

# THE IMPACT OF VARYING ASSET SPECIFICITIES OF SUBCONTRACTORS ON RELATIONSHIPS DEVELOPMENT IN CONSTRUCTION

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The adoption of more collaborative relationships in the supply network is recommended to provide sustained performance improvement, greater effectiveness and efficiency in operations. Transaction cost economics (TCE), however, argues that competitive advantage results from efficient governance of transactions, which involves tailoring of procurement procedures to transaction characteristics and thus viewing an optimum relationship as a function of asset specificity. Nonetheless, relationships between the main contractors and their subcontractors are complex. This paper explores impact of varying asset specificities of subcontractors on their relationships development. The data is part of an ongoing exploratory study which to date comprises, 7 semi-structured interviews individuals who are involved in the procurement of subcontract packages. The analysis is structured around the key attributes influencing asset specificity of subcontractors. Results suggest that subcontractors can be grouped on the basis of their asset specificity. Low asset specificity is associated with arm's length relationship, whilst high asset specificity is closely linked to collaborative relationship. The development of bilateral dependency between main contractor and subcontractor starts at tender stage and follows different trajectories, depending on subcontract trade.

Keywords: asset specificity, main contractor, relationship development, subcontractor

## INTRODUCTION

The traditional way in which economic activities are carried out is fast changing due to increasing competitiveness and technical nature of products (Errasti et al., 2007). Since traditional procurement procedures are considered potential root causes for opportunism (Ireland, 2004; Cheung et al., 2003), interest in more collaborative relationships has increased in recent years as an alternative approach to traditional procurement and project governance (Eriksson et al., 2007). The adoption of more collaborative relationships in the supply network is recommended to provide sustained performance improvement, greater effectiveness and efficiency in their operation, and change the structure of business processes in the industry as well as an engineering basis with which to design, plan, and manage construction projects in a collaborative manner (Wolstenholme, 2009; Egan, 2002; 1998).

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Transaction cost economics (TCE) is one of the most frequently used theoretical framework when investigating procurement and inter-firm relationships in general (Eriksson and Laan, 2007; Eriksson, 2006) and in construction (Rahman and Kumaraswamy, 2002). According to TCE, competitive advantage results from efficient governance of transactions (Williamson, 1985), which involves tailoring of procurement procedures to transaction characteristics (Eriksson, 2006). TCE argues that market-governed transactions build upon the availability of many possible sources for a buyer who compares and chooses one of them on the basis of the best quality/price combination. The existence of a large pool of suppliers presumably allows lower transaction cost through the benefits of market competition. Similarly, the availability of predetermined resources within a hierarchy also reduces transaction cost, where the buyer does not incur expenses of searching and gathering information.

On the other hand, it is acknowledged that the system of subcontracting in construction offers several advantages over internalisation, such as production efficiency and organisational flexibility (Hartmann and Caerteling, 2010), but it adds coordination costs. The quest for costs minimisation has led firms to develop informal collaborative arrangements (Lee et al, 2009). However, subcontractors offer different resources, expertise and technologies and the main contractor has established preferred subcontractors it uses for quotations, which means that some subcontractors are more likely to eventually undertake the work package than others. This can be referred to as specificity (Ross, 2011). Hence, it would be interesting to explore current contractors' procurement procedures from a TCE perspective in order to analyse their fit to transaction characteristics, which explains contractors' strategies for subcontracting and the ensued relationships. The purpose of this research is to investigate the impact of varying asset specificities of subcontractors on relationship development in the supply networks.

The rest of the paper is organised as follows. First, a presentation of the theoretical framework, explaining how subcontracting decisions can be affected by transaction cost and asset specificity. This is followed by forms of relationship in construction. This is followed by a research strategy adopted for the study and data analysis. The paper concludes with a report of the results, a conclusion and outline of future research.

## **THEORETICAL FOUNDATION**

One of the influential frameworks for analysing decisions to outsource work packages is the theory of TCE supplemented by management theory to determine the best type of relationship an organisation should develop in the marketplace (Williamson, 1985; 1975). TCE assumes that the attributes of a transaction determine what constitute the efficient market, hierarchy or relationship. The key properties that affect the transaction include: bounded rationality, opportunism, small numbers bargaining, and information impactedness. According to Williamson (1985), these are considered to be transaction difficulties and associated with cost increase when transactions are characterised by: asset specificity, uncertainty, and frequency.

The transaction relates to the degree of asset specificity which is referred to as the nontrivial investment in transaction-specific assets (Williamson, 1985). It is the main transaction cost element that affects the threat of opportunism and, thus, choice of subcontracting strategy and form of business exchange. If asset specificity, and uncertainty are low, and transactions are relatively frequent, transactions are governed by markets. On the other hand, high asset specificity results in transactional

difficulties with transactions being performed internally within the firm. Medium levels of asset specificity lead to bilateral relations in the form of collaborative arrangements between the firms. Hence, there is a degree of dependence that one or other of the parties to a transaction can take advantage of. One obvious way of reducing the risk of opportunistic and related behaviour is collaborative arrangements which attempt to deter any such behaviour by offering the opportunity to work together for common goals, in a long-term ongoing relationship (McIvor, 2000). The buying organisation therefore faces two extremes of the subcontracting decision – “variable boundary or fixed boundary” of the firm (Cox et al., 2007). The primary concern is determining the boundaries between these two extremes (McIvor, 2000). TCE assumes that the decision will always be considered taking into account the scope for cost reduction and the importance of asset specificity. The firm should subcontract activities if performing internally would require excessive investment to get the lowest unit cost. Hence, when asset specificity is high the cost governing transaction through market mechanisms may exceed the potential flexibility and production cost benefits of subcontracting.

Conversely, subcontracting decisions are driven by “core competences” in relation to transaction cost (McIvor, 2000). Ebers (1997) refers to increased responsiveness and flexibility, capabilities, and competences as the motivation for collaboration. Parker and Hartley (2003) further suggest that subcontracting decisions should be seen not as the outcome of some deterministic relationship based on transaction costs issues alone, instead the results of strategic choices taking consideration of both costs and firms’ internal capabilities and strategic goals. Prahalad and Hamel (1990) maintain that core competences are not physical assets. Thus, asset may be tangible or intangible.

Using both the transaction cost perspective with the resource-based perspective, careful calculation of the relative transaction costs and internal capabilities or benefits can be determined thereby providing optimal subcontracting decision based on cost–benefit as well as grounds for entering into some kind of relationship to procure the good or service. This is illustrated by Fig. 1 below.

		Asset specificity		
		Low	Medium	High
Occasional	A	B	C	
	Subcontract	Subcontract/ internalise	Internalise	
			?	
Frequency	Recurrent	A1	B1	C1
	Subcontract	Subcontract/ internalise	Internalise	
			?	
		low	Medium	High
		Capability		

Fig. 1 Asset specificity versus internal capability in subcontracting decision adapted from Eriksson (2006)

Where asset specificities and internal capabilities are low, the case for subcontracting through arm's-length contracts is high (subcontract). Conversely, where asset specificities are high – which may be due to strategic importance of the activity or because of the threat of lock-in as a result power asymmetries in the supply chain, and internal capabilities to carry out the activity efficiently exist, the case for subcontracting may be minimised (internalise). In such circumstances, however, the activity will be subcontracted through close external contracts based on various forms of long-term collaborative arrangements as opportunistic behaviour and lock-in are protected against by these arrangements (Parker and Hartley, 2003). In the case of medium asset specificities and internal capabilities, subcontracting will be conducted through close external contracts based on various forms of long-term collaborative arrangements similar to the high specificities and capabilities situations.

However, the frequency of transaction determines the strategy and relationship. Finally, it is assumed that where the subcontracting decision is less obvious, strategy selection and the form of relationship will depend on careful calculation of the relative importance of asset specificity and internal capability or benefits.

In this paper we investigate the impact of varying asset specificities of subcontractors on their relationships development in supply networks as different asset specificities are associated varying degree of cost of free market transactions. A decrease in cost of free market transactions may lead to increase use of free market mechanisms and, hence less collaborative business exchange in the supply networks.

## **RELATIONSHIPS IN CONSTRUCTION SUPPLY NETWORKS AND SUBCONTRACTORS**

Subcontracting is one of the key links in the supply network and has a significant impact on the overall success of the project delivery. The procurement of construction subcontractors involves many activities: categorising the supplier-base, establishing bidding competition, creating mechanisms for managing the subcontracted activities, reducing supplier-related risk, assessing and comparing the potential supply partners, and establishing relationship contracts (Ng et al., 2009; Errasti et al., 2007; Miller et al., 2002). Strategically, organisations may enter into business relationships in order to innovate, access new markets, overcome local market restrictions, raise entry barriers and share risk for mutual benefit. Operationally, reasons such as the capability of the firm and the need to focus on core competences the strategic importance of a product/service and its criticality to the final product, and the cost of procurement relative to performing internally, may influence the decision to outsource (Beach et al., 2005; McIvor, 2000).

Despite the opportunities available to some main contractors, King and Pitt (2009) maintain that there is difficulty involved in developing a managed supply network. Ireland (2004) declares that adversarial relationships and opportunism are the norm contractor-subcontractor relationships. Dainty et al. (2001) conclude that there exists a general mistrust among subcontracting firms that make up the construction supply chain. Briscoe et al. (2001) also identify attitudinal barriers to collaboration at the main contractor-subcontractor interface. This problem is echoed by Briscoe and Dainty (2005) who submitted that lack of trust is key inhibitor to integration of supply chain.

However, it is acknowledged that supply chains can exist in various forms and can vary significantly in their complexity and diversity (Cox et al., 2007). According to

Briscoe and Dainty (2005) and Dainty et al. (2001) construction supply chains on larger projects typically involve hundreds of different companies supplying materials, components and a wide range of construction services. Dubois and Gadde, (2000) observe the need for variety in supplier relationship. This is because customers can use the skills and capabilities of their suppliers, and cope differently with diverse interdependency situations. Consequently, the nature of the relationships that are developed can take many different forms, ranging from those based entirely on market forces to those structured around various forms of collaborative arrangements (Svahn and Westerlund, 2009; Beach et al, 2005). Two main types of exchange can be distinguished: transactional or market-based and the relational or collaborative (Eriksson et al., 2007; Beach et al., 2005). Brief descriptions of these relationships in the context of the construction industry follow.

### **Market-based relationships**

Eriksson et al., (2007) suggest that market-based relationship typically involves non-repeated short-term dealings with a distinct beginning and end. Similarly, Miller et al. (2002) conclude that contractors normally maintain relationship with a variety of different specialists trade contractors and offer sporadic works, matching the skills of the specialist to those required for the successful completion of a construction project. This practice however places very little emphasis on the development of the subcontracting sector in the construction industry. One significant feature of price-based market relationships is its focus on price and contract formalisation (Eriksson and Laan, 2007). Emphasising only on the price implies the buyer does not take the opportunity to take into account characteristics of the supplier such as competence and capacity, resulting in a permissive approach (Heide and John, 1990). This strategy allows the use a large pool of potential suppliers who are often replaced, as buyers are able to facilitate competition and focus on price and immediate pay-offs (Svahn and Westerlund, 2009). Consequently, the use of collaborative tools, such as shared objectives and teambuilding techniques may be non-existence (Cheung et al., 2003), resulting in increased need for authority since there is no or low human asset specificity (Eriksson, 2006).

### **Collaborative relationships**

The primary goal of collaborative networks is to improve relationships among parties involved, and to achieve long-term commitment between two or more organisations for the purpose of achieving specific business objectives by maximising the effectiveness of the relationship, either in single project partnerships or in long-term orientation (Beach et al., 2005). In collaborative relationships, subcontractors undertake more than one construction project or several construction activities at any point in time. In this form of working exchange, the contractor has a degree of certainty of the quality of work. Conversely, the subcontractor gains a degree of certainty concerning job security over a specific time-period. This is especially useful in the planning and optimising the production schedules (Sözen and Kayahan, 2001). It thus removes incentives to sacrifice long-term gains for short-term benefits.

Unlike market-based, consideration of the characteristics of the supplier, such as competence and capacity becomes vitally important (Anderson and Oliver, 1987). Considerations regarding the collaboration and nurturing of the relationship indicate social control (Eriksson, 2006). Through social control, however, the parties establish an implicit sense of satisfactory and unacceptable behaviour (Aulakh and Gencturk, 2000), making more formal and comprehensive the contracts unnecessary. This may

be represented by soft parameters such as collaborative ability, reputation and earlier experience of the subcontractor. The presence of these collaborative tools indirectly decreases the emphasis on authority, since these tools create high human asset specificity, leading to switching costs for the buyer (Eriksson and Laan, 2007). Consequently, the higher the emphasis on asset specificity, the more weight on soft parameters, and the higher the emphasis on collaborative exchange, and vice versa.

## **RESEARCH DESIGN**

Whilst there are distinctions between philosophical assumptions associated with both quantitative and qualitative paradigms, it is possible to combine both methods for use within a single study. Commonly referred to as a “mixed method” research approach, this method uses the strengths of one method to enhance the other (Tashakkori and Teddlie, 1998), which is realised by encapsulating both qualitative and quantitative dataset results to offer a comprehensive understanding of the research questions, resulting in a balanced view of the topic in a study which is as accurate and thorough as possible. As revealed by (Bryman and Bell, 2011), combined quantitative and qualitative approach is the most effective technique used to reduce bias. Furthermore, this combined approach has been acknowledged for its legitimacy in creating a more comprehensive representation of both statistical trends and participant perspectives, permitting cross validation of the results, eliminating dogmatism (Plowright, 2011), whilst ensuring the discovery of robust findings in a way not possible when considering the datasets in isolation (Creswell, 2008).

As contracting organisations opinions and views are the driving force behind the study, a qualitative approach has been undertaken through semi-structured interviews, in order to explore the stated research questions. Purposive sampling has been intentionally selected to identify survey participants to provide data in a high-quality qualitative study. Consequently, a small sample size of 7 respondents were selected in order to provide information which is both rich and deep in nature which is commonly unobtainable from large sample sizes. This specific sample size was also selected to provide a representation of the wider population.

Participants were selected from both large and medium organisations situated in the Northwest of England with diverse working experience and positions. They were key personnel within these organisations at both strategic and operational levels. Interviews were both conducted on telephone and face-to-face. Each interview lasted between 40minutes and 1hour. Questions were adapted to reflect the companies’ strategic objectives to allow the identification of approaches to working relationships that were being employed, and attributes which could have an influence on such approaches.

Each interview was transcribed in full and coded using NVivo 10 computer software to assist the analysis process. The approach to data analysis was to have multiple cases and consequently, the method of generalisation was "analytic induction," where a predetermined topic areas related to the objectives of this study were used as a template with which to compare the interview results. The analysis was a process of using multiple perceptions to clarify meaning, verifying the repeatability of an observation or interpretation and referencing back to the literature review and results. The assumption was made that a systematic set of methods could lead to the triangulation and a provisionally verifiable set of factors grounded within the data. The responses were then coded appropriately into the identified categories.

## RESULTS

The pilot interview results investigated the relationship between (Eriksson, 2006) asset specificity types and the form of relationships developed. They provided support for the proposition that a relationship exists between asset specificity and strategic business exchange. Respondents were asked about key factors that influence their approach to subcontracting and ensued relationship. Responses were varied but coded into three main categories. Out of the seven participants, 71% perceived skills and expertise (specialism) as key factor, 57% identified technical nature as essential, whilst 43% were of the view that market environment influenced their choice of approach. It was found that strategy choice was not based on single factor but combination of factors. With projects of more technical nature, specialism (asset specificity) bilateral dependency emerged as a key predictor of subcontracting, the price and availability making small contribution to explain the choice of strategy and business exchange. On the other hand, less specialised construction activities that involve little asset specificity the price and availability were found to be key factors.

## DISCUSSIONS

This study explores current contractors' procurement procedures of subcontractors from a TCE perspective in order to analyse their fit to asset specificity by providing some initial answers to two research questions: (1) Do varying asset specificities influence contractors' strategy for procuring subcontractors? (2) And how does asset specificity of a subcontractor affects its relationship development in the supply network? Overall, the exploratory interviews suggest that subcontractors with high asset specificities tend to be procured using collaborative arrangements more than their counterparts with low asset specificities.

The procurement of every product or service involves a degree of asset specificity. Where the procurement of a product or service involves low asset-specificity, the business relationships ensued takes the form of arm's length (A and A1). One reason that account for this situation is that, the main contractor would have a pool of potential suppliers due to low entry barriers who are often replaced to facilitate competition (Anderson and Oliver, 1987). The main priority therefore becomes price (cost minimisation) and short-term gains. Thus, the main contractor does not take the opportunity to affect the characteristics of the supplier in terms of earlier experience (Heide and John, 1990). This is exemplified by one participant

"... we try to bring down price as much as we can so we shop around..... after the project has been won we go back to our subcontractors to bring down their cost if possible. If we can get equally good subcontractor with competitive price then obviously those one will be given attention. If we find their quotation interesting, this can lead to the work being awarded to the new bidder."

The easier the supplier can be replaced, the higher the focus on price and the lower the emphasis on soft parameters leading to collaborative working exchange (Eriksson and Laan, 2007). It would appear that the strength of the dependency developed at the tender stage is affected by the ease of replacement which in turn is influenced by trade.

On the other hand, high asset specificity subcontractors tend to develop long-term collaborative relationships with their main contractors. This group of specialist trade contractors are usually highly skilled and high level of competence. Specifying skills and technologies facilitates high emphasis on collaborative parameters (Eriksson and

Laan, 2007), and focus on a number of core activities, in which they can achieve and maintain a long-term relationship. Eriksson (2006) acknowledges that in such conditions, the suitable form of authority is social control which entails more emphasis on trust and less focus on price. Therefore, in situations where asset specificity is high, the best option for the main contractor is to internalise production (C and C1). For high specificity specialised subcontractors the incentives for short-term benefits are removed, but grounds for long-term relationships and expectations of continuance fostered (Aulakh and Gencturk, 2000), due to their potential impact on overall project performance and profitability as well as ability to affect technical specifications and complex projects (Ekström et al., 2003). Consequently, their involvement is sought in both planning and construction stages, and thus, the asset specificity become even higher. These issues were captured by the remarks of some of the participant:

“.....because of their technical competence and criticalness to project performance they are selected on the basis of collaborative ability, rather than on market price.”

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## **CONCLUSIONS**

The primary aim of this study was to explore the impact of varying asset specificities of a range of trade of subcontractors on their relationship development in the supply networks. In order to realise this aim, the research examined the current contractors' procurement procedures from a TCE perspective in order to analyse their fit to transaction characteristics, which explains contractors' strategies for subcontracting and the ensued relationships. Initial findings suggest that low asset specificity is associated with arm's length relationship, whilst high asset specificity is closely linked with collaborative relationship. Thus, main contracting organisations increasingly pursue core competency strategies and employ collaborative arrangements as a basis for reducing the risks associated with subcontracting. Significantly, these results are consistent with principles of transaction cost theory, suggesting that the use of asset specificity may yield important insights into complex relationship developments.

This study is one of few attempts to asset specificity to explain subcontracting decisions and relationships development in construction. It also provides richer information on how the main contractor establishes working relationships with different groups of specialist trade contractors within the supply networks. Like other literature that uses TCE, the emphasis on theoretical aspects of relationship development could enhance the overall effectiveness and efficiency of construction project delivery team and ultimately transforming business performance.

### **Limitations and future research directions**

The small sample used in the study may not be able to exploit the full benefits of subcontracting due to their scope of operations, and thus, may not represent the true picture.

Aside from the different asset specificities of subcontract trades that have been pointed out in this article, there may be other attributes that affect the relationships development and bilateral dependency between the two actors such as the extent of competition within a group (Ross, 2011).

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