

THE VALUE OF TRUST IN CONSTRUCTION SUPPLY CHAINS

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This research generates insights on the value of trust in construction supply chains, in particular the relationships between construction actors. One of the difficulties for developing and managing trust in construction supply chains (cSCs) is the project-focused (P-F) characteristic of construction projects, which results in a limited understanding of the role of relationship and the short-sighted and P-F view on value creation in industry. Trust-based and long-term relationships are often assumed to be unnecessary and/or impossible to nurture and sustain in temporary construction projects. However, trust as a foundation for business relationships appreciates with use and generates long-term benefits during interaction through more effective communicating, relating and knowing that should not be neglected. A change in focus from project towards service in construction project businesses has been argued as service-dominant (S-D) logic is inherently relational and considers value created both within and beyond the scope of projects. Thus, this paper discusses the value of trust under the S-D setting by illustrating how trust develops during service provision and how the development of trust enhances service value in use. This paper contributes to research by exploring the value of trust through S-D lens and in construction supply chains.

Keywords: service-dominant, supply chain relationships, trust, service value.

INTRODUCTION

Trust and trust-based relationships have drawn increasing attentions in a wide range of areas such as psychology (Rotter 1967), organisational behaviour (Mayer *et al.* 1995, Zaheer *et al.* 1998) and project businesses (Hartman 1999, Smyth *et al.* 2010). Trust has been perceived to be conducive to organisation and project performance as it can improve organisational culture through fostering ‘fair’ play, create a collegial working environment and better in-role and organisational citizenship behaviour inside organisations (Mayer and Gavin 2005), leading to long-term commitment, effective communication and cooperation between organisations (Brinkhoff *et al.* 2014, Talay and Akdeniz 2014). In construction where businesses are highly project-focused, trust has been suggested to be difficult to generate and develop (Kadefors 2004). Even in project businesses focused on relationship (e.g., partnering projects), trust building has been mostly discussed as a solution for adversarial relationships among key actors (Laan *et al.* 2011). Consequently, trust in construction project businesses has been viewed as ‘lubricant’ for managing project partnering and alliances. However, some researchers have pointed out that partnering does not necessarily guarantee success. Not all partnering projects perform well due to the elusive partnering practices and the complicated mechanisms required for establishing and maintaining trust-based collaborative relationships between construction actors. These arguments further

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question the possibility of and necessity for building trust-based relationships and the value of trust in construction supply chains (cSCs).

The *aim* of this paper is to generate insights on the value of trust in cSCs, particularly in enhancing service value in supply chain relationships, where service value is defined in terms of the service-dominant logic (S-D) set out below. This is a neglected area in research on trust. One difficulty for developing and managing trust in the context of cSCs is the project-focused characteristic of construction projects, because it leads to the view that cSC relationships are temporary and project-focused (P-F). Thus, the objectives of this paper is to illustrate: (1) a revised logic of value creation in cSCs and projects – using S-D logic, which provides an original contribution; (2) how trust conceptually develops in supply chain relationships; and (3) how trust development theoretically helps create higher service value. In the next section, we will briefly introduce construction industry context, in particular the P-F view of value creation, followed by an overview of trust development in relation to domains such as psychology, general management and organisational behaviour. These two sections provide a foundation for the illustration of the value of trust in construction supply chains. To be specific, how potential value is conceptually derived in part by developing trust will be discussed in this section. A conclusive summary and implications will be given in the final section.

CONSTRUCTION INDUSTRY AND VALUE CREATION

Construction is inherently project-focused, where a short-term coalition of actors is formed around a specific project that works as a ‘temporary multiple organisation’ in principle collaboratively for the sake of project success in context and use. In practice project conduct is frequently adversarial. This renders the development of trust and trust-based relationship in the context of construction projects and supply chains problematic (Laan *et al.* 2012). On the one hand, the temporary multiple organisation is confined to a specific project and personnel normally change with projects. Thus, temporary organisational forms inhibit the nurture of trust-based relationships. On the other hand, although some main contractors and tier one supply organisations continue business between projects, in whose organisational interests trust would conceptually and in principle appear desirable, construction actors arguable have insufficient support, resources or time to engage in the process of trust building to yield the project and organisational benefits. It is possible that construction is completed while the extent of a business partner's trustworthiness has yet to be demonstrated.

The P-F feature has led to prevailing view of value creation in construction projects. It holds that value is created by contractors and suppliers in the construction process. For example, buildings are constructed out of materials and components. Contractors and suppliers embed and integrate value in those materials, components and their assembly during construction, which forms the final tangible facility or building. The whole value creation process is regarded as inputs delivered on time, to budget and the required scope and quality levels. Value is thus created by individual contractors and suppliers and measured by exchange transactions. The P-F view works as projects are completed and organisations are paid, sustaining the market as a result. However, the emergence of specialisation and subcontracting has made construction actors more interdependent upon each other than ever (Dubois and Gadde 2000). Moreover, technology developments, social pressures, and other forces have drawn in increasing numbers of stakeholders, such as government and environmental organisations, who place various demands upon construction (Walker 2007). Thus construction projects

and firms exist in a social text, and cannot operate entirely from ‘self-interest’ (Smyth *et al.* 2010) – there are social and ethical issues to be considered to keep the market functioning. Under the circumstances illustrated above, the P-F view seems inadequate in explaining value created in project businesses, which includes benefit and impact outcomes. Investment made within projects yields benefits post-completion, since networks of relationships tend to extend beyond the scope and lifecycle of the project. Further, value created on one project can provide social resources for future projects through learning, knowledge transfer and application of other social capital and project capabilities. Such benefits are conducive to firms’ well-being, but are largely neglected by the P-F view. Trust, for instance, takes time to build and maintain but once developed, it may reduce objective and subject risks (Smyth *et al.* 2010), decrease transaction costs (Zaghloul and Hartman 2003), link strategy and operational practices (Gustafsson *et al.* 2010) and derive financial value for both customer and supplier (Smyth *et al.* 2010). Furthermore, P-F tends to fail to consider some social issues (Vargo and Lusch 2008), since it usually neglects value derived from reputations or network positions. Importantly, P-F tends to become less convincing as increasing numbers of contractors and suppliers find it perceptually difficult to develop and maintain core competencies to derive potential value from their activities in this competitive market.

Both the difficulty in maintaining competitive advantages beyond price and inputs and the inadequacy of the P-F point towards a revised logic of value creation – service-dominant (S-D) logic. Proposed by Vargo and Lusch (2004a), it has been applied in project businesses (Wells and Smyth, 2011, Liu *et al.* 2014, Smyth, 2015). Under this logic, the basis of exchange is the service rendered (outputs and outcomes), which are derived from operant resources (knowledge and skills) that are the fundamental source of competitive advantage. Customers are not recipients of ‘value’ inputs; they become co-creators of value by actively learning and integrating its resources into the service provided. Thus, suppliers and contractors can only offer value propositions and support customer’s value creation as co-creators. Ultimately, value is uniquely and phenomenologically determined by customer in use and context. S-D can be substituted for P-F in construction project businesses. As Vargo and Lusch (2008) stated, S-D is inherently relational, relationships being necessary for both adding potential value to the product or services of the project and in project delivery as a service. Trust as the foundation for relationship has been suggested as a means to enhance the value by bettering joint activities and improving customer experience (Ballantyne and Varey 2006, Cheung *et al.* 2010, Truong *et al.* 2012). Therefore, trust is part of co-created service value in execution and may enable value co-creation for value co-creation post-completion.

TRUST DEVELOPMENT

Building on Mayer *et al.* (1995) and Smyth *et al.* (2010), we define trust in construction supply chains as a construction actor’s current *intention* to rely on the actions of or to be vulnerable to another party. The expectation is that other parties can reduce risks, creating opportunities to enhance service value in execution. We focus on inter-firm trust between main contractors and subcontractors during execution.

The cycle of trust development

Although trust is a *current* state, in its process of generation and development trust also tends to relate forward to *the future* and backward to *the past*. Trust builds on learning consisted of assessment of a situation, including both another party

considered and the relationship between trustor and trustee, and a judgement about the future relationship. To secure positive outcomes of learning so that trust is developed, it is necessary that another party behaves with trustworthiness, or at least is perceived to be trustworthy enough to reduce risks existing in the situation. For example, their competence can be trusted to fulfil their obligations or they act fairly when facing opportunities for opportunism. But trustworthiness alone is not adequate for increasing trust as relationship involves in the context. Trust development also depends on the quality of relationship. Trust will not develop if trustor has no intention to further expand the relationship with another party even if their past relationship is considered positive.

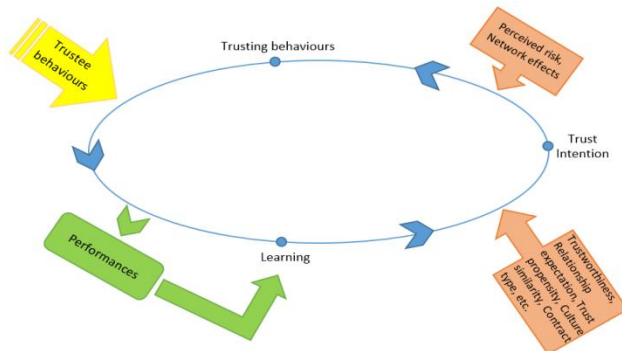


Figure 1 Cycle of trust development

It is notable that the process of learning discussed above is not purely calculative or weighing up the other party's trustworthiness and the quality of relationship. Actually, the process is usually mainly, if not wholly, relational, because the situation is assessed and judged in trustor's lens, or by trustor's interpretation, which is influenced by relationship with and attitude towards others and one's own disposition. Mayer *et al.* (1995) noted that disposition and attitude vary with different experiences, culture and personality, resulting in degrees of trust. This accords to organisational learning literature contenting that organisations vary in the ways they make sense of the same information and in the mechanism for sense making (Fiol and Lyles 1985). Also, the interpretation on another party is largely based upon experiential learning in relation to others and under the influence of the quality of relationships, and thus is relational and subjective (Smyth *et al.* 2010). In short, for trust to develop, a series of experiential learning is required and the outcome of such learning determines the extent to which trust develops. The development of trust leads to a set of trusting behaviours benefiting interactions between parties, the outcomes of which become parts of the contents of learning for a new cycle of trust development.

Consequently, a dynamic cycle of trust development is initiated, consisting of three elements – learning, trust intention, and trusting behaviours (see Figure 1). This dynamic cycle is subject to a diversity of factors that influence the degree of trust intention or mediate the relationship between trust intention and trusting behaviours. For example, extant research has suggested that power is essential to trust development, but the relationship between them is still unclear, especially at inter-organisational level (Fulmer and Gelfand 2012). Cox *et al.* (2000) defined power as the extent to which one party depends on another for particular resources, implying that resource and capability availability is the source of power asymmetry. On the one hand, power imbalance between firms has been suggested to hinder the development of trust (Smyth and Pryke 2008) and equality tends to foster collaborative, effective and trust-based relationship (García-Canal *et al.* 2003). For example, by investigating

a network of suppliers, retailers and manufacturers in Finish food industry, Kähkönen (2014) found that trust-based collaboration is more shallow when power is imbalanced between firms than when balanced. Actually, collaboration between manufacture and retailer happened only because retailer at higher power position was willing to do so and the depth of collaboration was set by retailer. On the other hand, some studies suggested that power asymmetry can co-exist with the development of trust, as in the case of aerospace company and its suppliers in Cuevas *et al.* (2015).

The measure of trust intention

The extent to which trust develops is a fundamental area that researchers have attempted to explore (e.g., Laan *et al.* (2012) and (Laan *et al.* 2011)). However, when researchers provide comprehensive descriptions and measurement, trust tends to dissolve into several types of dimensions, depending on the perspectives researchers viewing the process of trust development. Most extant research on trust dimensions or models tends to focus either on the breadth of trust dimensions alone (e.g., Hartman (1999)) or only illustrate the path of trust development without specifying the extent to which trust develops (e.g., Rousseau *et al.* (1998)). Dimensions that indicate the depth of trust are largely under-researched, but expectations can be found in Smyth and Edkins (2007) and Fawcett *et al.* (2012), both of which emphasised trust dimensions in a dynamic view and related to the evolution of relationship. However, without referring specific aspects of trust (breadth), it is hard to detect the development of trust, whereas without indicating the extent to which trust develops (depth), it is difficult to explore the influence of trust on service value. Thus, this paper argues an alignment of trust dimensions in terms of breadth and depth to analyse the development of specific aspects of trust in a given time point, but also assist the comparison of the influences of trust between different degrees (see Figure 2).

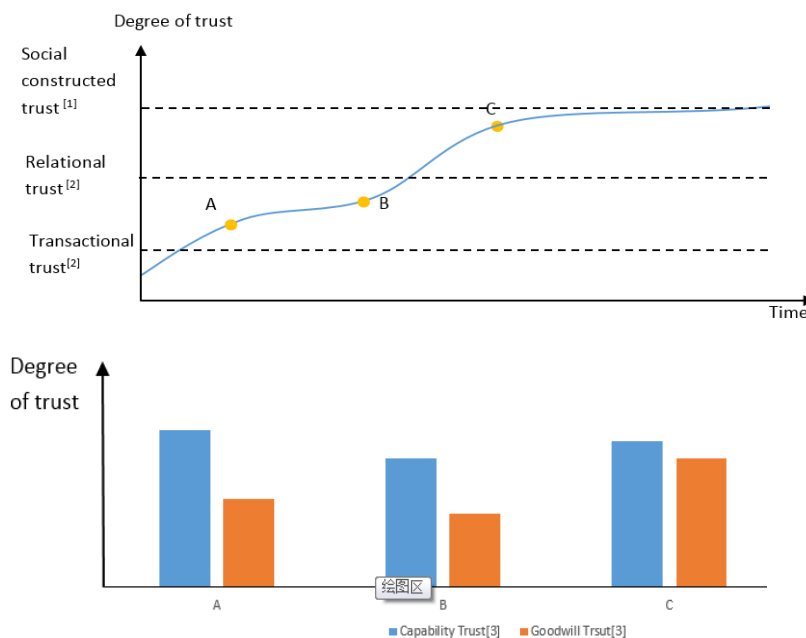


Figure 2 Trust dimensions (Source: [1] Smyth and Edkins (2007); [2] Fawcett *et al.* (2012); [3] Das and Teng (1998))

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Value co-creation

Building on Grönroos (2008) and Vargo and Lusch (2004a), we define value as customers' experiential perception of the benefits of service in use. Value is not unidimensional, but consists of multiple dimensions such as competence value, relationship value, social value and emotional value. How value is dynamically co-created by main contractor (MC) and second tier subcontractor (SC) is illustrated in Figure 3. Consider a building contracted to a MC, who subcontracts the electricity installation to a SC. The service of installation provided by SC is embedded with value propositions instead of 'real value'. The contents of this service will be adapted to and integrated with MC's resources in use or during execution. For MC, the use of service is to integrate electricity installation provided by SC into the whole project or facility, which is delivered to MC's customer – the client. Thus, value creation is depended on both SC's service contents and value propositions and MC's efforts to integrate resources, and the perception of value from MC's perspective depends on the extent to which the service can be integrated to and adapted with MC's own resources and the whole project or facility.

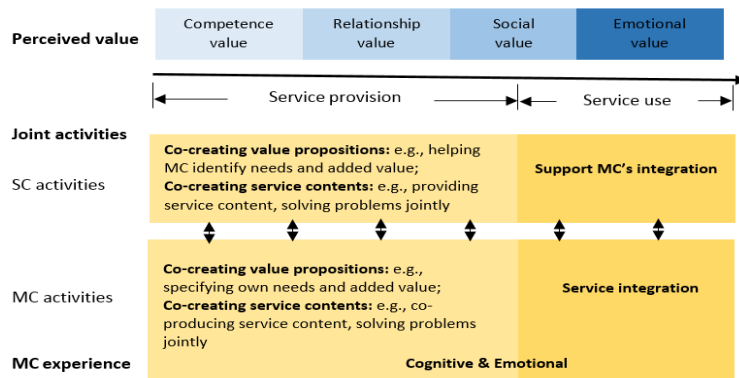


Figure 3 Value co-creation in construction

Co-creation of value involves a series of joint activities between MC and SC during service provision. Ballantyne and Varey (2006) identified three basic elements in value co-creation activities – relating, communicating and knowing. For example, when co-working emergent problems such as unfit size of components in assembly, MC and SC apply own knowledge and skills in communications to deal with the problem while relate to each other's objectives, working styles and capabilities. Not only problems are more likely to be solved in a way both parties satisfy, but also more operant resources, mutual understanding and reinforced relationships can be achieved so that higher added value for MC and benefits such as repeated businesses for SC are both secured. In other words, emergent incidents during service encounters are opportunities for learning and adding value under the S-D, rather than risks that should be avoided as assumed by P-F. The quality of communicating, relating and knowing is a determinant of the quality of contents. Also, working jointly tends to render better value propositions as customers can identify more opportunities for value creation with the help of SC who is more knowledgeable about the service provided. On the other hand, if SC is able to provide better value propositions (e.g., more customised solutions) that tend to bring higher value for MC, MC will regard this SC as more competitive than others and is more likely to repeat business with this SC, which is a benefit for SC.

By participating in value co-creation, MC is involved in an experience that is cognitive and emotional (Payne *et al.* 2008). Customers evaluate their service experience by resources and outputs required, but also through their own lenses that are largely determined by affects and emotions. Facing the same objective outcomes, customers' perception will differ depending on emotional bonding and affective preference that might be accumulated in relationships across projects (see example in Smyth *et al.* (2010)).

The value of trust in co-creation of value

The use of service, from MC's perspective, is to integrate service into the project as a whole by using organisational and project capabilities as well as operant resources required from learning during interaction with SC. So the quality of service in use is largely depended on both MC's capabilities and the extent to which SC is integrated in value creation. Trust is a prerequisite of value co-creation to build relationships, hence 'lubricate' customer interactions and engage in value co-creation (Abela and Murphy 2008). More importantly, trust has been suggested to have the potential to enhance value by bettering joint activities and enhancing customer experience (Ballantyne and Varey 2006, Cheung *et al.* 2010, Truong *et al.* 2012). Service provided with better value propositions and more customised contents are more accessible to be integrated with customer's resources and thus have higher potential to enhance value. Also, better learning and communicating associated with enhanced customer experience make MC acquire more operant resources benefiting service use after service delivery. Cooperation, exploration of new information, market opportunities and technologies, and product, service and process innovation enable the enhancement of service value, all of which depend on the trust between organisations (Zaheer *et al.* 1998). Figure 4 illustrates the conceptual relationship between trust and value-in-use.

Trust leads to high quality relationships to enable the process of relating, communicating and knowing, which influences the outcomes of joint activities such as service contents and propositions. Stable and sustainable relational structure, network communication and learning contributing to interactive relationship development are all founded on trust. This mutually sustains value-creating activities. As a facilitator of knowledge sharing, for example, trust activates the knowledge renewal that supports sustainable value co-creation. Consequently, customers acquire more operant resources through co-creation experience, learn more skills and knowledge to use service and perceive more value out of usage. This in turn upgrades organisational capabilities that benefit future value creation. The relationship between trust and value propositions tends to be self-reinforced. On the one hand, value propositions that provide better opportunities for MC to create value via higher benefits leads to SC being perceived as superior (Ballantyne *et al.* 2011), motivating MC to develop closer relationship that leads to higher degree of trust. However, superior value propositions are usually accompanied by higher risks as they tend to be more complex and interdependencies and require more intensive interactions and negotiations between MC and SC (Kowalkowski 2011). Trust is salient in dealing with high risks and interdependencies and thus is required for producing intensive collaborative service propositions (Jones *et al.* 2010). Decreased opportunism, improved goal alignment, resource allocation, collaborative problem identification and enables improve propositions during execution rather than merely in bidding stages. Further, customers who trust their providers are more likely to be open to unpack their preferences, share experiences as part of the interactions to improve service and technical content and customisation (cf. Neghina *et al.* (2014)). Also, as trust develops and relationships

deepen, customers are more likely to sacrifice short-term individual gains in favour of long-term benefits of the partnership (Cheung *et al.* 2010), meaning that suppliers are able to secure more benefits under high-level trust, especially in S-D settings. Thus, both propositions and service contents crafted in trust-based relationships are more customised, emphasising value and mutual benefits.

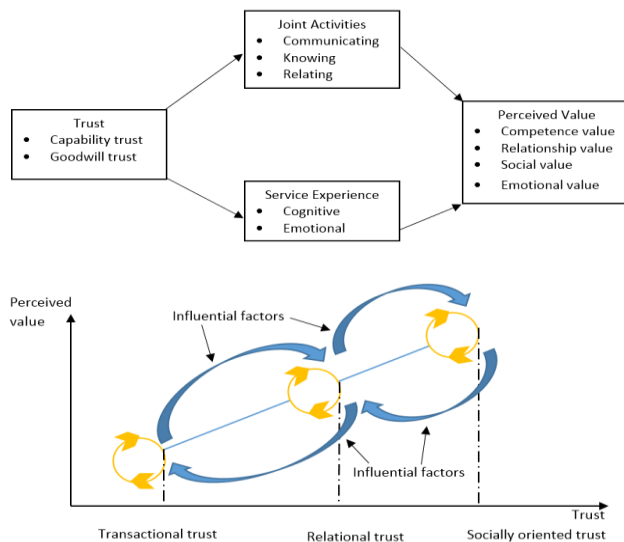


Figure 4 Conceptual relationship between trust and value-in-use

Consequently, customer experience and the perceptions of value will change as trust develops; the higher level of trust the customer has of a service provider, the more value from that service is perceived by the customer. Trust is more likely to reach socially oriented level under S-D settings because the diverting attention from project to service and from tangible competences to intangible competences enables MC to consider SCs with superior operant resources rather than operand resources alone as an extension of their own resources. Relational investment as trusting behaviour is more likely to occur such as skill enhancement and repeat businesses.

CONCLUSIONS

This paper sheds light on the value of trust in value creation process in construction supply chains, in particular relationships between main contractors and second tier subcontractors. This is thought to be the first paper to explore the value of trust through S-D. It has focused on value derived from operant resources using operand processes of co-creation. It has concentrated on downstream supply chain relationships, MC-SC relationships, as an under-researched area. The S-D logic as a substitute for P-F explains value created both within and beyond project lifecycles by focusing on service, operant resources and relationships. Trust as a relationship foundation to facilitate communication, knowledge sharing and relating enables the process of value co-creation, hence enhancing service value in ways such as producing customised service and effective learning over project lifecycles. A model of trust that illustrates the breadth and depth of trust dimension was developed, with the aim of facilitate future empirical research on how trust dynamically affects the value co-created in construction supply chains

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