

COLLABORATION AND LEARNING: A BUSINESS INTEGRATION MODEL

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A lot of clients and contractors have chosen to move away from the more traditional forms of contract and tendering and have chosen to develop a more collaborative approach, which is heralded as producing greater efficiency in project outcomes. This is reflected in the greater use of alternative procurement methods, a greater emphasis on partnership and the participation of the co-ordinating contractor at a much earlier stage of the project life cycle. Reviewing recent research a question mark remains over the effectiveness of collaboration between the main contractor and their supply chain. A pilot survey was set up to test the strength of collaboration which existed between main contractors and specialist contractors in the downside of the supply chain, which indicated a lack of trust which most significantly improved over an extended period. A model has been set up which also considers the importance of developing separate skills which enhance success in collaborative working.

Keywords: collaboration, skills, supply chain, trust.

INTRODUCTION

Construction processes in the UK are inherently confrontational lining up parties in a construction contract which encourages conflicting rather than integrated objectives. Over the last 20 years this process has been compounded by the introduction of back to back contracts which exist down the supply chain transferring risk until it is managed at its lowest level of competence.

Recent reports such as Latham (1994) Atkins (1994) and Egan (1998 and 2002) have recognised the waste and poor quality created by a lack of integration in the supply chain and this has led to recommendations for alternative forms of working, which promote integration, such as first and second generation partnering, lean construction, building process re-engineering, PFI and Prime Contracting.

Other reports such as Jones and Saad (1998) have indicated that there is a gap between the rhetoric and real process change that would bring better collaboration and catalyse less wasteful practice. Green (2003) has gone further and questioned whether many of these recommendations act as long term solutions to increasing productivity in the industry.

There has been a stirring of unrest amongst the larger clients (CCF1998) who have indicated their frustration when budgets, programme and performance targets have not been consistently achieved or have sensed that specifications have been compromised, or not delivered value for money.

Some large contractors have also been fighting for survival with the small margins that are possible in competitive traditional tendering and have been moving out of

competitive selective tendering all together to specialise in negotiated two stage contractual arrangements like PFI and prime contracting

However at the next tier of the supply chain, many specialist subcontractors have questioned the benefits of partnering and whether main contractors are passing these on. Instead they perceive risk has been passed down the line and admirable aspirations to improve the performance of supply chains becomes a pervading system of risk transfer down to the weakest link. There seems to be a major question mark over whether real changes have taken place for the better or whether improvements are sustainable. Why is there a gap between theory and practice? Why do some relationships work and others not? What should be done to reap the expected benefits of collaboration?

This paper reviews collaborative theory and in particular explores the importance and development of trust throughout the downside of the main contractor supply chain. The focus of this paper is to look at the process of collaboration and integration in the construction process without prescribing specific solutions.

INTER-ORGANISATIONAL IMPLICATIONS

Construction projects have a predominance of inter-organisation relationships due to the fragmentation of the design and construction and the broad use of specialist trade contractors (STC's). This latter aspect has been accentuated during latter years by subcontracting all work, further supporting the need to collaborate effectively (Powell and Poyner 1995).

Fisher and Morledge (2002) talk about the 'low bid win' strategies of open non selective tendering that encourage production processes geared to lowest cost rather than 'best value', bidding cultures that encourage claims because of cheap risk taking and unwillingness to collaborate in problem solving with the client and design team. McGeorge and Palmer (2002) indicate that major clients are now committed to the quality improvement philosophies that lead to the introduction of modern management concepts. These and a more global economy for comparison have indicated severe cracks in the system with clients less satisfied as argued above.

Jones (2005) believes that supply chain management (SCM), which is dependant on win-win attitudes, can help break down the adversarial attitudes that permeate traditional business relationships. This is because they are based on the incentive of repeat work, pain gain agreements and reduced tendering costs. They can lead to the possibility of suppliers holding prices, open book accounting and transparency in relation to true costs where reasonable profit mark ups are acceptable. This level of trust depends upon the project culture, the commitment of team members and even the chemistry between individuals who have to closely work with each other to resolve conflict with less dependence on the formal contract.

INTEGRATING THE SUPPLY CHAIN

The supply chain consists of "materials suppliers, production facilities, distribution and customers linked together via feed forward of materials and feedback of information" (Christopher 1998). In the construction industry the supply chain is both complex and fragmented, due to the complexity of the product (many elements and components) and the specialist nature of many of its parts (many suppliers and sub suppliers). Due to the unique nature of the final project there is a unique supply chain created in every project and in many cases an inexperienced client.

Strategic or project partnering arrangements may also be used to gain further mutual competitive advantage (Latham 1994, Egan 1998 and Bennett and Jayes 1998) in order to cut out the 'low bid, win' strategies. McGeorge and Palmer (2002) counsel against a one horse approach to the use of these new management concepts and suggest that we need a more holistic view where guidance is given for them to be "applied concurrently and in combination". Egan (2002) suggests that some progress has been made but only where there has been committed top management.

Hill (2000) makes a strong case for the early involvement of the construction supply chain in order to gain the benefits of collaboration, claiming that sophisticated clients bring their main contractor and their strategic suppliers onboard as soon as the project scope is defined to increase collaboration. This brings many advantages for increased certainty of turnout cost, improved functionality, improved quality, predictable - through life maintenance and obtaining a cost effective building. Innovation and increased value may be enhanced by introducing incentives to share savings and to build up trust between the client and their supply chain. This is illustrated by the case study in prime contracting (Brown 2000).

Bresnan and Marshall (2000) in their seminal study on partnering relationships, note the fragile nature of partnering and alliancing and indicate the importance of identifying the economic and organisational context, the compatibility of internal organisational characteristics of partners such as structure, culture and management practices and acknowledging that collaboration takes place at interpersonal and organisational levels. Their nine case studies indicate quite different collaboration structures noting formal and informal versions and different levels of success, some with better future prospects than others and some with the possibility of diminishing returns for clients who also need to maintain repeat work to keep contractors interested. From what has been said the need for trust between organisations at the top management level is clear.

Dorée (2004) illustrates how the trend towards co-operative procurement and improved business relationships is very fragile and cites the public procurement climate in Holland. Here, where the industry is under investigation of collusion, there is a public client backlash which has led back to price competition bidding only.

Jones 2005 suggests that "working more closely with suppliers requires high levels of information sharing, co-operation and increased openness and transparency, which is linked to creating appropriate internal organisational and cultural changes". These are justified according to Mowery (1988) on the mutual benefits such as sharing resources and learning, which occur from pursuing inter organisational collaboration.

THEORY OF COLLABORATION AND TRUST

Collaborative theory is built on the value chain concept, which involves organisations forming strategic alliances with their customers and suppliers, creating a network of connected and interdependent organisations (Christopher, 1998). Christopher argues that the concept of the value chain becomes important when considering an organisation's ability to create a sustainable and defensible competitive advantage.

The formation of a strategic alliance creates a social institution based on democratic and capitalist values which is called collaboration. The benefits of which can not be achieved through the creation of the alliance and legal redress, but are dependent on the ability of that alliance to uphold its moral obligation and duty towards the alliance whilst trusting each other to do the same (Fukuyama, 1995 in Trust Within Reason,

Hollis 1998, p.3). The presence of trust therefore becomes central to the collaborative relationship and essential for the alliance to create the performance improvements called for.

Child and Faulkner (1998) define trust as referring to the willingness of one party to relate with another in the belief that the other's actions will be beneficial rather than detrimental to the first party, even though this cannot be guaranteed. It is for this reason that trust plays such an important role in the success of strategic alliances. Each organisation must commit time and resources to the alliance in the belief that their partner(s) will not take advantage of this commitment.

Dibben (2000) recognised that if mutual trust can be realised, then the ability to generate implicit contracts, that function effectively in the high trust society will reduce operating costs by (i) enabling substantial benefit to be gained in not having to rely on formal contracts, (ii) enable faster more effective integration of sub contracting suppliers within the production system, and (iii) increasing the likelihood of repeat orders through more rapidly generated buyer-supplier loyalties. Child and Faulkner (1998) suggest that mutual trust between partners should also make them more willing to share information and so better inform their actions and decisions. Secondly it makes it safer for the partners to invest assets in their alliance which cannot readily be used elsewhere, and thirdly, it reduces the temptation for either partner to take advantage of the other because of the goodwill it represents.

The presence of trust in the alliance does not come about as a result of the existence of the collaborative group, but rather as a result of a process of formation and continual re-negotiation of trust within the individual interpersonal relationships (Dibben 2000). Child and Faulkner (1998) observed that within alliances only certain individuals relate with each other across the organisational boundaries. Therefore, with trust being an inter-personal phenomenon, the extent to which organisations trust each other will to a large extent come down to the inter-personal skills of these individuals and the quality of mutual trust that can be developed between them. Development of trust often means more of these interpersonal links between two organisations.

Lewicki and Bunker (1996) identify that there are three types of trust which are linked in a sequential iteration in which the achievement of trust at one level enables the development of trust at the next level. **Error!**

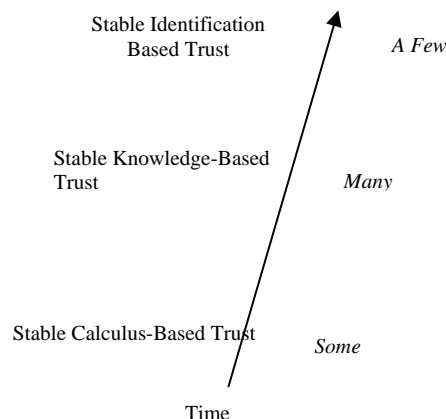


Figure 10 The Stages of Trust Development, (Adapted from Lewicki and Bunker (1996))

The first level of trust is based upon calculation, ‘Calculus based trust’, and relies on assuring consistency of behaviour. Lewicki and Bunker suggest that individuals will do what they say because they fear the consequences of not doing so. Adding that

trust is sustained to the degree that the deterrent is clear, possible, and likely to occur if the trust is violated. They accept however that this form of trust is also grounded, but not significantly, in the rewards that can be derived from maintaining the trust. Child and Faulkner (1998) comment that this form of trust is most likely to apply to new relationships where the deterrence is based upon institutionalised protection (a legal framework) or the reputation of the partner. This calculated trust is seen in action in the case study in appendix 2 with the carefully crafted contractual relationships and organisational inter-dependencies. This level can be considered to be fairly basic in improving the efficiency of relationships.

The second level of trust is termed 'knowledge based trust'. It is grounded in the predictability of one's partner. Knowing the other sufficiently well so that their behaviour is expected. It relies on information rather than deterrence. Knowledge based trust develops over time as a function of the parties having a history of interaction that allows them to develop a generalised expectancy that he or she will act trustworthily. It is likely to be a much more beneficial level for the synergy of alliances and may make the alliance more sustainable. This level of trust is recognised in the case study by the voluntary sharing of the bank account.

The highest level of trust is based on people sharing a personal identity. This means they hold common values, including a common concept of moral obligation (Child and Faulkner, 1998). Lewicki and Bunker term this 'Identification based trust'. This trust exists because, as both knowledge and identification develop, the parties not only know and identify with each other but come to understand what they must do to sustain the other's trust. It is believed that trust based on personal identification may be less common than cognitive based trust in business or work transactions where some difference of interest is usually inherent in the relationship (Child and Faulkner, 1998). The 3rd level is not likely to be attainable in very many construction project relationships due to their unique and short term nature and is not seen within the case study.

RESEARCH

A small qualitative pilot study was carried out between specialist trade organisations (STCs) and main contractors who are pursuing collaborative working practices. The purpose of this study was to test the strength of their collaborative relationships to discover if further integration of members of construction supply networks has been fostered. There was an aim to follow the movement of alliances from the first to the second stage of trust development, along with integration of internal and external systems. It is hypothesised that substantial performance improvements are made by sidelining formal contracts and emphasizing implicit contracts with in-built efficiency improvements which allow the formation of a sharing environment that has reduced the temptation for either partner to take advantage of the other. It also tested the perception of the requirement for further collaboration.

Purposive sampling was used to build up a sample set of STCs from the internet and with the assistance of the National Specialist Contractors Council. The pilot study sent out 68 self-completion postal questionnaires with a 30% return. It required the collection of qualitative data concerning STC experiences, attitudes and opinions. This tool made it possible to collect standardised information on the experiences of this set in a short period of time. To select an experienced sample, organisations were screened for references to strategic alliances, Latham and Egan agendas, collaborative

practices or any of the new emerging collaborative procurement strategies. The questionnaire was sent to a director or senior manager level within each organisation.

The two organisational case studies were selected from the questionnaire respondents, who had different experiences of strategic alliances using a semi-structured interview to elaborate upon the findings of the questionnaire. Their selection was also based upon experience of different forms of collaboration and differing views on issues raised by the survey. The data provided further interpretation and explanation of the phenomena studied and the patterns of results obtained from the survey. It is recognised that this is a limited sample but it is an important reference to the STC /contractor relationship which can provide pointers for further research into the nature of these relationships.

A further case study using the prime contracting procurement used by Defence Estates (Brown 2002) in appendix two has been compared as a sort of gold standard for collaboration. The issues that have been compared are the degree of collaboration and trust often indicated by the practices adopted, the use of contracts and their conditions including retention, the effect of competitive practices in collaboration and the degree of training that has taken place to promote collaboration and change practices.

THE RESULTS

The survey found that some STCs claimed to have replaced formal contracts on collaborative work with higher levels of trust, with anecdotal evidence to suggest that this has created substantial improvements in performance. However two thirds of strategic alliances between STCs and main contractors have not reached a stage where they would remove formal contracts from their relationships and move into the knowledge based trust stage. The second interviewee reported that she unfortunately thought that if there was no contract in place the company would be open to exploitation by their partners.

Those alliances without contracts, have had to trust their partners to transact without them, despite similar levels of perceived trust. Interestingly those organisations with a formal contract under-pinning their alliance agreement believe they are required to further improve collaboration and trust and those without do not.

There was some evidence in both the questionnaire and the interviews that STCs mistrust is warranted through main contractors seeking contractual conditions that are more favourable to themselves over the alliance. Three quarters of STCs working within an alliance reported that their contracts required them to manage risks and accept liabilities that they felt would be better managed elsewhere. Almost all believed that legal sanctions are required to evenly distribute roles and responsibilities amongst collaborative partners. The first interviewee reported that some main contractors have not fully embraced the collaborative philosophy and are using it very loosely to suit themselves. Interviewee two commented that main contractor partners use inequitable contractual terms and conditions.

This research is not concluding that contracts are inhibiting the development of trust but rather that the perceived need for a contract indicates that trust has not yet developed in many collaborative relationships. Interviewee one commented that contractual agreements are required at the beginning of an agreement to collaborate, as is consistent with calculus based trust.

In the prime contract case study it is noted that There is a three stage tendering process so that negotiated stages may provide opportunities for value management before the guaranteed prime cost is agreed. The core team takes a 30% share of any gains or losses made through value adding exercises after the guaranteed prime cost. Certain mechanisms such as a joint bank account with a common profit level were agreed to seal in the collaborative effort where partners would connect their profit levels with all working hard. The pain gain incentive mechanism was however on the basis of the degree of risk which *each* party felt able to take. A 1% share of the 30% represented a cautious approach to loss and a 20% share a greater confidence in the risks taken.

The survey found that over one third of main contractors are using competitive tendering between a reduced list of preferred suppliers but were obtaining comparative costings from other contractors in order to compare rates, which caused considerable unease amongst STCs. One questionnaire respondent commented that 'check prices' are sought by main contractors with unsolicited bidding very common which upsets the relationship. Another commented that comparative costings and cross checking was unnecessary.

These results suggest that this type of competition is affecting the level of trust experienced between alliance members and suggests that cost is still the main criteria for main contractors in their relationship with STCs, which is undermining the trust specialists are experiencing. While this behaviour continues STCs will continually feel the need to use contracts and the alliance will not develop into a knowledge based trust relationship where substantial improvements can be made. In the prime contract case study pain gain incentives may be passed down the supply chain one tier, but they had not developed beyond this. The larger core team have made their accounts transparent to each other and to the client there is a greater chance of equality.

From the literature review a number of other issues were claimed to affect trust between the parties. These issues were

- Barriers left over from traditional relationships such as retention monies
- Commitment to aligning and integrating systems to gain performance improvements could be achieved by removing waste and duplication at the interface of the alliance and sharing information
- Transparent business practices so that the level of profit and cost are clear
- Education/training and skills development in specific collaboration skills

STCs had reported an improvement in the payment of retention money, for example monies paid on time and full amount paid, they also reported higher levels of trust. It is possible that this can be explained as providing a gesture of goodwill towards STCs and a commitment to and acceptance of their business needs.

When the issue of systems alignment was analysed against trust it was found that the level of trust is affected when the alignment and integration of systems is seen to be detrimental to the specialist. Surprisingly however, trust does not seem to increase if the aligning of 'partner's' systems is beneficial.

It was found that when transparent working practices are beneficial to the organisation trust is seen to increase, with the reverse being true ie. that when transparent working practices are not practised, the level of trust is reported to be lower.

Two thirds of respondents reported that they carefully select their employees that work at the interface between collaborating organisations.. However, only a third actively educate and train their employees in the skills that are required to successfully forge a collaborative relationship.

These findings lead to the conclusion that the introduction of collaborative practices will not in themselves increase the trust between collaborating organisations but these practices must be seen to be providing benefits to each organisation. Also, residual issues carried over from traditional relationships, such as retention and competitive practice, need to be addressed if attitudes and cultures are to change. It may also indicate a lack of understanding of the differences in skills required to form, develop and maintain collaborative relationships over traditional relationships throughout the sector.

LEARNING COLLABORATIVE SKILLS

Collaboration requires the managing and organising of a project culture, which integrates much closer sustainable networks between client, contractor, specialists contractors and consultants. These skills seem to be quite different from those required for formal contractual relationships and so need to be learned or relearned.

The CITB (2000) report on professional construction skills finds that

“the current skills priority is focused on the current approach to construction and does not support partnering..... a lower skills level in developing relationships mitigates against partnering with customers and joint ventures with suppliers and other contractors. Whilst partnering may seem a good idea, without the skills to implement it, it is less likely to happen”.

CIOB (2000) identify four key processes in construction projects - construction management, business development, strategic management and stakeholder management. Figure three indicates the scores for each of the process skills.

Construction Management	Strategic management	Stakeholder Management	Business development
Project planning 5.3	Financial control 5.5	Construction managers 4.8	Finalising the bid 5.3
Site management 5.3	Business planning 4.8	Strategic managers 4.7	Tender planning & evaluation 5.2
Cost control 5.3	Developing effective working relations 4.6	Business developers 3.2	Managing design 5.2
Dispute resolution 5.0			Estimating 5.0
Procurement 4.5			Identify work 4.5
			Tender planning 4.4
			Feasibility studies 3.9

- scores are out of 6 and under 5.0 indicated by the dotted line leaves room for improvement.

Figure 11 CITB List of Process Skills (CITB 2000 Adapted from table 2)

This survey suggested that construction personnel were less skilled at the “foresight” skills of business development and stakeholder management associated with the longer term collaborative skills”.

These skills are quite different from the operational and technical skills, that we tend to be quite good at (CITB 2000).Holti and Whittle (1998) writing about construction learning networks identify a hierarchy of learning. They established that at each level strategic and operational learning takes place. Strategic learning is most relevant to thinking and acting in fundamentally different ways and their examples for strategic

learning are connected with the creation of alliances and radical changes to the reward and payment systems.

The lack of these skills may well be corroborated by the traditional graduate weaknesses, which are their inability to communicate their ideas, their poor performance in collaborative group working and their lack of experience in personal skills (Entwistle 1992). Griffith (1998) advocates the development of a planned post graduation interim stage of on-the-job training to develop these skills whilst gaining experience. Rogers (2003) and others have also advocated multi-disciplinary learning at degree level to increase respect for the different perspectives created by different training, which is supported by the Strategic Forum for Construction. This could create synergy and trust in alliances and supply chains, rather than lose efficiency through conflict. It also echoes, in part, calls for common educational elements of up to a year together and extended specialist training by the Reading Construction Forum (1991), CITB (1992) Latham (1994) and CIC (1996)

The CITB Report clearly indicates the positive correlation of performance with skills levels and in particular of highly skilled business developers with higher mark ups, winning more projects (by number) and more profitability. More profitable companies had satisfied employees, delivered contracts on time and had more satisfied customers.¹ Collaborative business skills must be linked carefully to the business strategy.

The development of a business Integration model

Bennett and Jayes (1998) firmly believe that partnering firms need to integrate their systems so completely that they form an efficient ‘virtual organisation and they include strategic, tactical, operational, interpersonal and cultural levels.

For collaboration to be successful there must be time for an implementation process, through which the alliance can achieve the inter-organisational understanding, progressively working towards the integration of internal and external systems and the development of a knowledge based trust society, taking as a basis ‘where people are at’ in terms of strategic learning at an inter organisational level. This will require the development of negotiation, stakeholder management and business skills to make collaboration successful. The diagram below is an attempt to model the integration of trust and the learning process.

It is this integration facilitated and combined with the development of knowledge based trust and a skills development programme, that allows the effective management of the interfaces between collaborating organisations, producing the substantial performance improvements widely speculated upon within the construction industry.

¹ The correlations indicated that expenditure on training in any of the 4 process areas drives up skills significantly. In a benchmarking of 10 KPI's of the best performing (top quartile of results) and worst performing (bottom quartile) the most marked difference is between the lowest and highest profit per employee (75%), and the least marked difference is delivery on time (c5%). The interpretation is more complex, but it suggests that a lot can be done to convert training into profit. There is surprisingly less difference (c30%) for customer satisfaction, though the study has made the point that profitable companies had satisfied clients

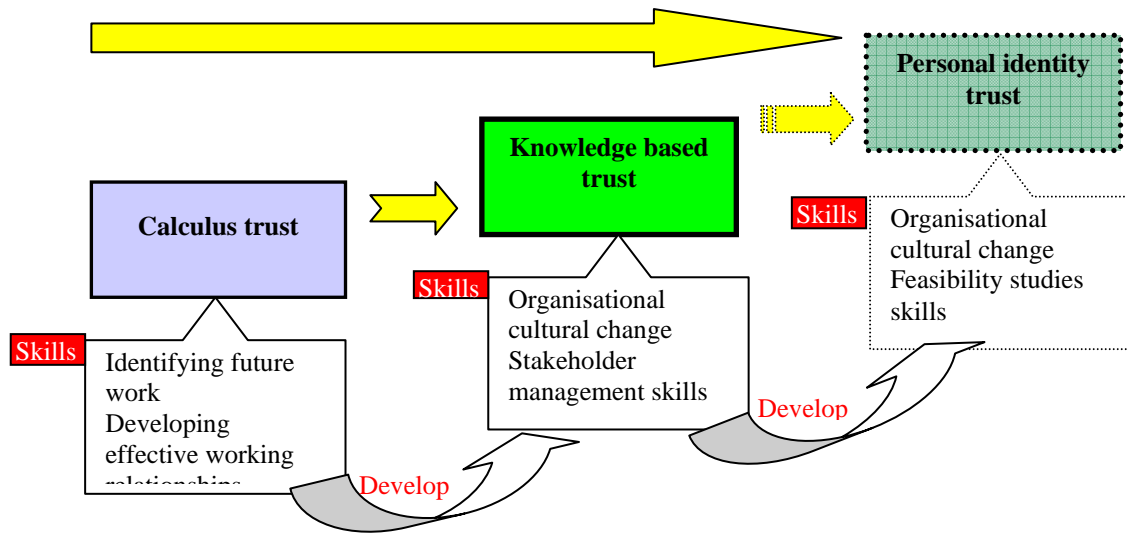


Figure 12 Integrated business model for trust and Learning

Further research is required to investigate and establish the extent by which these criteria enhance or restrict the development of trust and the proportions within which they must be applied to establish the correct pull within the relationship to allow one party to relate with another in the belief that the other's actions will be beneficial rather than detrimental to the first party.

CONCLUSION

The changes in the construction industry induce a need for more collaboration in the industry and in many cases the headlined benefits are not being achieved indicating that positive relationship factors may be wrong. Collaborative relationships are evidenced by more transparent business practices, a more highly skilled workforce including graduate education and professional development with the aim of cultural change, better client satisfaction rates, less dependency on contracts and a consideration of the removal of retention or bonds.

Current business practices are created by the dominant party and contract conditions are perceived by the specialist in particular to be favourable to that party. Contract conditions are subject to wide interpretation and the weaker party may be exploited and financial payment and cash flow remains a major cause of discontent.

The results of the pilot study showed that a large proportion of specialist trade contractors working in collaboration with main contractors do not trust their partners

enough to put aside the formal protection offered by contracts from their relationship. This indicates that alliances are still operating at the calculus based trust level and are therefore not obtaining the benefits that are realised once the relationship moves into the knowledge based trust arena. Two tentative conclusions emerge:

Collaboration is not being seen as the result of a process through which collaborating organisations develop an understanding of each other and address the issues that allow a convergence of interests. At present the development of mutual trust is being suppressed by the lack of attention given to overcoming the differences that are preventing trust developing. Secondly the development of a meaningful level of trust requires time and synergy and it is suggested that a focused programme, incorporating training and education that recognises new business and personal skills that support the longer term collaborative practices espoused by various initiatives, will make these relationships more sustainable, successful and profitable. This is indicated in the integrated model for trust and learning.

APPENDIX (ADAPTED FROM BROWN (2000))

Case study Andover North Site Redevelopment (ANSR)

ANSR is one of the first tranche of capital prime contracts rolled out by the MOD, post 2000, to improve performance in Defence Estates procurement as an alternative to PFI. The procurement provides an output specification to the prime contractor who mobilises the design and construction team to deliver the estate. The principles of PC are to establish an integrated project team which levers in the direct involvement of the supply chain in strategic decision making and to ensure a high standard of management by the PC to create conditions that respect the workforce. Some of the mechanisms suggested by Defence Estates (2001) for achieving long term value for money are incentivised payments, improved supply chain management, continuous improvement and partnering². Other principles that contractors take on board are a three stage selection process including negotiation, a single point of contact, clear allocation of risk, through life costing, open book accounting, prompt payment of suppliers and the early appointment of a disputes review board to provide timely interventions to manage dispute. The contract has standard core provisions and will be tailored to suit specific projects circumstances.

The site is the headquarters for defence logistics on a brownfield site and consists of the development of a technical building, , offices for 780 people, a creche, sports facilities, a mess with accommodation, a gatehouse and 34 acres of landscaping. The contract was worth £40m, in Jan 2000 and it was completed in October 2002. An additional operating budget was agreed for a six year maintenance compliance period. The attitude of the client is that they expect a product matching their functional output specification, that is fit for purpose and which has a maximum target cost that is likely to enhance its value through the incentive of sharing any value savings. The client will benefit from financial savings on a 70:30% sharing arrangement.

Integrated team approach

The prime contractor was a consultant and a core team was formed consisting of the key supply chain cluster leaders and four design consultants. The mechanical and electrical contractor together with two building contractors and the architect each lead

2

their supply chain of contractors/designers. The core team are bound together in an agreed equity weighting proportional to the degree of risk which is taken in a pain:gain, cost:profit sharing agreement with the client, based on the target budget of £40m.

A virtual joint venture agreement has been created by the core team that is solidified by the voluntary creation of a single project bank account, which pays out simultaneously in accordance with pre agreed proportions against project progress and the addition of a single rate profit margin. This is planned to create peer pressure for equal performance so that poor performance is righted to optimise the payment received in the team. Excellent performance on the part of one party can be wiped out by poor performance by another.

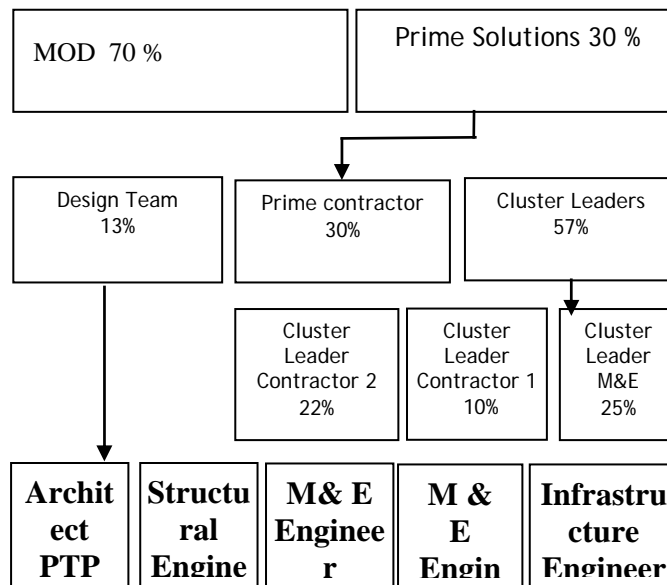


Figure 13 Organisational matrix of core team and supply chain

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