & staff	Coordination committees
2. Coordination and Control by:	Rules, plans, schedules	Exceptions to hierarchy	Mutual group adjustments
3. Resource & Information Flows among Organizational Levels, Units, & Positions:			
a. Direction	Diffuse	Vertical	Horizontal
b. Amount	High	Medium	Low
c. Standardization & Codification	High	Medium	Low
4. Perceived Interdependence among Components	Low	Medium	High
5. Frequency of conflict among Components	Low	Medium	High

The client organisation obviously influences supply chain culture; commitment to the goals and objectives of an organisation is crucial in facilitating successful implementation of relationship management or organisational changes. However, these goals must be explicitly stated in the both the client policy and the conditions of contract and must be fully understood by all parties in the supply chain. To this end, facilitation workshops can play an important role in achieving these understandings.

8. FACILITATION

Facilitation workshops in the relationship management process provide an ice-breaking platform for project participants and encourage open and honest communication between the client and supply chain organisations. By facilitating from the outset an atmosphere that promotes open communication and willing cooperation, a brainstorming approach to problem solving and a value engineering approach can be brought to bear on project issues and solutions. To maintain and

develop non-adversarial attitudes and a collaborative supply chain culture, continuous facilitation workshops should be used to ensure open and continuous communication between the client organisation and the supply chain.

The role of facilitator is crucial in the relationship management process, across the production process, for better supply chain relationships (Dainty et al. 2001). However, the cost of employing an external facilitator is also very high, which subsequently affects the frequency of the facilitator's involvement in the process. Although it is a general perception that the facilitator should be a neutral party to the project but Cheung (2006) argued that either employing a third party as a facilitator or an in-house facilitator are scenarios which can work successfully.

9. TRUST

Trust plays a crucial role in facilitating the implementation of relationship management and organisational changes. Trust is a major component in building a cooperative relationship between partners. It creates an increase in openness between parties. Trust is perceived as a result of effective collaborative relationships and leading to higher levels of partner/customer satisfaction (Mohamed 2003; Zineldin and Jonsson 2000). Moorman, Deshpandè and Zaltman (1993) believe that trust is built up over a series of interpersonal encounters, in which the parties establish reciprocal obligations. Yet, Gambetta et al (1998) see trust as a precondition of cooperation because partners need some assurance that the other parties will not defect. Thus, trust is an essential element of employing relationship management approaches in supply chain management.

Trust is said to have a direct effect on work group process and performance, and in Dirks' findings (1999), it is shown that better coordination and greater efficiency are found in a high-trust group and hence better performance. High trust between parties does not only reduce the transaction costs, make possible the sharing of sensitive information, permit joint projects of various kinds, but also provides a basis for expanded moral relations in business (Brenkert 1998).

Construction project teams are unique entities, created through a complex integration of factors, with inter-disciplinary players, varying roles, responsibilities, goals and objectives (Goodman and Chinowsky 1996). Collaboration and teamwork are therefore crucial since sharing up-to-date information between participants which lead to minimisation of errors, reduction of time delays and breaking the widespread rework cycle. Benefits of collaborative, rather than adversarial, working relationships within construction organisations are well documented (Walker and Hampson 2003).

Successful collaborative relationships rely on relational forms of exchange characterised by high levels of trust. However, the construction industry has a stronger preference for distrust rather than the full benefits of cooperation (Wood and McDermott 1999). There is a need for culture change to bring about increased cooperation between parties on a long-term basis. With relationship contracting, based on long-term relationship and trust, a win-win situation can be created for both the client and the supply chain organisations.

Relationship management can provide a positive contribution to sustainability and help to satisfy client and stakeholder interests. It is a sustainable approach to the industry in terms of people, environment and economics. Clients and contractors/suppliers can potentially make savings in their operations under a relationship management regime through sharing and exchanging technical and knowledge of the project. Cheung et al (2005) point out that the development of trusting relationships also encourages a more proactive working manner – more harmonious working relationships allow both parties to focus on work issues rather than other contractual issues, saving both cost and time. Thus, the true benefits of relationship management can only be achieved if there is a change of culture in the industry – in the client, contractor and supply chain sectors (Cheung 2006).

10. CONCLUSIONS

Relationship management can be easily adopted in the Australian culture. Physical interactions and direct confrontation are preferred while dealing with matters. Getting the right mix of people is a key to maintain a harmony and effective working atmosphere. Trust is crucial in building a cooperative and collaborative relationship between parties. Hence, up-to-date information and knowledge are shared between parties which lead to both cost and time saving.

The degree of match and mismatch between organisational culture and structure has an impact on staff's commitment level. The concept of relationship management needs to filter down to all levels in the supply chain if participants are to retain commitment and buy-in to the relationship.

Higher frequency of communication does not necessarily lead to better relationships or more collaborative problem solving behaviour. Although application of structured relationship management approach in the supply chain increases both formal and informal communication amongst participants, good working relationships and collaborative behaviour are found where respect and acknowledgements are expressed. Facilitation workshops in the relationship management process promote a collaborative supply chain culture, move away from adversarial to cooperative attitudes amongst participants; provoking a change of culture in the client, contractor and supply chain sectors.

Sustainable supply chain requires proactive relationship management and the development of an appropriate organisational culture. These, in turn, are predicated on trust. This research has explored these dimensions and come to the conclusion that organisational structuring has a significant impact on all of these issues and that attention must be paid to this structural aspect of organisation as well as the human and economic aspects.

11. REFERENCES

Blau, P. M. (1963). *The Dynamics of Bureaucracy*, University of Chicago Press, Chicago.

- Brenkert, G. G. (1998). "Trust, Morality and International Business." *Business Ethics Quarterly*, 8(no. 2), 293-317.
- Bresnen, M., and Marshall, N. (2000). "Partnering in construction: a critical review of issues, problems and dilemmas." *Construction Management and Economics*, 18(no. 5), 229-237.
- Burnes, B., and Coram, R. (1999). "Barriers to partnerships in the public sector: the case of the UK construction industry." *Supply Chain Management: An International Journal*, 4(1), 43-50.
- Cheung, F. Y. K., and Rowlinson, S. "The Interrelationships between Organisational Structure, Culture and Commitment - an Australian Case Study." *Proceedings of Australian Project Management Institute 2005 Conference*, Melbourne, Australia.
- Cheung, F. Y. K., Rowlinson, S., Jefferies, M., and Lau, E. (2006). "Relationship Contracting in Australia." *Journal of Construction Procurement*, 11. *Accepted for publication.*
- Cheung, Y. K. F. (2006). "A Study of the Determinants of Effectiveness in Relational Contracting," M.Sc, Queensland University of Technology, Brisbane.
- Dainty, A. R. J., Briscoe, G. H., and Millett, S. J. (2001). "Subcontractor perspectives on supply chain alliances." *Construction Management and Economics*, 19, 841-848.
- Darwin, J. (1994). "Networks, partnerships and strategic alliances." Sheffield Business School, Sheffield Hallam University.
- Darwin, J., Duberley, J., and Johnson, P. (2000). "Contracting in ten English local authorities: preferences and practice." *The international Journal of Public Sector Management*, 13(no. 1), 38-57.
- Dirks, K. T. (1999). "The Effects of Interpersonal Trust on Work Group Performance." *Journal of Applied Psychology*, 84, 445-455.
- Fellows, R., and Liu, A. (1997). *Research Methods for Construction*, Blackwell Science Ltd., Australia.
- Gambetta, D. (1998). *Trust: Making and Breaking Cooperative Relations*, Basil Blackwell.
- Goodman, R., and Chinowsky, P. (1996). "Managing Interdisciplinary Project Teams through the Web." *Journal of Universal Science*, 2(no. 9), 597-609.
- Handy, C. (1985). *Understanding Organisations*, Penguin, London.
- Hofstede, G. H. (1980). *Culture's Consequences: International Differences in Work-Related Values*, Sage, Beverly Hills.
- Kumaraswamy, M. M., and Matthews, J. (2000). "Improved subcontractor selection employing partnering principles." *ASCE Journal of Management in Engineering*, 16, 47-57.
- Lee, T. W. (1999). *Using Qualitative Methods in Organizational Research*, Sage, Thousand Oaks.
- Liu, A. M. M., and Fellows, R. (2001). "An Eastern Perspective on Partnering." *Engineering, Construction and Architectural Management*, 8(no. 1), 9-19.
- MacNeil, I. R. (1978). "Contracts: adjustment of long-term economic relations under classical, neoclassical and relation contract law." *Northwestern University Law Review*, 854-905.
- MacNeil, I. R. (1985). "Relational contract: what we do and do not know." *Wisconsin Law Review*, 483-525.
- Maxwell, J. A. (1996). *Qualitative Research Design: An Interactive Approach*, Sage, USA.

- Mohamed, S. (2003). "Determinants of Trust and Relationship Commitment in Supply Chain Partnerships."
- Moorman, C., Deshpandè, R., and Zaltman, G. (1993). "Factors affecting trust in market research relationships." *Journal of Marketing*, 57(January), 81-101.
- Patton, M. Q. (1990). *Qualitative evaluation and research methods*, Sage, California.
- Rousseau, D. M., and Parks, J. M. (1993). "The contracts of individuals and organizations." *Research in Organizations' Behaviour*, 55, 1-43.
- Rowlinson, S. (2001). "Matrix Organisation Structure, Culture and Commitment - A Hong Kong Public Sector Case Study of Change." *Construction Management and Economics*, 19(no. 7), 669-673.
- Rowlinson, S., and Cheung, F. Y. K. (2002). "A Review of the Concepts and Definitions of the Various Forms of Relational Contracting (2002-022-A)." CRC for Construction Innovation, Brisbane, Australia. *Unpublished report*.
- Rowlinson, S., and Cheung, F. Y. K. "Relational Contracting, Culture and Globalisation." *Proceedings of the International Symposium of CIB W107/TG23 Joint Symposium on Globalisation and Construction*, Bangkok, Thailand, 239-247.
- Rowlinson, S., and Root, D. (1996). "The Impact of Culture on Project Management." Final Report to British Council, Department of Real Estate and Construction, Hong Kong.
- Walker, D., and Hampson, K. (2003). "Enterprise Networks, Partnering and Alliancing." Procurement strategies: a relationship-based approach, D. Walker and K. Hampson, eds., Blackwell Science Ltd., UK, 30-70.
- Winch, G., Millar, C., and Clifton, N. (1997). "Culture and Organisation: The Case of Transmanche-Link." *British Journal of Management*, 8, 237-249.
- Wood, G., and McDermott, P. (1999). "Building on trust: a co-operative approach to construction procurement." *Journal of Construction Procurement*, 7(no. 2), 4-14.
- Wood, J., Wallace, J., and Zeffane, R. M. (2001). *Organisational Behaviour: A Global Perspective*, John Wiley & Sons Australia Ltd., Australia.
- Zineldin, M., and Jonsson, P. (2000). "an examination of the main factors affecting trust/commitment in Supplier-Dealer Relationships: An Empirical Study of the Swedish Wood Industry." *The TQM Magazine*, 12(no. 4), 245-265.