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The 'transaction X-ray': understanding construction procurement

1 **Alan Aitken** BSc, MSc, PhD, CEng, MICE, MIStructE
Lecturer, Glasgow School for Business & Society, Glasgow Caledonian University, Glasgow, UK
(corresponding author: alan.aitken@gcu.ac.uk)

2 **Robert A. Paton** BSc, MSc
Professor of Management, Adam Smith Business School, University of Glasgow, Glasgow, UK

This paper presents the results of a case study, the Construction Case, which examines procurement practices within the UK construction supply chain and compares these with a more general UK sample taken from non-construction sectors. Using a qualitative methodology, the approaches to relationship management and buyer value perception are graphically mapped, using an innovative 'transaction X-ray' technique. The Construction Case considers procurement transactions conducted at various points along the construction value chain: the client, the construction firm and the specialist contractor. Recognising that the research design favours a small sample size, and thus limits generalisability beyond the boundaries of the case, the paper finds that construction industry procurement operates in an adversarial and largely arm's-length manner. While procurement practice is found to share common aspects with other industrial sectors, the case demonstrates that the construction industry is more adversarial and less collaborative than is the average found across the other sectors examined. The paper outlines a useful framework whereby construction practitioners can evaluate elements of procurement practice within their own organisations, and also signposts the required direction for future research in order to reflect the gap, suggested by the case, between current normative theory and construction procurement practice.

1. Introduction

It is 21 years since Sir Michael Latham provided his final report laying out what was seen as the future of UK construction procurement (Latham, 1994). The report called for co-operation and fairness along the supply chain claiming that increased value would thus be created and shared. He noted, for example

> Effective partnering between client and contractor with teamwork and a 'win-win' approach helped bring the Sizewell nuclear power station to completion on time and within budget. (Latham, 1994: p. 20)

This paper examines the legacy of Latham, on the 'coming of age' of his report, by comparing procurement practice in the construction sector against both his recommendations and also, more generally, with the practices adopted within UK industry in general. The examination is conducted using a relatively non-invasive, qualitative, and innovative methodology that penetrates the barriers frequently associated with buyer–seller commercial sensitivity (Cronin, 1994; Harwood, 2002).

2. Background

Procurement relationship management practice is recognised as being underresearched (Spina *et al*., 2013; van der Valk and Wynstra, 2012), yet the importance of understanding how this boundary-spanning role operates is also widely recognised (Johnston *et al*., 1999). It is significant to note that while Latham acknowledges the importance of value creation within the construction supply chain, literature concedes that there is a degree of complexity associated with the concept of value (Aarikka-Stenroos and Jaakkola, 2012; Sánchez-Fernández and Iniesta-Bonillo, 2007). Notwithstanding which, considerations of value and its appropriation are seen to influence buyer behaviour (Cox, 2004; Liu *et al*., 2005).

2.1 Supply chain relationship management

Gadde *et al*. (2010) recognise that business relationships will always be characterised by both conflict and co-operation, as the parties simultaneously hold both contradictory and shared interests. However, Sako (1992) and Zacharia *et al*. (2011) are among those

who broadly support Latham's (1994) position that value creation will be enhanced through relationship building strategies.

Lax and Sebenius (1986: p. 33) provide a useful practical insight

> No matter how much creative problem solving enlarges the pie, it must still be divided; value that has been created must be claimed. And, if the pie is not enlarged, there will be less to divide; there is more value to be claimed if one has helped create it first.

Cox *et al*. (2000) develop this concept by expressing the view that there are four basic relationship management approaches (RMAs) and suggest these are best understood on the basis of commercial appropriation of value (pie dividing) and by the manner of operationalisation (pie enlarging). The resulting four basic RMAs are summarised in Figure 1.

Cox *et al*. (2004) discuss these approaches in some detail. Adversarial arm's-length relationships are characterised by both parties attempting to maximise their unilateral gain. On this basis, co-operation between the parties is likely to be minimal, contingent with satisficing the basic demands of their exchange partner. When the relationship is non-adversarial and arm's length, there will be little co-operation but commercial terms offered are likely to be accepted, at least in the interim. Where there is adversarial collaboration, parties recognise a commercial need to work together to achieve mutually desirable outcomes and to develop their operational interfaces. However, it must also be recognised that the value thus created may well be claimed asymmetrically on the basis of the power resources held. The final buyer–seller relationship is non-adversarial collaboration, in which both parties behave collaboratively, accepting that opportunism may destroy trust and believing that collaboration will result in mutually beneficial performance.

2.2 Supply chain value

Latham (1994: p. 11) lists the features that the construction industry values. These include 'value for money', 'free from defects on completion', 'delivered on time', 'fit for purpose', 'reasonable running costs', and 'satisfactory durability'. Broadly, these items can be categorised as being focused either on the financial exchange that takes place between the contracting parties (exchange value) or on the subsequent utility that will accrue through use (utility value). The view that value can only be established from the perspective of the customer was advanced by Vargo and Lusch (2004), an idea that has since been the subject of much academic debate.

A common view of value perception is based on 'buyer gain against sacrifice' models such as that of Khalifa (2004: p. 656), which is adapted to form the basis for Figure 2.

In addition to recognising that the customer requires to meet the cost of providing the supplier margin and also his own search and acquisition costs, Khalifa highlights the concept of psychic value. Groth (1994) considers that psychic value differs from utility value insofar as it does not accrue directly from the use of the goods or services but rather it is imbedded in human factors such as feelings, emotions and even buyer ego. To better reflect the range of factors that potentially influence an individual buyer's wider psychological needs, the authors prefer the term 'buyer-specific perceptions of value' (BSPV) rather than use those adopted by Khalifa. Spina *et al*. (2013) and Terpend *et al*. (2011) note both the complexity of the professional buyer's search for value and also of the absence of related empirical studies. Similarly, Brandon-Jones *et al*. (2010) and Hunter *et al*. (2006) highlight a need to reconcile why, although there is considerable research evidence that concentrates on the value added by strengthening operational linkages, evidence suggests that practitioner focus is frequently the reduction of price through competitive tender. They consider that this anomaly alone highlights the need for further research into procurement practice.

3. The Construction Case

Ireland (2004) describes the four functional stages that comprise a typical, if somewhat simplified, construction of supply chain. The first stage involves a construction client engaging a first-tier construction firm. Typically, second-tier specialists, who in turn

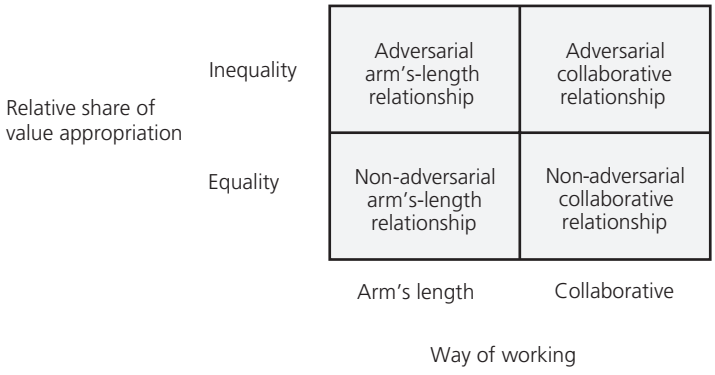

Figure 1. Relationship management approaches (source: Cox *et al*., 2000: p. 56)

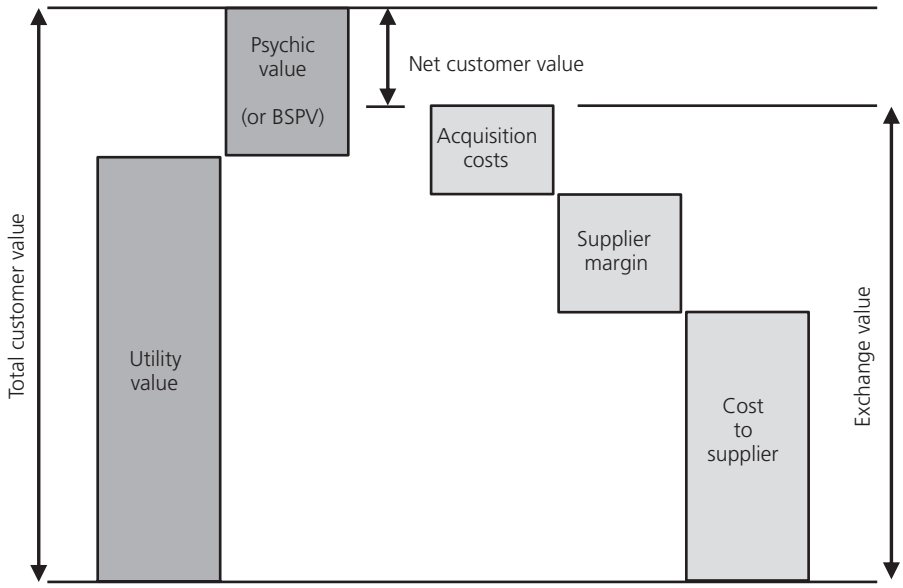

Figure 2. Customer value in exchange (source: adapted from Khalifa (2004: p. 656))

may well utilise third-tier component suppliers, provide the specialist services required by the construction firm. Latham (1994: p. 27) lists typical roles of specialist contractors as including suppliers of piling, structural steelwork, HVAC systems and IT networks. Figure 3 summarises the simplified supply chain.

Yin (2003) offers the opinion that case research methods are appropriate when contextual considerations are significant, especially when the boundaries of the phenomenon under examination and the context are not clearly evident. Significantly, Anderson *et al*. (1987) observe that the purchasing process is frequently less heavily influenced by the precise nature of the goods or services being purchased than by the perceived importance and frequency of the purchase. Reflecting on this, the authors felt it appropriate to adopt a case study methodology in order to conduct an empirical examination of buyer behaviour and value perception in the construction sector. In choosing this focus, the authors acknowledge that the 'team', as defined by Latham, extends beyond the buyer–seller interaction examined. To provide a degree of generalisability beyond a single type of transaction, the research design deliberately sought situational diversity by examining the interaction between clients and construction firms and between construction firms and the specialist contractors on whom they rely. To provide the required industrial diversity for comparative purposes, non-construction-related transactions were also examined.

Gadde *et al*. (2010) and Lamming *et al*. (1996) recognise that asymmetric power forms one of the core constructs in the study of inter-organisational relationships. Cox *et al*. (2000) suggest that power-based interdependence occurs in situations in which purchasers have an incentive to proactively select a preferred sourcing behaviour, but where they also recognise that they lack the power advantage to achieve a position of dominance. Kähkönen and Virolainen (2011) and Squire *et al*. (2009) recognise that there has been limited research into exchange interaction in such conditions of interdependence. Ireland (2004) notes that regularity of demand is a fundamental prerequisite for the development of effective supply chain management in power regimes of interdependence.

Jap (1999) notes that research into procurement practice has variously adopted the industry, the firm, the trading dyad (i.e. an individual buyer and seller), and the transaction as the appropriate unit of analysis. Hunter *et al*. (2006) and Williamson (1991) suggest that analysis at the level of the transaction, a micro perspective, will reveal the behavioural assumptions of the key players, the governance structure, and the contracting strategy of

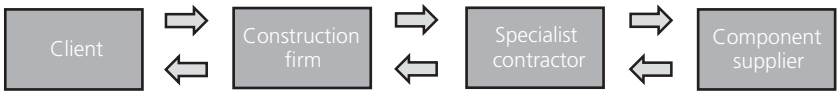

Figure 3. Simplified construction supply chain (source: adapted from Ireland (2004: p. 374))

the respective organisations. They further recognise that the transaction may well encompass aspects of past relationships, anticipate future relationships, and reflect the influence of the wider supply chain. This paper adopts the transaction as the appropriate unit of analysis.

In summary, therefore, this paper describes the Construction Case which considered transactions involving repeat purchases, carried out in situations of power interdependence.

3.1 Participant recruitment

Harwood (2002) observes not only that is it inherently difficult to gain access to negotiating parties but also that this difficulty is exacerbated when there are sensitivities. She suggests adopting purposeful sampling through the identification of 'research-friendly' participants, while highlighting the need to reflect on such an approach when drawing conclusions. Following Harwood's lead, the participants asked to supply information were selected on a 'non-probability' basis (Bryman and Bell, 2003) based on the likelihood that they think would have knowledge relevant to the study, which they would be willing to make available to the researchers. During initial discussion with potential respondents, it became clear that procurement professionals appeared more confident, with regard to the sharing of commercially sensitive information, when they knew that their trading partners would not be involved. For this reason, it was decided to recruit only buyers. Dampérat and Jolibert (2009) observe that such an approach will inevitably introduce a certain bias but contend that it may be possible to mitigate this through the choice of appropriate research methods.

In order to recruit into the Construction Case, direct approaches were made to senior managers, who were known to the authors, whose area of responsibility lay within potentially suitable organisations. A snowball sampling approach was then adopted (Bryman and Bell, 2003; Jankowicz, 1995) to identify those with relevant organisational responsibility, sufficient subject knowledge and a willingness to participate. The cohort recruited into the Construction Case comprised four construction clients seeking to procure the services of a construction firm, and a further five construction firms seeking the services of a specialist contractor. The construction sectors represented included water supply, industrial building, utility provision and commercial building. To act as a control sample, 12 non-construction related buyers were also recruited from a range of sectors including fast-moving consumer goods, health care, pharmaceuticals and education.

3.2 Data collection

The data collection method employed in the Construction Case was a contemporary, web-based interpretation of the 'diary-diary interview method' (Zimmerman and Wieder, 1977). All respondents completed a web-based diary at key points during a developing presale interaction. The use of the diary served to build a rapport between the researcher and the respondents and also encouraged the supply of information relating to potentially sensitive issues. By adopting such an approach, it was possible to both monitor and, if necessary, to expedite diary responses. The initial diary screens reminded the diarist of the research objectives, explained the ethical position and provided instruction. These screens were also used to collect data to ensure that the transaction fulfilled the Construction Case criteria for inclusion. These criteria included establishing the importance of the transaction, that the transaction occurred under conditions of power-based interdependence and that it was a repeat transaction. Subsequent screens requested the buyer to explain their personal and organisational objectives and their perceptions of the seller's objectives; screen prompts were provided to encourage the buyer to provide details of tactics, reasons and background.

Post diary completion, semi-structured interviews were conducted to explore themes and issues raised using questions developed from the diary entries. Typically, interviews sought clarification regarding the degree and nature of supplier presales engagement, the nature of any post offer negotiation and discussions and indicative perceptions of seller's satisfaction.

3.3 Data analysis

The interview transcripts were analysed using the method of qualitative content analysis (QCA) proposed by Graneheim and Lundman (2004). While it is recognised that QCA affords the opportunity to make both replicable and valid inferences from qualitative data (Bryman and Bell, 2003; Jankowicz, 1995), QCA does not follow a specific set of predetermined rules (Elo and Kyngäs, 2008; Hsieh and Shannon, 2005). There is, however, a general acceptance that the frequency with which an idea occurs is an indication of its relative importance, recognising that the researcher still needs to distinguish the nature of the contribution represented by each occurrence (Bryman and Bell, 2003; Rubin and Rubin, 2005).

The first QCA step developed a framework whereby buying behaviours could be identified and assessed. To this end, relevant behavioural indicators were developed from the works of Gundlach and Cadotte (1994), Rojot (1991), Sheth (1973) and Zaltman and Bonoma (1977). To provide a sufficient width of perspective, an experienced practitioner, the lead author and the second author, independently assessed the alignment of these behaviours on a high, medium and low basis, to the RMAs identified by Cox *et al*. (2000). Through reflection and discussion, an agreed coding framework was developed. A similar process was adopted in respect of buyer value perceptions using the literature of Ballantyne and Varey (2006), Cretu and Brodie (2007), Groth (1994), Lapierre (2000), Lindberg and Nordin (2008) and Ravald and Grönroos (1996) as a basis for identifying expressions of buyer value which were assessed according to their alignment with the framework identified by Khalifa (2004).

The QCA involved the practitioner and the lead author independently reading the interview transcripts, on multiple occasions, in order to identify any occurrence of the relevant behaviours and value perspectives. Ultimately, through discussion and agreement, the coding was reconciled to develop a common coding across all transcripts.

4. Results

As noted by Jankowicz (1995), the researcher must find a way to present research outcomes in a manner that facilitates understanding and enables patterns and relationships to be established. The approach developed summates the frequencies derived from the QCA process and equates the relative frequency of their occurrence to a shading density in the appropriate area of the RMA grid, or value grid, as appropriate. The adoption of relative frequency allows the development of a common measurement scale which, for reasons of parsimony, contains five density bands. The bandwidths are determined by distributing the range of relative frequencies evenly across the five bands. The examination of these density plots is conducted in a manner broadly analogous to that of the medical X-ray, which led the authors to adopt the term 'transaction X-ray' to describe the resulting graphic. Simply stated, the darker the shading, the more commonly occurring is the relevant RMA or value perception. Adopting a graphical format, based on relative shading density, not only presents the opportunity to consider individual transactions but also provides a basis for superimposing and comparing results across multiple transactions. The 'layering' of multiple individual 'X-rays' leads to the production of composite X-rays as demonstrated by Figure 4, which is the composite formed by combining individual X-rays across the construction-related transactions.

Examination of the nine individual, construction-related transaction X-rays shows that by far the most commonly adopted RMA gave rise to an X-ray pattern that resembled the letter 'T'. The characteristic 'T-shaped' buyer is one who adopts an adversarial commercial RMA while simultaneously seeking, to a significantly limited extent, the means for operational collaboration. A secondary pattern gave rise to an RMA pattern that resembled an inverted 'L' shape. The 'Γ-shaped' buyer behaves in a manner that is both commercially adversarial and operationally arm's length. The dominance of the 'T' shape and the secondary presence of the 'Γ' shape are reflected in the construction-related composite X-ray (Figure 4).

Figure 4 also shows the dominant value perceptions that were found to exist across the construction-related transactions. Although the value perceptions of buyers were found to vary when viewed at the level of the individual transaction, there were underlying themes. A focus on exchange value was, in overall terms, the most commonly occurring with utility value also in evidence. BSPV was, perhaps surprisingly, as significant as utility value and was recorded in each of the construction-related transactions examined.

Given the qualitative nature of the data collection process, it is possible to illustrate the value perceptions encountered by referencing representative extracts from the interview transcripts. These extracts are selected from different interviews with only identifying features removed

> 'The main focus is always to look at price and payment terms' – <exchange value>

> 'We need to discuss the amount of money that is being spent here. For that amount of money we are expecting some sort of discount!' – <exchange value>

> 'I am trying to think why we use that … well actually it is the Director of Procurement that is driving this. He is an … fan. He is encouraging that everything we do follows that route. It would be a little foolhardy… .' – <BSPV>

> '…probably only a desire to reduce my workload! That was one of the advantages of using…' – <BSPV>

> 'We were not just buying equipment, we were also buying the vendor's competency to make sure that it was installed and commissioned correctly.' – <utility value>

> '…simple things like accuracy of delivery dates… . It's a bit false efficiency just to look at price alone.' – <utility value>

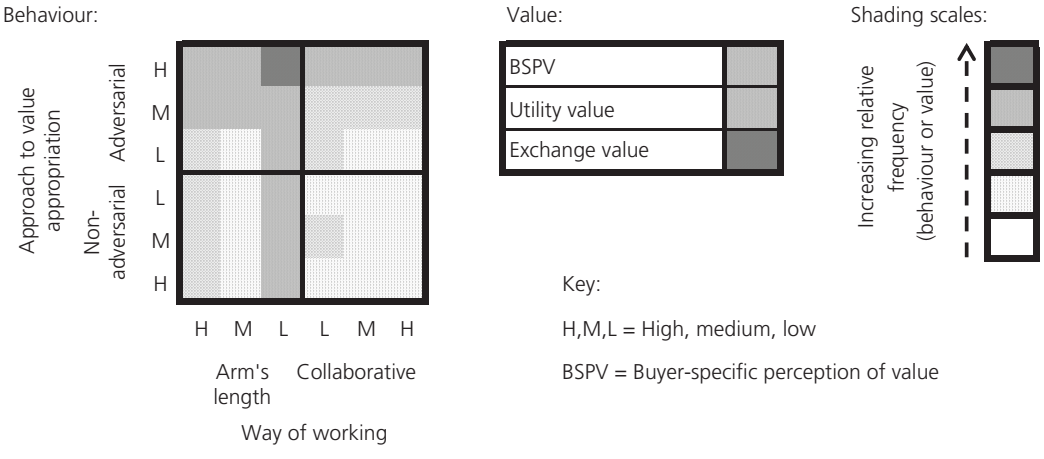

Figure 4. Composite 'X-ray': all construction sector transactions

Figure 5 shows the composite X-ray patterns for transactions between client bodies and construction firms, while Figure 6 summarises the situation for transactions between construction firms and specialist sub-contractors. Comparing these density patterns indicates that the adoption of an adversarial RMA was slightly more prevalent in transactions between construction firms and specialist subcontractors. While recognising the researchers' attempts to select only transactions that were conducted in conditions of power interdependence, this may indicate that value chain position is a significant variable in determining the use of any residual power asymmetry in an attempt to disproportionately capture value.

Figure 7 is the composite X-ray which summarises the transactions that took place within the non-construction-related control group. Comparing this X-ray to that shown in Figure 4 indicates that while displaying the characteristic T shape, the non-construction transactions were undertaken in a significantly less adversarial and more collaborative manner than was found in the construction sector.

5. Discussion

The T shape metaphor is not uncommon. For example, Hansen and von Oetinger (2001) develop the concept of the T-shaped Manager who, they argue, simultaneously focuses on and reconciles both value capture and creation, and Bitner and Brown (2008) use the shape to describe successful graduates (the vertical upright being discipline related and the bar transferable skills); similarly, Uhlenbrook and de Jong (2012) suggest that T-shaped professionals leverage their interpersonal skills (the bar) and also discipline specific skills and experience (the upright). Commenting on the metaphor of the T-shaped manager, Hansen and Nohria (2004) consider the bar to characterise the manager's primary role while the upright suggests secondary tasks. This analogy raises the possibility that the primary function of the T-shaped buyer is the adversarial capture of commercial value, and that the pursuit of collaborative value is somewhat secondary.

The profile of the T-shaped buyer may align more closely with the thoughts of Cagliano *et al*. (2004), who recognise that

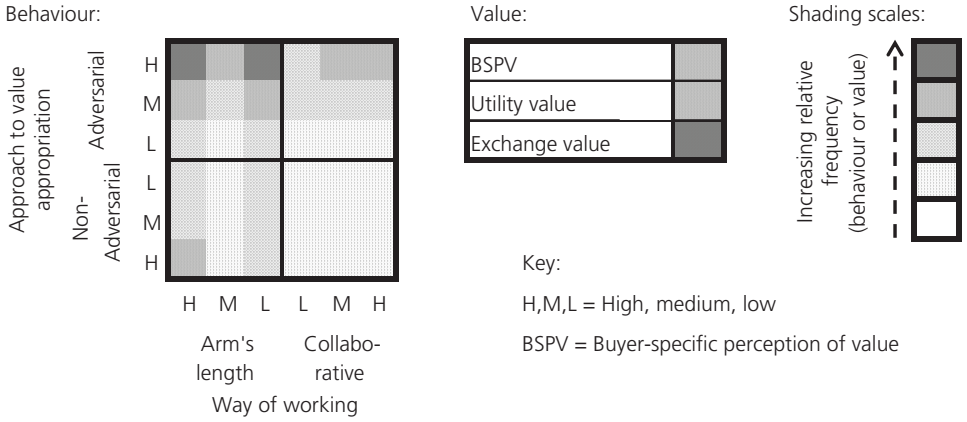

Figure 5. Composite 'X-ray': client–construction firm transactions

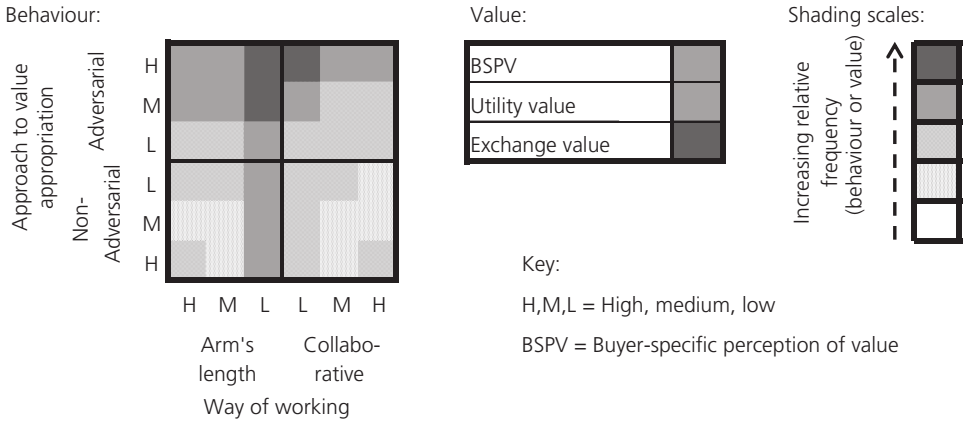

Figure 6. Composite 'X-ray': construction firm–specialist contractor transactions

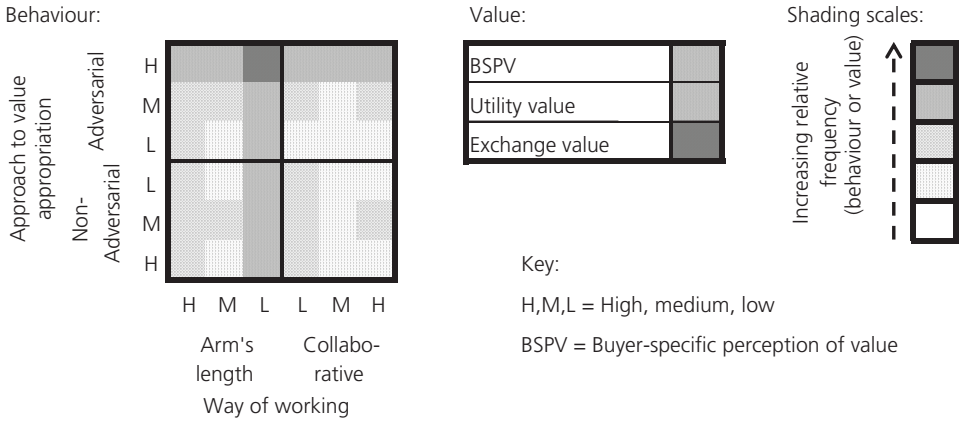

Figure 7. Composite 'X-ray': non-construction-related industrial transactions

advanced supply chain strategies may not be justified in all situations and suggest that even those who adopt less advanced strategies are likely to avoid a simple arm's-length supply model. Notwithstanding these observations, the authors suggest that the Construction Case provides results which are at odds with the perspective found within much of the extant literature which suggests a wide commitment to value creation through the strengthening of supply chain relationships. These findings perhaps reflect the Ordanini and Pasini (2008) observation on the frequent divergence between the academic's need to abstract an emergent theory, and the practitioner's desire to drive forward a potentially rewarding business model.

The authors note that while many recent scholars, such as Davis and Love (2011), support Latham's (1994) relatively positive view of collaboration, few appear to give consideration to the actual role of the buyer, or of the behaviour of those buyers when left to their own devices. The construction buyer's emphasis on exchange value, rather than utility value, together with the undoubted prominence of BSPV, counters Latham's view as to the importance of cross supply chain focus on the value perspective of the construction client. Figure 8 represents an 'idealised' Latham composite X-ray which presents very different density patterns from those found within the Construction Case. The pattern of behaviour demonstrates Latham's desire to see collaborative, non-adversarial approaches to RMA and, while it does not ignore exchange value, places greater emphasis on utility value which will ultimately deliver the longer-term client benefits that accrue from value-in-use.

It is also worthy of note that Wolstenholme (2009) reflects on construction practice and reports

> Other anecdotal evidence describes longer payment cycles, further fragmentation of supply chains and the practice of 'subbie-bashing' by retendering sub-contracts. (Wolstenholme, 2009: p. 19)

In response, he calls for a means to more effectively present data which give evidence to the practices he encountered, in the hope of influencing 'senior decision makers' (Wolstenholme, 2009: p. 26). The authors suggest that the methods outlined in this paper provide the basis for such methods of analysis and presentation.

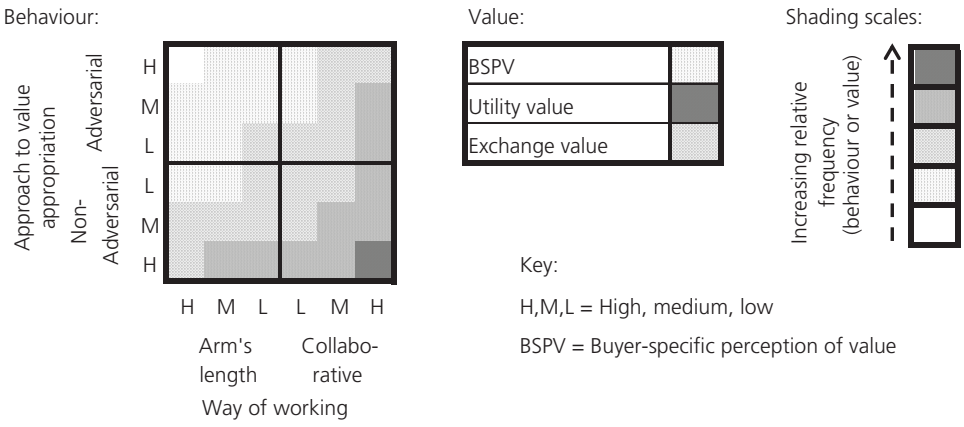

Figure 8. Composite 'X-ray': idealised 'Latham' transactions

6. Conclusions

While recognising that the research method favours a small sample size and acknowledging that this limits the generalisability of the findings beyond the boundaries of the case, the authors contend that the method presented both enhances empirical understanding of the RMAs adopted by construction buyers and also of the perceptions of value that they hold. In the view of the authors, the Construction Case identifies the need to enhance this understanding by undertaking further, contextually driven, qualitative research. Fundamentally, however, the Construction Case raises the question as to whether the constructing of 'Latham's Team' still remains more visionary than a practical reality. However, if there is a desire to embrace the vision of Latham, transaction X-rays are able to provide construction professionals with a window on procurement practices both within their own organisations and also of those with whom they trade. Perhaps this window will also give a perspective on better real-world procurement practice while simultaneously facilitating the development by researchers of more robust normative theories.

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