

Addressing the procurement systems, culture and trust issues that the key stakeholder(s) had to contend with during the construction Heathrow T5 discuss the commercial legacy that the project leaves behind.

Abstract

Megaproject clients are traditionally disappointed with the outcome of their project, be it over budget, delayed or not to the specification they requested at tender stage.

This paper investigates through a literature review the procurement systems, culture and trust issues that the key stakeholders had to contend with during the £4.3 billion construction of Heathrow Terminal 5.

The results reveal that the success of the project was dependent upon the culture of trust installed and the approach to risk adopted by BAA during the procurement process. It is recommended that the steps implemented by BAA should be repeated, particularly in future megaprojects to ensure the satisfaction of all parties.

Introduction

On 27 March 2008 Heathrow Terminal 5 (T5) opened after approximately 19 years of planning and £4.3 billion investment by British Airport Authority (BAA). Laing O'Rourke, AMEC and MACE were the three principal contractors employed, although as highlighted by Basu (Little and Millard, 2009) by 2008 fifty thousand people, employees and key stakeholders had been involved in the construction.

Prior to construction BAA conducted a two year study in which '*every major UK construction project of over £1bn conducted over the previous 10 years and every international airport that opened over the previous 15 years*' (Brady and Davies, 2009) were investigated. Brady and Davies (2009) discussed the findings, stating that of those investigated none had been constructed on time, within budget and to the original standard set out. Davies (Gann and Douglas, 2009) echoed Brady and Davies (2009) discussions noting it would be £1 billion over budget, over a year late and at least two fatalities.

However, the study predictions were not fulfilled. T5 was completed on time and within budget (later complications regarding the roof may divide opinion as to the overall success of the budget). This paper will discuss the reasons behind the success of the project, focussing on three commercial management issues identified by Lowe and Leiringer (2006) namely; procurement systems, culture and trust. The commercial management issues will be evaluated and the commercial legacy for future projects to ensure success highlighted. The conclusion will cover the key lessons learnt from T5 and re-emphasize the commercial legacy that should be taken from this project.

Procurement Systems

Within construction (and other industries) different procurement systems exist to source the labour, plant and materials required. Often clients will be advised by an Architect, Private Quantity Surveyor or another related professional on the most appropriate procurement route to select depending on project size, complexity, cost and risk.

The procurement system adopted by an inexperienced client will often be purely on the recommendations of the professional initially appointed. Clients are normally presented with a few options of systems to select. However research by Ireland (1989, cited by Langford and Murray, 2006) into six procurement methods concluded that those investigated had '*virtually meaningless distinctions.*' Hibberd and Djebarni (1996, cited in Langford and Murray, 2006) found most clients and consultants, were unhappy with their procurement system, most likely having been '*seduced by the comfort of options*' without fully evaluating the selected' merits. Further discussions of Hibberd and Djebarni (1996 cited in Langford and Murray, 2006) found that commercial gain was a significant factor in promoting the options but often that benefit is not passed to the client. These findings would imply that experienced clients base their chosen method on systems they know, but previous issues increase the likelihood that they will seek new options.

An important outcome of procurement is 'value', the meaning of which varies between people and organisations. Some view value as lowest price, while others look to get a mix between quality and cost. Langford and Murray (2006) highlighted the different perspectives of value, including '*economic, marketing and business*' concluding that '*value in procurement is a social and political construct as well as being bounded by economic selectivity*' (Langford and Murray, 2006). Ultimately the strategy for procuring value will be limited by the economic boundary i.e. one must buy within ones' means. However, the product selection of the options within this boundary will depend on the organisational culture on what constitutes value; within T5 the culture was changed from the traditional and this will be discussed later.

The procurement within T5 was discussed by Caldwell (Roehrich and Davies, 2009) noting that BAA's intentions from the start was to have a few close relationships with preselected supply partners through the T5 agreement. This would lend itself towards achieving the 'value' approach of attaining quality, rather than 'lowest price wins' described above. The close relationships were formed upon the basis of trust, and this was important in ensuring value from the selected procurement was achieved.

The best source for understanding success and failure of different procurement systems is case studies. Both Brady and Davies (2009) and Davies (Gann and Douglas, 2009) commented on the two areas identified by BAA which contributed to the previous poor performances, namely, a lack of collaboration among project partners and the client's reluctance to assume responsibility for project risk. BAA's response to the findings was to "change the rules of the game" through the management and commercial structure in order to prevent the predictions from coming true. This "rule change" was achieved through an adopted partnering approach to procurement.

Wolstenholme (2008) noted the procurement strategy adopted was in direct response to the assessed risk that the project posed to BAA as a business. In order for the project to be successful and targets met, BAA introduced a new procurement strategy based upon the partnering approach. The most likely catalyst for the unique contractual approach came from BAA's CEO Egan, and the T5 agreement '*employed the same philosophy applied by Egan when he produced Rethinking Construction.*' (Williams, 2008)

Partnering differs to the traditional procurement route and was introduced by Latham's 1994 report Constructing The Team. It encourages parties to embrace trusting and cooperative relationships. A further report by Sir John Egan (at the time of T5 he was BAA's CEO);

Rethinking construction, redefined the term partnering to 'supply chain management' introducing principles from manufacturing to ensure success. Partnering was by no means without critics, Green (1999, as cited in Fellows, 2006) went so far as to note that the idea had '*become dangerously radical by replacing the central tenants of a regulated market economy with an ideology uncomfortably close to naked corporatism.*' Success in partnering is centred on trusting relationships. Therefore the trust installed as part of the T5 culture was paramount to its success.

Commonly risk is transferred down the supply chain though the use of the procurement system. Rowlinson and Kvan (2004) described this approach as '*vicious circles in the procurement process*' whereby the supplier with the least financial stability bears all the risk. The construction industry is founded on subcontracted labour from small firms. The transfer of risk to the small firms can often lead to their demise, in turn undermining the structure of the industry. It is therefore imperative that the transfer of risk is addressed to protect the small firms who may not be able to cope with the burden placed upon them in order to keep the stability of the supply chain. BAA addressed this risk transfer in T5, and their commercial success provides a risk legacy which should be considered again.

A contractor views risk as a cost or an opportunity. If the risk occurs, it is an additional cost, but, if it does not, their risk contingency becomes profit. Traditionally clients will try and transfer risk to contractors. Contractors will therefore price it within their tender and will in turn try to pass on the risk to their subcontractors. BAA took a different and unique approach to risk in T5 – they held all the risk - deciding it would be '*the best way to achieve price certainty.*' (Focus on Transport, 2007) Subsequently the contractors risk contingency was removed, lowering the overall tenders. Obviously with no risk placed on the contractor, incentives were required to encourage all to work to minimise the risk – the approach of 'it doesn't matter, it's not my bill' had to be avoided for this scheme to be successful. The risk was managed through financial incentives for suppliers, rewarding successful performances. During the design stage the risk contingency was held within the each project, however in 2004 Bullock decided cost target could be more challenging. This resulted in £100 million taken from individual projects to a central pot which allowed the risk contingency to be allocated depending on where it was needed (Doherty, 2008). This contingency allowed greater control of the financial implications of risk at a more global level thus a tighter overall budget control.

Even prior to the completion of T5 the commercial legacy of the partnering approach was being adopted by Laing O'Rourke in the Channel Tunnel Rail Link terminal at St. Pancras. Although the risk approach which had been adopted by BAA was not being used, as Davies (Gann and Douglas, 2009) discussed the T5 approach was reused for the target cost "pain/gain share" principle.

Culture

Many culture definitions exist; Hofstede (1994) defines it as '*the collective programming of the mind which distinguishes one category of people from another.*' However, a more succinct definition of culture within an organisation from Fellows (2006) is '*how we do things here.*'

Culture exists within an organisation. It is ingrained and makes change difficult, and consequently change will occur over a long period rather than quickly. A climate also exists

within an organisation and can be changed in a relatively short period. However, its ability to change is also a weakness, as both negative and positive climates can infiltrate an organisation. The climate is the surface of the organisation and the culture underlies this and will remain constant even with fluctuating climate changes. Both culture and climate are subject to change because of power influences.

The core layer of culture is often stated to be values, then beliefs and ultimately is manifested through the behaviours displayed by individuals. Figure 1 shows the layers of culture often described, with the core being values, and the outer layer - or skin - the behavior displayed. One of the core values within T5 was teamwork. This was encouraged through the passing of a rock upon a completed milestone. This ceremonial handover, may seem trivial, was done with great pride and the teamwork culture within the project meant workers did not want to let the team down by passing the rock late (Doherty, 2008).

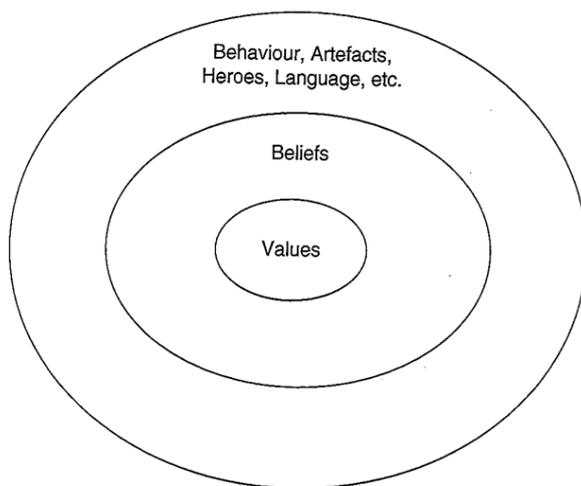


Figure: 1 Layers of Culture (Fellows, 2006)

The construction industry involves individual projects which make up the overall company portfolio, such as T5. Fellows (2006) states these individual projects are often referred to as 'temporary multi-organisation (TMO) involving individuals from varying power based coalitions. These TMO's may display the culture of the organisation, but their climate will vary in line with the objectives of those in power.

Within T5, BAA sought to create a new culture which encouraged people to:

- Seek out, capture and exploit the best practices of others
- Remove the barriers and inhibitors to doing things differently
- Stimulate and support good ideas
- Leverage the commercial incentive to perform exceptionally (Wolstenholme, Fugeman and Hammond, 2008)

Partnering and other similar procurement methods must have a different climate compared to that required for traditional and design and build methods, as the feeling of trust and cooperation is key to the success. With traditional procurement methods arguably trust and cooperation would improve the performance and satisfaction of all parties involved, although not essential to ensure success.

The T5 agreement was a cost-plus contract (the client pays the suppliers actual cost plus a fixed fee which includes overhead and profit) based upon a partnering approach. Caldwell (Roehrich and Davies, 2009) highlighted that the T5 agreement was based upon behaviours and relationships, allowing 'bespoke' interactions between BAA and suppliers. Doherty (2008) discussed how the contractors involved within the project mentioned previous 'games' that they used with more traditional contracts, such as bidding low to win the project and then working to commercially protect their company during the project. The approach adopted within T5 discouraged these methods by fair payment mechanisms and the change in culture within the project. The culture literature reviewed highlights the success of this contract was dependent upon the culture within the project. BAA instilled a culture with reduced emphasis on contractual principles commonly observed in construction, and promoted a behavioural focus. The reduction in contract focus allowed an informal approach, in turn reducing the contractual conflict commonly reported. A goal sharing rather than individual goal culture was adopted within T5. It is important to highlight the informal approach was potentially only possible due to BAA bearing all the risk, and therefore for this culture change to have future commercial impact, arguably clients must assess the risk and look to manage it themselves.

Hofstede (1980) defined four dimensions of culture:

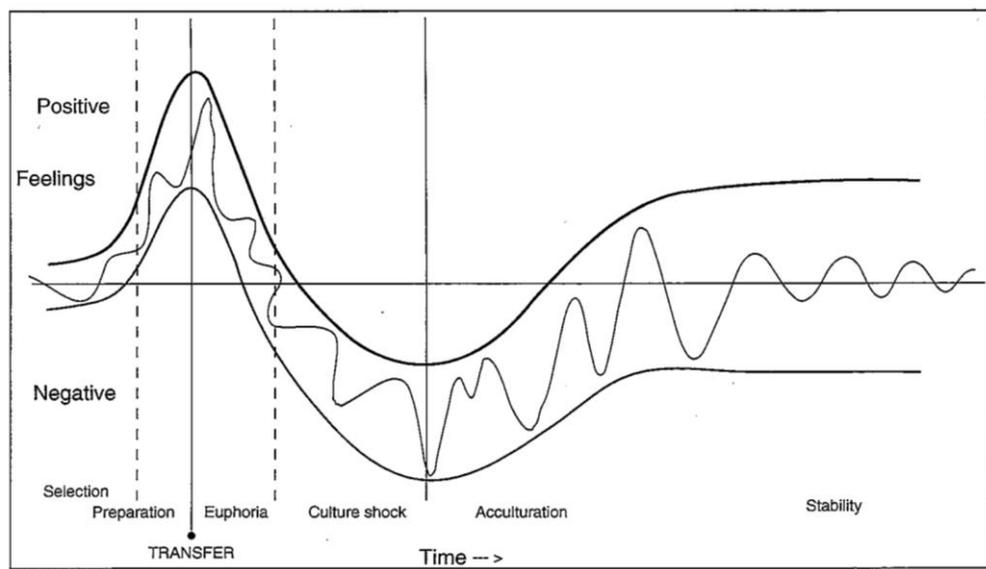
1. Power distance; where society has a few powerful leaders, and the majority will expect to be told what to do
2. Collectivism/individualism; collectivism people work as a team more commonly seen in Asian communities, unlike individualism which is more commonly associated with Western cultures, and people within these are described as independent.
3. Masculinity/femininity – distinct roles for men or women within the society
4. Uncertainty avoidance – *'the extent to which members of a culture feel threatened by uncertain or unknown situations'* (Hofstede, 1994b)

Clear conclusions can be drawn on the dimensions of culture encouraged within the T5 'agreement':

1. The power distance was based upon a few powerful leaders who over-saw the whole project – it would be impossible for a project of this scale to have no single point of control due to its complexity. However, within the smaller teams there was a lower power distance, encouraging teamwork.
2. Collectivism rather than individualism which was adopted through goal sharing.
3. The masculinity/femininity has not been discussed. However, the sex discrimination act prohibits this, and it has been noted that teams were made up of *'individuals identified as having the right skill sets for the activity in hand'* (Wolstenholm, Fugeman and Hamond, 2008)
4. Uncertainty avoidance was tackled by BAA taking all the risk and the 'no blame' culture reducing the fear of risk.

The critics to partnering have already been mentioned and its lack of dominance in procurement systems - Davis Langdon (2010) reported partnering only accounted for 1% of procurement methods chosen - adopted implies little surprise that the companies working on T5 experienced a culture shock when they first started. Figure 2 demonstrates the process of experiencing a new culture, starting with the preparation, moving to the euphoria period

where everything is great, next the culture shock which has a negative feeling before acclimatisation to the new culture and mechanisms.



**Figure 2 –
Diagrammatic
view of
'culture
shock'**

**(Fellows,
2006)**

Davies (Gann and Douglas, 2009) discussed the culture “shock” that Laing O’Rourke experienced during the T5 construction. Laing O’Rourke a traditional contractor with little or no experience of collaborative team working had to quickly learn to adapt to the BAA partnership employed.

Trust

Wood and McDermott (1999) defined trust as ‘*a willingness to rely on the actions of others, to be dependent upon them, and thus be vulnerable to their actions.*’ It is therefore clear that trust is focussed on risk; individuals must take the risk to be vulnerable to the actions of another in order for trust to be established.

Trust has already been highlighted within the previous two principles discussed – procurement systems and culture – as their success depended upon the ability for individuals to trust one another.

Malik et al (2007) investigated the notion of trust through a series of interviews, and found that the majority of those interviewed agreed that ‘*trust was concerned with the way people communicated with each other.*’ It is important that clear communications exist in order for information sharing so problems can be solved. This was particularly important within the risk conundrum, where in order for risk to be avoided communications between parties must be good, so all are informed of potential problems. The freedom of communication and the ability for people to speak without fear of blame was essential to the success and it was the trusting nature installed within the community that provided this.

The procurement system adopted was based upon the partnering approach. In order for this to be successful trusting relationships between parties must be established. The payment mechanisms were based on a cost plus approach with open book philosophies, agreed profit margins ensuring all parties were satisfied and the project was completed within budget. It was important all parties trusted that a fair analysis of work done would be conducted. The whole commercial process was partnering in its purest form with a totally open book

approach. Trust was therefore essential between BAA and all involved to ensure all parties were content.

The culture established within the project was a trusting culture whereby individuals were selected upon merit rather than the organisation they worked for. It was important for managers to be able to trust those within their team, some of whom they may have met only briefly, rather than having had a long term relationship. Malik et al (2007) found that trust was not isolated to one situation, but built up over time. It is therefore a big success of T5 that trust between parties was established in such a short space of time, as research dictates trust is built over time.

Arguably it was the formation of trust from contract mechanisms that enabled the success of T5; *'the formation of integrated teams and the application of a novel form of contract enabled trust between all parties to be established.'* Wolstenholme (2008) noticed BAA's project strategy, where they acknowledged the significance of risk in establishing trust. Their decision to shoulder all risk left one fewer excuse for distrust by removing the vulnerability which people and organisations would have otherwise had to bear. Trust is built upon the sharing of information, and the reliance on this information, Bigley and Pearce (1998, cited in Malik et al, 2007) reiterated this, stating *'there is also an element of reliance.'* BAA's shouldering of the risk, required all to work together to negate the risk. To achieve this, individuals had to rely on the information given to them, in order to make the correct informed decision which would produce the most effective way of preventing, reducing or managing the risk.

Conclusion

In conclusion, if BAA had not conducted the two year study to understand the fundamental problems that have plagued previous mega projects the outcome of this project would most likely have been as predicted; approximately £1billion over budget, more than one fatality and at least a year late. More fundamentally to conducting the research, BAA listened and acted on it - a key reason for T5's success. Too many clients exist who are inexperienced, or do not treat value for what it should be. More often than not, cheapest is not best. Quality costs money, but it is not right that a contractor can 'pull the wool' over a clients' eye on quality, in order to turn a profit. The partnering approach adopted by BAA is the most fundamental reason behind the commercial success of T5. If the culture installed within the whole project had been that traditionally seen within construction where blame exists and cooperation is limited, the success of partnering may not have been the same. The trusting nature and harmonious working may largely be attributable to BAA shouldering the risk thus negating a later argument, as all contractual aspects were clear, in turn allowing an informal contractual approach.

The underlying principals of the scheme were not new; partnering has been done before with varying degrees of success. If lessons are to be learnt and a commercial legacy taken forward, the culture built within the project team should be held in the highest regard. A culture where different organisations with different cultures can work together, trusting and sharing information to ensure success should be what all construction projects strive to achieve. It is essential the commercial legacy is not only directed and applied by contractors, but that clients understand that value does not mean cheapest, and with the right framework the transfer of risk may not be the most economical solution.

References

1. Basu, R., Little, C. and Millard, C. 2009. *Case Study: A Fresh Approach of the Balanced Scorecard in the Heathrow Terminal 5 Project*. *Measuring Business Excellence*, vol. 13, no. 4,
2. Brady, T. and Davies, A. 2009. *From Hero to Hubris – Reconsidering the Project Management of Heathrow’s Terminal 5*. *International Journal of Project Management*, vol. 28, no. 2,
3. Caldwell, N.D., Roehrich, J.K. and Davies, A.C. 2009. *Procuring Complex Performance in Construction: London Heathrow Terminal 5 and a Private Finance Initiative Hospital*. *Journal of Purchasing and Supply Management*, vol. 15, no. 3,
4. Davies, A., Gann, D. and Douglas, T. 2009. *Innovation in Megaprojects: Systems Integration at London Heathrow Terminal 5*. *California Management Review*, vol. 51, no.2
5. Davis Langdon. 2010 *Contracts In Use: A Survey of Building Contracts in Use during 2010*. Available through:
http://www.rics.org/Global/CONTRACTS%20IN%20USE_FINAL_%20Nov2012_%20teage_081112.pdf [Accessed 14 November 2011]
6. Doherty, S. 2008 *Heathrow’s Terminal 5: History in the Making*. Chichester: John Wiley & Sons Ltd
7. Fellows, R., 2006. Culture. In: Lowe, D. & Leiringer.R., 2006, *Commercial Management of Projects Defining the Discipline*. Oxford: Blackwell Publishing. Ch.3.
8. Hofstede, G.H. 1980. *Culture’s consequences: International Differences in Work-related Values*. Sage, Beveley Hills, CA.
9. Hofstede, G.H. (1994a) *The business of international business is culture*. *International Business Review*, vol.3, no.1
10. Hofstede, G.H. (1994b) *Cultures and organizations: Software of the Mind*. Harper Collins, London.
11. Langford, D. Murray, M. 2006. Procurement in the Context of Commercial Management. In: Lowe, D. & Leiringer.R., 2006, *Commercial Management of Projects Defining the Discipline*. Oxford: Blackwell Publishing. Ch.4.
12. Lowe, D. & Leiringer.R., 2006, *Commercial Management of Projects Defining the Discipline*. Oxford: Blackwell Publishing.
13. Malik M.A. Khalfan, McDermott, P. & Swan, W. *Building trust in construction projects*, *Supply Chain Management: An International Journal*, vol. 12, no. 6
14. Public Private Finance, 2007. Focus on Transport: *That’s the way to do it: Heathrow’s Terminal Five is a role model for the Industry*. Available through: Loughborough University Library Website < <http://www.lboro.ac.uk/library/> > [Accessed 14 November 2012]
15. Rowlinson, S and Kvan, T. 2004 Procurement Systems. In: Langford, D and Murray, M., 2004, *Architect’s Handbook of Construction Project Management*. London: RIBA Enterprises. pp141-157.
16. Williams, R. 2008. *The perfect storm: Underwriting the construction of Heathrow Terminal 5*. Gleneagles, 16 September 2008. Swiss Reinsurance Company Limited
17. Wolstenholme, A. *Introduction*. *Proceedings of the ICE - Civil Engineering*, vol. 161, no. 5.
18. Wolstenholme, A., Fugeman, I. and Hammond, F. *Heathrow Terminal 5: Delivery Strategy*. *Proceedings of the ICE - Civil Engineering*, vol. 161, no. 5.

19. Wood, G., McDermott, P. 1999. Looking for trust in construction: an interim view. In: Ogunlana, S.O., 1957- 1999, *Profitable partnering in construction procurement. CIB W92 (procurement systems) and CIB TG 23 (culture in construction) : joint symposium*, London : E&FN Spon, London.

Word Count: 3,258