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# Understanding trust in construction supply chain relationships

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## Introduction

Trust is a social phenomenon that enables collaboration among actors and organisations. In a context such as construction, involving increasing complexity and uncertainty, increased specialism and need for collaboration, trust is required not least because of the call for non-adversarial working and integrated supply chains, for example Egan (1998) and its influential UK successors (e.g., Egan, 2002; Wolstenholme *et al.*, 2009). Trust helps leverage better service standards for actors and organisations involved. A decade or so ago, Smyth (2008) presented a framework of trust drawing conceptual, philosophical and methodological elements together to deepen the understanding of trust in and between project businesses. While trust among project-based organisations is essential, it is particularly challenging to develop and sustain it in projects, especially between contractors and suppliers. This is a management challenge. Main contractor and second-tier subcontractor relationships have been identified as being worse than client and main contractor relationships (Alderman and Ivory, 2007). This chapter aims to deepen the understanding of trust in construction supply chain relationships, particularly in the project delivery. This helps academia and practitioners understand how they can lever value in supply chain relationships through the constitution of trust.

Trust, in the broadest sense, sustains institutional, social and organisational life (Luhmann, 1979; Giddens, 1990; Kramer and Tyler, 1996). Increased division of labour means the need for more collaboration between actors and organisations to create integrated solutions (Pryke, 2009). In this vein, inter-organisational trust is believed to be an appropriate governance mechanism for enhancing communication quality, reducing transaction costs and increasing project efficiency (Zaheer, McEvily and Perrone, 1998). The view on trust as a governance mechanism or organisational form further leads to studies promoting trust relations among organisations through relational marketing, relational contracting. relational governance and partnering projects (e.g., Nootboom *et*

al., 1997; Doloi, 2009; Ling et al., 2013). Once established, trust may generate an environment of integrity and openness where actors are willing to share risks, commit resources and work jointly (Kadefors, 2004; Smyth and Thompson, 2005), which in turn increases the chances to enhance trust. Pryke (2017) has suggested that trust is an important enabling factor in the establishment and maintenance of supply chain networks. The virtuous cycle of trust nurtures relational norms such as reciprocity and equity that stabilise relationships (Macneil, 1980).

Despite collaborative mechanisms and tools in construction project management research (CPM), their effects on relationships and trust vary (cf. Cicmil and Marshall, 2005; Brady and Davies, 2014). One barrier to improving supply chain relationships is the institutional logic of goods dominant, called the goods-dominant logic (G-DL) and the project counterpart, which is termed here the project-focused logic (P-FL), which emphasises transactional efficiency and promotes practices maximising short-term profits and assessing performance on a project-by-project basis (Kadefors, 2004; Smyth, 2015a). Under G-DL and P-FL, partnering projects and collaborative mechanisms simply move the singular transactions to multiple transactions over time in order to profit from supply chains (Alderman and Ivory, 2007; Smyth, 2015b). The lack of empirical studies on supply chain relationships (Bygballe, Jahre and Swärd, 2010), especially the process of relationship development in project delivery, might also contribute to the difficulties of implementing partnering arrangements into practice (Bresnen and Marshall, 2000). It has been identified that second-tier subcontractors and suppliers have less understanding of collaborative mechanisms and question the benefits they can get through collaborating with main contractors (Mason, 2007).

In sum, to promote collaborative relationships and trust in construction supply chains, CPM research need to

- Open the black box of trust development in projects,
- Shift the institutional logic of G-DL and P-FL so to
- Shed light on the value of trust for those involved, including main contractors and subcontractors, as well as a broader view on value beyond

points of transactions towards value-in-use over time (Vargo and Lusch, 2004; Saxon, 2005).

This chapter draws on the above points from the perspective of structuration theory (Giddens, 1984) and service-dominant logic (S-DL) (Vargo and Lusch, 2004, 2008, 2016). Based on data from the case study, this process-based research demonstrates how trust, from the main contractor to second-tier subcontractor, develops and how the value of trust unfolds while trust develops.

## **Towards an understanding of trust in construction supply chains**

### **Towards a service dominant logic view**

The division of labour and subcontracting systems enable previous in-house production to become a type of service and main contractors as system integrators to provide the service of management for clients. Construction projects then become less about production and more about the establishment of delivery channels of service for the benefit of end-users such as building occupants and road users. In the project management field, the changing place of service has gained increasing interests (Brady, Davies and Gann, 2005; Edvardsson, Gustafsson and Roos, 2005) and distanced the delivery of projects from G-DL and P-FL (Table 1).

Under G-DL, value is added in goods and services by producers before completion and determined at the point of making a transaction or a series of transactions, that is value-in-exchange. Value propositions are promises of value to be delivered by producers and are treated as 'quantifiable evidence' of value (Skålén *et al.*, 2015). From a good dominant logic (G-DL) perspective, value propositions are active from the producers' side (Lanning, 1998) and customers reactively accept the offering or not. The role of the customer in creating value propositions is not implicitly addressed by G-DL. The focus is on the exchange of manufactured goods and services (Skålén *et al.*, 2015). Therefore, the

interactions and relationships between customer and producer in the production are largely neglected in G-DL.

Table 1 Good dominant logic, the project-focused view and service dominant logic in the delivery of construction projects

	The delivery of construction projects	G-DL/P-FL perspective	S-DL perspective
Creation of the value proposition	Before delivery  Little can be accurately quantified	After production  Quantifiable evidence of transactional value, such as cost, programme and quality	A balancing mechanism that links actors at different time and position in the service ecosystem
Role of customer	Continuously shaped before and during the delivery  Main contractor as the intermediate customer of specialist projects participating in the delivery and providing service	Static promises from the producer to customer  Reactive recipient of goods and services	Customers can passively accept the value proposition or participate in the creation of value proposition
Firm-customer interaction	Some clients participating in the delivery  Intensive interactions between the main contractor and supply chains in delivering the project	An operand resource to be profited from  Active producer and reactive customer in making value propositions and production	An operand resource to co-create value with  Interchangeable role of service provider between the customer and producer in the creation of value proposition
Firm-customer relationship and trust	Main contractor and subcontractor may facilitate the use process post completion  An integral part of project success  Related to repeat businesses and economics of repetition and recombination	Producer may provide facilitating services as added value  Not addressed in G-DL  Temporary and an operand resource for project efficiency in P-FL	Service beneficiary co-create value in use experience through direct or indirect interactions with the service provider as well as other actors in the service ecosystem  Inherently relational  An operand resource determining the meaning of goods and services

Source: original

Nevertheless, the delivery of construction projects requires intensive interactions between contractors and supply chain members. Supply chain organisations are selling and bidding, the formation of value propositions occurring prior to production or delivery. Value propositions can be shaped through interactions and early involvement of main contractors and supply chains at the front end (Cova and Salle, 2008). Main contractors, more often than not, participates in the service provision. Interactions between main contractors and subcontractors continue beyond the formation of value propositions and might even become intensified in project execution. In order to manage changes and uncertainties, both main contractors and subcontractors may take the role of service provider during service delivery. In construction, exchange is a process, broken down into stage payments. How this is managed is an integral part of the relationship and trust is a crucial part of the mutual service experience.

On the other hand, P-FL emphasises the temporary and uniqueness of projects (Lundin and Söderholm, 1995) and in this vein, trust relations are viewed as a vehicle to increase project efficiency and terminated with the project; projects have no memory and trust is mostly built from scratch (Dubois and Gadde, 2002b). Yet, this is far from the case, especially in supply chain networks and where repeat business is commonplace and sometimes the norm. The shadow of the past and future, rules and resources at multiple levels of service ecosystems influence perceptions, actions, practices and power relations in current interactions and hence their performance in knowledge transfer and capability building (Brady and Davies, 2004; Manning and Sydow, 2011).

S-DL shifts the focus away from projects, goods and services towards service and relationships in service ecosystems (Vargo and Lusch, 2008, 2016). This inherently-relational feature links S-DL with construction project management. The central argument of S-DL is that in an actor-to-actor or A2A context the basis of exchange is service; “service is exchanged for service” (Bastiat, 1964, as quoted in Vargo and Lusch, 2004: pp. 6-7). In S-DL, service is more than what was traditionally meant in G-DL as an activity or a set of input activities resulting in a singular output aimed at assisting the customer’s practice, but the “application of specialised competencies (skills and knowledge) through deeds,

processes, and performances for the benefit of another party or the entity itself” (Vargo and Lusch, 2004: p. 2). A S-DL views goods and services as operand resources, on which an operation or act is performed to produce an effect and operand resources that are employed to act on operand resources as well as other operand resources (Vargo and Lusch, 2004). In this vein, relationships and hence trust are not operand resources to be profited from; they are operant resources and determine how a certain resource can be efficiently used or easily accessed. S-DL regards relationship value beyond bringing repeated transactions; “a service-centred view is inherently beneficiary oriented and relational” (Vargo and Lusch, 2016: p.4). Relationships are embedded with social capital that can be transformed to other types of capital and help lever value for those involved (Bourdieu, 1986; Coleman, 1988).

Under S-DL, main contractors and subcontractors can only create value propositions, namely construction projects and components. Service beneficiaries such as building occupants and road users, while they use the service delivered through the construction project, co-create value with other actors in service ecosystems and determine value-in-use of the service. In some cases, main contractors and subcontractors, together with the client, facilitate the end-users’ systems post completion (Grönroos, 2008; Lusch, Vargo and Tanniru, 2010). Therefore, value-in-use depends on two processes:

- (1) Service experience of delivering value propositions;
- (2) Use experience of realising value propositions as value-in-use (Smyth, 2015a).

From the perspective of main contractors and subcontractors, it is the first process, service experience of creating value propositions, that levers value, instead of actualising such value propositions. By participating in service interactions, actors have more opportunities for mutual learning, knowledge sharing and relationship building, hence gaining resources and service rights that lever value for future service exchanges. Between selling and project completion, the components of value propositions, perceptions of value and power relations

may alter, resulting in value realisation enhanced for some yet reduced for other organisational actors. This points to the importance of complementary objectives, mutual understanding on the basis of shared meanings, resource commitment and access to mobilising other actors' resources and reflexive learning in experience (Lusch, Vargo and Tanniru, 2010; Kowalkowski *et al.*, 2012). All these are founded upon trust-based interactions at different levels of service ecosystems that align actors' value expectations as reciprocal promises *"to and from suppliers and customers seeking an equitable exchange"* (Ballantyne and Varey, 2006: p.344).

Value co-creation implies reciprocity and equity for those involved (Ballantyne and Varey, 2006; Aarikka-Stenroos and Jaakkola, 2012). However, the majority of service-dominant logic research focuses on the practices of and value for customers (e.g. van der Valk and Wynstra, 2012). Service value, particularly for suppliers, is somewhat neglected, with the exceptions of Smyth *et al.* (2016) and Walter *et al.* (2001). This imbalance of research interests is consistent with the client-centred focus of construction project management (CPM). While many studies have focused on the in-use phase, the experience of service provision at the meso and micro levels attracts little interest (Karpen, Gemser and Calabretta, 2017). In short, despite the argument that service is a process, the S-DL community lacks empirical research on how this service aspect enacts and levers value for those involved – pointing to the necessity for a process-based study on service provision and value-in-use for both customer and supplier.

## **Towards a process-based view**

Service dominant logic (S-DL) provides a lens for viewing resources and value beyond both the transactional sense and project duration. This section moves the ontological foundation for this research towards a process-based view. Most trust research in construction has centred on:

- Identifying antecedents and outputs of trust in projects (e.g., Wong *et al.*, 2008)



- Trust in governance structures at the project and corporate level, relational contracting and the design of collaborative mechanisms and tools (e.g., Rahman and Kumaraswamy, 2012);
- The atmosphere and culture derived from specific trusting behaviour conducted by actors in interactions (e.g., Smyth and Thompson, 2005).

Despite the enlightenment on trust in construction project management, most studies have taken static snapshots of trust. Like Zeno's arrow, an individual snapshot gives a glance of trust in a given point of time and space but sheds little light on the understanding of the essence of trust. Also, trust research in CPM neglects the relational and social context where actors and organisations are situated. Trust is foundational to relationships, meaning that trust exists, develops and functions through relationships among people and organisations (Smyth, Gustafsson and Ganskau, 2010). Individuals would have no occasion nor need to trust apart from engaging in relationships (Lewis and Weigert, 1985). Trust cannot be fully understood on either a psychological or institutional level alone. Zooming out to a broader picture shows that supply chain relationships are nested in multiple levels of service ecosystems that equip project actors with rules of interpretations and legitimation as well as resources of power (Manning, 2008; Sydow, 2017). Time matters as well. Despite any projects have an *ex-ante* defined duration, actors and firms have earlier experience and future expectations that influence current perceptions and behavioural orientations towards others.

To capture the dynamics of trust requires taking a 'becoming' ontology (Chia, 2002), bringing inter-organisational relationships to the centre of analysis and theorising on the basis of contexts over the course of time. This move towards a 'becoming' ontology requires a more open, dynamic, and reflexive management approach and a broader view of organisational theory (Sydow, 2017). Structuration theory (Giddens 1984) is one of the theories able to reconcile the interplay of structures and agency in process studies. Specifically, the concept of duality of structure provides a dynamic lens for viewing the recurrent interactions between structures and interaction processes. Structure, according to Giddens' structuration theory, consists of rules and resources. Rules of signification and

legitimation constitute the interpretative and normative aspects of structure and resources are constituted from authoritative and allocative resources from social systems. Rules and resources in the institutional, social and organisational environment then constrain and enable practices in interactions. Knowledgeable actors, on the other side, reflexively choose among multiple rules and resources in interactions with others, hence reproducing or transforming rules and resources. This research does not include a full review of structuration theory here (see Bresnen et al., 2004). The point is that structuration theory provides a theoretic perspective of viewing how service interactions help constitute trust and how trust influences service process and outcomes.

In construction projects, interpretative and normative rules and resources are divergent and are imposed rules and regulations at the level of organisational fields, industrial norms at the network level and organisational policies at the organisational level (Manning, 2008). Such rules and resources form structural conditions of trust. On the other hand, the management of construction projects is highly decentralised (see for example, Pryke et al., 2018), authorising managers power to make decisions at the local level. Actors are also able to generate norms, form routines and resources at the project level. As such, construction actors have various interpretative schemes and facilities of gaining resources, depending on rules and demands from different stakeholders. Actors play an active role in choosing forms of communication, whether and how to use power and ways of sanction. Their decisions depend on interests of the parent organisation but also power relationships and resources in the project as well as the institutional environment at the project location (Bresnen, Goussevskaia and Swan, 2004). Through the lens of structuration theory, generating trust enables the following (Sydown, 1998):

- The raising of the perception of trustworthiness (interpretative rule)
- The using of trust relations as resources to allocate resources (facility of resources)
- The legitimising of relational norms that constrain opportunism and encourage trusting and trustworthy behaviour (normative rule).

The phenomenon of trust, in return, influences communication, power relations and sanctioned behaviour in interactions (Sydow, 1998), hence service process and project performance.

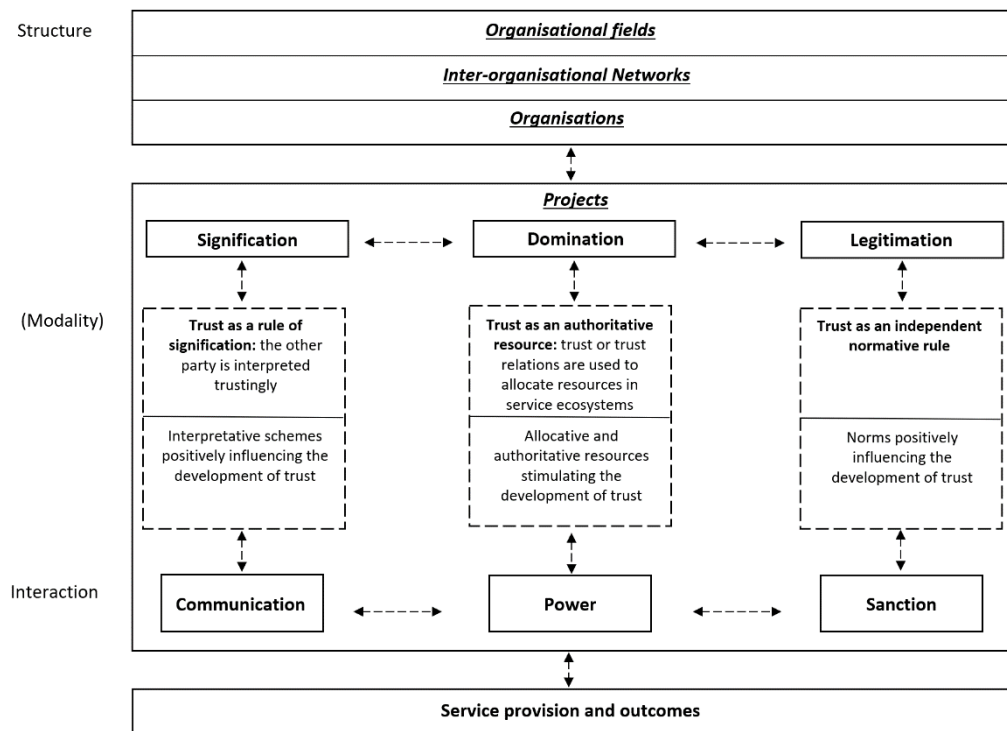


Figure 1 The constitution and value of trust: a structurationist view

Source: adapted from Sydow (1998: p.40) and Manning (2008: p.33)

To recap, a process-based view is used, viewed through the service-dominant logic, and demonstrates whether and how trust, from the main contractor to second-tier subcontractor, develops. It also addresses the value of that trust (See Figure 1). Based on extant research (Mayer et al. 1995; Rousseau et al.1998; Smyth et al. 2010; Sydow 1998), this study uses the working definition of trust as

An actor's current intention to rely on the actions of, or to be vulnerable to, another actor, based on the expectation that the other actor can reduce risks and co-create value in a relationship.

A relationship can be interpersonal. It can also be inter-organisational based upon the sum of the key interactions and individuals.

## Methodology and methods

The study on which this chapter is based on an interpretive and process-based approach and focused on the informants' view of the topic and individuals' perceptions of events and processes (Smith, 2004). The case study offered a 'zooming-in' opportunity for investigating processes in a local situation (Yin, 2009). One inter-organisational relationship was selected to demonstrate how trust develops or decays in supply chain relationships and how trust influences service value in the project. Case Gamma involved an internal supply chain relationship between a main contractor, referred to herein as Build Gamma, and a foundation and piling subcontractor referred to herein as Found Gamma. Case Gamma was selected because of the dual relationship feature between Build Gamma and Found Gamma. On the one hand, Build Gamma and Found Gamma are functional units of the same parent company, Gamma UK and structural conditions at the organisation level may influence service interactions and trust at the project level. On the other hand, the two parties have separate profit goals, business plans and different organisational structures. For instance, Found Gamma needed to bid as external subcontractors for Build Gamma's projects. In this sense, the relationship between Build Gamma and Found Gamma is similar to an inter-organisation relationship that may be influenced by interorganisational networks. Taking Build Gamma: Found Gamma relationship as the unit of analysis offers an opportunity for investigating the interplays of trust and interaction process at the project level but also structural conditions at different levels of ecosystems. Table 1 summarised key features of the case.

Table 2 Case Gamma overview

Case study information	
Project context	Piling project for a multiple-use high-rise building in a city centre
Piling duration	- Overall including procurement, design and resource mobilisation: 16 months - Execution: 6 months
Relationship nature	Functional units of Gamma UK
Main procurement and contract	- Two-stage procurement - JCT 2011, management fee (Preconstruction agreement), 30-day payment
Piling procurement and subcontract	- Limited bid invitation - JCT 2011, lump sum, 42-day payment

Source: original

To investigate the sequence and flow of events in order to understand processes in the course of time, the research was enlightened by the longitudinal study method. Data collection involved three-round visits and interviews at preconstruction and procurement, then execution stage and finally completion stage of the piling project so as to capture both historical and contemporary processes (Pettigrew, 1990). By doing so, the author gathered data about past experiences that dated back 3 years. Conducting repeated, multiple-wave interviews mitigates the possibility of bias due to incomplete, misinterpreted and mistakenly reported memories. 21 interviews were conducted, with informants across different organisation levels and functional units from both the main contractor and subcontractor. Bias due to the same functional roles and organisations were mitigated. All interviews were semi-structured, guided by a protocol and open-ended questions. Structuration theory provided general guideline and mechanisms to explain local findings, but these mechanisms and concepts are subjective to revision (Dubois and Gadde, 2002a).

All interviews were recorded and transcribed by the researcher. Transcription was stored and managed through MAXQDA 12.

## Case study

This section is to illustrate the context, events and processes of case Gamma and analyse the case study on the basis of theoretical mechanisms. Specifically, the case study findings are summarised in Box 1-4, each box followed by theoretical interpretations of the influences on, or of, trust.

### Context

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#### BOX 1 PROJECT PARTICIPANTS, PROJECT ECOSYSTEMS AND THE SHADOW OF THE PAST

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##### ***Project participants***

The parent company is Gamma UK, a major construction company in the UK. Found Gamma is the piling and ground engineering unit and Build Gamma is the Building construction unit; each having their own managing director and leadership team. The whole company is supported by a number of enabling functions such as health and safety and communications. The client is a private property company. Several consultants were in partnership with the client, providing quantity surveying, design and engineering services.

##### ***The shadow of the past***

Before Project Gamma, Build Gamma and Found Gamma just delivered 'Lemon project'. Both parties perceived the experience of Lemon project as negative, in which communication at the project level became 'just to execute obligations'. After project completion, both parties denied own responsibilities and wanted to 'cut ties' with each other. When the piling project was completed, two companies were in extensive disputes. Build Gamma charged Found Gamma 25% of contract value for delay whereas Found Gamma asked for compensation for additional works.

##### ***Service ecosystems***

At the organisation level, Gamma UK had a collaborative policy, referred to herein as 'One Gamma', to encourage service integration between internal units and increase the competence and reputation of Gamma UK at the board level. After Lemon project, the executive management team drove the initiative of relationship development 'top-down' to the senior management and middle management. Also, the two companies shared common enabling systems, procedures and standards for joint activities. At the middle management level, the biannual business-to-business (B2B) meeting between project directors of Build Gamma and Found Gamma was the main event for relationship building after the Lemon project. Gamma UK's organisational structure, on the other hand, allowed functional units to competitively procure piling and ground engineering services, despite owning the specialist unit Found Gamma. This autonomy was to pursuit lowest cost and satisfy clients' requirements.

At the network level, the client used two-stage procurement to encourage early contractor and subcontractor involvement and an integrative team. The main stakeholder of Project Gamma was a local government body responsible for transport, herein referred to City Ltd. The site was close to underground stations and Build Gamma and City Ltd had frequent communication regarding to the risk of disturbing underground operations.

### *Assessing the shadow of the past*

Prior to the front end, actors assessed the other party's competence and intentions on the basis of the two companies' past experiences. Structures at the organisational level influenced trust in two ways. First, executive management team of Gamma UK drove communication between to the senior management and middle management of two units to improve relationships. Second, routines between internal units such as the biannual B2B director meeting provided the opportunity for joint learning.

Despite the initiative and joint activities, the Lemon project negatively affected Build Gamma's perception of Found Gamma's trustworthiness as the middle management failed to establish shared learning and invoke actions to exploit the lessons of the past for future benefits. The challenge of forming shared understanding was attributed to the lack of first-hand experience and thus a belief in the other party's competence and intentions since directors got involved in the project when disputes had already occurred. As a consequence, directors at both 'Build' and 'Found' avoided, rather than dealt with, problems. Both parties denied their own mistakes. Financial disputes caused by the Lemon project exacerbated the relationship at the firm level. According to the project director of Found Gamma:

*"It is a very contractual and transactional relationship. It shouldn't be, but it is...And because we are the subcontractor, we are always at the bottom of the food chain...So at the very beginning of the job [Project Gamma], there was some resistance from... [Build Gamma] to use us because of... [the Lemon project]. And it took some higher-level people to say 'No, ... [Found Gamma] is our in-house company. We can't*

*dismiss them because of... [the Lemon project]. We have to fix it and move on.”*

### *Organisational structure and policy: forming a sense of unfairness*

The narrative above pointed to the second factor influencing trust between internal companies – the organisational structure of Gamma UK. Specifically, the structure enabled contractual relationship dominating the in-house relationship between Found Gamma and other functional units as main contractors. The strategies of internal units’ businesses, although seeming to mitigate complacency and maintain the competence of the in-house service, was to capture short-term profits, even if it was at the expense of long-term benefit across projects. The organisational structure in place at the time promoted discreteness and facilitated the project-focussed view (P-FL) and goods-dominant logic (G-DL) practices. Under P-FL and G-DL, internal actors tended to ignore the benefits from trusting and well-structured internal relationships. No strategic relationship was established between Found Gamma and other functional units.

Further, the organisational structure and institutionalised, transaction-based actions constrained the effect of ‘One Gamma’ policy, especially on Found Gamma. ‘One Gamma’, on the broadest level, was conducive to integrated service and resource efficiency. As ‘One Gamma’ was disseminated within the organisation and continuously communicated between individuals, it could influence individuals’ interpretations such as the meaning of internal relationships, ways of utilising internal resources and the intention of collaborating with internal companies. Despite the top-down approach, interpretations were affected by individuals’ experiences. Under the structure in place at the time, specifically after the Lemon project, ‘One Gamma’ was perceived by Found Gamma as employing a rhetoric of using their resources to facilitate other units as main contractors. Looking at this as a whole, the management of Gamma UK might have tried out of self-interest to secure their profit by not adequately paying Found Gamma. Transactional relations dominated over the in-house relations and generated the perception of



unfairness, which dramatically hindered the development of relationships and trust.

## Procurement and preconstruction stage

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### BOX 2 PROCUREMENT AND PRECONSTRUCTION

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The main contract was open to two-stage tendering in August 2015. To satisfy the client's requirement for an early starting with piling, in October 2015, Build Gamma invited three piling contractors to competitively tender. Inviting Found Gamma was a normative practice between internal units of Gamma UK and Found Gamma offered the lowest price. Since then, two companies engaged to jointly develop the main bid. Based on experience with piling for surrounding buildings and established relationships with City Ltd., Found Gamma helped Build Gamma to win the first stage and, in this way, they added value to the main bid, and helped mitigate risks in main contract terms.

In January 2016, Build Gamma was awarded a Preconstruction agreement (PCA), which was originally for 6 months. During PCA, the client paid a monthly fee to Build Gamma who were responsible for site management and the management of piling. After Build Gamma had been awarded the PCA, Found Gamma introduced an operations manager and a project manager into the project, and continued to help develop the main contract and early involved in design. A joint risk workshop was initiated where engineers and managers of both parties identified risks together. Based on ground information from past experiences, Found Gamma reduced risks and main bid price. Found Gamma were involved in the meetings between Build Gamma and the client.

Meanwhile, main contractor, Build Gamma and piling subcontractor, Found Gamma started to negotiate piling contract. Learning from the Lemon project, Found Gamma refused any changes in their programme. Build Gamma supported Found Gamma's programme and assisted Found Gamma's site preparation and welfare. In April, Found Gamma and Build Gamma signed the contract with a lump sum price of £4 million.

#### *Early involving: forming a sense of security and familiarity*

The experience of the Lemon project increased the perceived risks of interdependence, and both parties preferred to interact with a transactional approach so as to reduce relational elements. At the front end, project organisations were governed by the price mechanism. From the perspective of Build Gamma, the early inquiry was to use Found Gamma's resources to optimise main bids and reduce the risk of disturbing underground operations. Found Gamma was perceived as an operand resource to be profited from, '*an asset to win jobs...to help for the technical systems...to pass on the risk*' (Commercial manager, Build Gamma). From the perspective of Found Gamma, early involvement in the main bid development meant more chances to direct the main

contract content to the benefits the firm could deliver and hence increase own influence in the project. In other words, early involvement was driven mainly by self-interest.

Nevertheless, competence trust increased as Found Gamma helped improve the value proposition. Through Found Gamma's technical solutions, advice and joint activities such as risk workshops, Build Gamma learnt about Found Gamma's specialist capabilities, although this was not an intended consequence. As commented by the project director of Build Gamma

*"...they did give us advice on the logistics and programme, which we used into our first-stage tender submission. So, we put that information in our first stage tender submission... [Found Gamma] are very educated. So, they understand risks more... [In contract negotiation] ... [Found Gamma] would ask searching questions. At the end of the day, it is good because it protects everybody."*

Found Gamma's competence, past experiences in the local area and relationships with City Ltd. gave Build Gamma a sense of security. Moreover, the early introduction of operations manager and project manager at the front end nurtured a sense of familiarity at the individual level and mitigated inconsistency between the front end and execution stage.

#### *Two-stage procurement: creating a sense of equity*

Throughout the piling procurement stage, both companies maintained transactional relationships to reduce perceived risks of interdependence. Actors from both parties repeatedly stressed that Found Gamma was awarded the contract because of the lowest price, rather than the internal relations. Contract negotiation was more about building safeguards, especially from Found Gamma's side, indicating a sense of insecurity in collaboration with Build Gamma.

The sense of insecurity was alleviated by perceived equity in the exchange. Two-stage procurement constrained the use of power by Build Gamma since the main contract was not awarded by the time of piling procurement. Build Gamma could

not control terms and conditions for self-interest. The piling contract was jointly determined, and the value proposition was reciprocal to both parties. Co-determination added a dose of equity between Found Gamma and Build Gamma. Perceived equity was further strengthened by Build Gamma's support for the piling programme. Equity reduced Found Gamma's safeguard and encouraged collaboration in the execution, which laid the foundation for trust development.

### *The value of trust*

Competence trust motivated Build Gamma to collaborate with Found Gamma. This is evident in joint risk workshops, bringing Found Gamma into the meetings with the client and their support for Found Gamma's programme. From the perspective of Build Gamma, collaborating with Found Gamma increased the client's trust and the effectiveness of communication with the client as Found Gamma were able to explain risks and technical solutions better. From the perspective of Found Gamma, they obtained quality information about the project and the client, built the relationship with the client and reduced risks at an early stage by direct communication with the designer and the client. Effective communication improved the value proposition that potentially brought about a good project. Expanded resource base with broader networks of relationships and information benefited future business and thus leveraged improved service value.

## Execution stage

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### BOX 3 PROJECT EXECUTION

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Piling execution started in June 2016. Found Gamma and Build Gamma maintained consistent teams. The two parties established project routines and maintained regular communication. Supervisors had daily reports and diaries, and project managers and engineers had weekly progress meetings on site. Found Gamma operations manager met Build Gamma's project manager fortnightly. At the middle-management level, project directors of both parties were also scheduled to meet regularly. Two parties agreed weekly programmes, resource plans, site records and risk assessment and method statements. Found Gamma also used rolling accounts to evaluate and predict the final account after each change and informed Build Gamma their prediction. In this way, both parties were able to jointly monitor project progress and deal with issues immediately rather than leaving them to the final account. As internal companies, Found Gamma and Build Gamma did joint inspection on H&S and environmental issues. Found Gamma achieved programmes, crafted effective technical solutions and shared their knowledge to help main bid submission and initiate relationships between Build Gamma and City Ltd. Relationships with City Ltd. was especially important for Build Gamma; City Ltd. was the key stakeholder for their next project. The way of collaborating was repeated and gradually routinised.

In September 2016, as the client and Build Gamma could not reach an agreement on price, the main contract was back to tender. Build Gamma agreed to extend the PCA until the piling was completed. To save costs, Build Gamma reduced resources and maintained key actors at the project level. Despite the resource reduction, the two parties showed higher solidarity so as to increase joint power relative to the client. They jointly solved problems to ensure both parties could get benefits. Found Gamma also had more flexibilities in their operations and piling issues were decided by both parties. In circumstances where Found Gamma delayed outstanding information, Build Gamma chose to discuss the issue by phone or face-to-face meetings, rather than contractually by formalising letters or emails. Similarly, Found Gamma did extra-mile works without charge.

#### *Structuring the project: maintaining security and familiarity*

##### 1. Relating, controlling and monitoring

Consistent teams sustained relationships between key actors and shared understanding established in the procurement, contract negotiation and design stages. Structuring project routines initiated formal relationships and ensured regular direct communication between two parties, which enabled continuous learning through monitoring or through joint activities. Further, exchanging legitimised boundary objects, such as weekly programmes and rolling financial reporting reduced misunderstanding and ambiguity in communications. Such formal mechanisms enabled the ability to control through structural influence. Through monitoring project tasks and performance, actors from Build Gamma

increased their competence trust in Found Gamma as the latter continued to comply with the programme.

## 2. Routinising

Apart from actualising the value proposition, Found Gamma's service enabled Build Gamma to obtain knowledge and establish relationships with City Ltd. The effectiveness of service process and outcomes increased competence trust, which in turn sustained the collaboration. This way of collaborating was reproduced and gradually routinised, embedding competence trust in the service interactions and relationships between Build Gamma and Found Gamma. In other words, competence trust and collaboration formed a self-reinforcing cycle where competence trust served as the medium and outcome of collaboration. Build Gamma became more willing to rely on Found Gamma and specifically on their solutions and advice. Interdependence increased between the two parties.

Relating, controlling and routinising sustained familiarity at the individual level and security in operations, which laid the foundations for generating trustworthiness and further using trust as a facility for coordinating resources.

*Joint activities: forming the interpretations of trustworthiness*

### 1. Collaborating and shared learning

Shared systems, standards and common knowledge facilitated joint activities between Build Gamma and Found Gamma. Joint activities enabled the co-presence of both parties and actors were able to identify, understand and solve project issues in shared experiences, hence reducing misunderstanding.

*"We do rely on them to do a good job, and we trust them to deal with what they are supposed to do in terms of quality, H&S, everything else...because you know they are... [Gamma UK], they follow the same*

*standard as we follow, we rely on them to make sure that if there are procedures to follow we trust they will do it. We rely on them to do it.”*

(Construction manager, Build Gamma)

## 2. The role of internal relations

The role of internal relations was two-fold here. On the one hand, the internal relation reduced perceived risks in collaboration and thus supported the virtuous cycle of competence trust and collaboration. On the other hand, the belief in internal relations substituted intention trust. Found Gamma was believed not to be opportunistic because of the internal relations and associated obligations, rather than experiential and reflexive learning about Found Gamma's actions.

*Using trust relations in resource coordination: bounded solidarity and economic reciprocity*

Build Gamma's failure in the main bid and reduction in resources changed power relations among the main contractor, subcontractor and the client and promoted bounded solidarity between Build Gamma and Found Gamma. Bounded solidarity was driven by the recognition of their own powerlessness relative to the client and the economic reciprocity from collaborating with each other. Internal relations facilitate the formation of solidarity.

*“[Internal relationship] A bit better with collaborating...kind of against the client...working together to make sure that both companies are achieving as much as they can and not make any mistakes that are going to affect another company.”*

(Construction manager, Build Gamma)

Bounded solidarity, on the basis of competence trust and internal relations, meant that Build Gamma and Found Gamma formed shared intentions of protecting collective benefits from the client in Project Gamma. Social orientations emerged at this point as actors became concerned about their own benefits but also the

other party's. Within shared intentions, bounded solidarity constrained contractual and opportunistic behaviour towards the other party and thus encouraged the use of trust relations in resource allocation and integration, rather than hierarchical authority or market price.

To use trust relations required mutual service and reciprocal value propositions, which nurtured economic reciprocity in the relationship between Build Gamma and Found Gamma. Economic reciprocity started with small actions with short-term returns specifically economic returns, completing programme on time and getting fair payment for instance. The repeated reciprocation of small actions promoted actions with less specified payback. The balance of the exchange was expected in a longer term, though still within the duration of the project. Contractual elements were mitigated, as mentioned by the project engineer of Found Gamma

*"We are trying to be as helpful as possible. We never said 'no, we cannot do it'...Also in terms of ... [Build Gamma] as a company on this site, they have been very helpful and supportive. And they really try to understand what it is, what we really do, what we need...we do our best to be helpful, and they do their best to be helpful. So, we will continue to do that."*

The narrative above illustrates the phenomenon of collaborating beyond merely integrating service. Collaborating for co-creating value involved social orientation, mutual service and reciprocal value propositions. Bounded solidarity and economic reciprocity supported the reproduction of value co-creating and hence competence trust as a rule of signification and trust relations as facilities of obtaining resources; the more trust-based service reproduced, the more trust became embedded.

#### *The value of trust*

Competence trust encouraged more enquiries and information sharing but also gave Build Gamma confidence in reducing resources and delegating some

authorities to Found Gamma. Although partly driven by the external environment, reducing resources depended upon the positive path created by the virtuous cycle of trust and collaboration and the belief in the nature of internal relation. From the perspective of Found Gamma, Build Gamma's openness and delegation of authorities signalled Found Gamma's trust and increased their confidence in communication. They became more proactive in resource sharing. From the perspective of Build Gamma, trust created a learning atmosphere where actors asked questions, shared knowledge and jointly solved problems. In other words, the self-reinforcing cycle of trust and collaboration promoted closer collaboration where actors were able to use trust as social capital in pursuit of value. The use of trust relations induced mutual service and reciprocal value propositions that made service experiences of both parties more flexible and effective. Moreover, the shared intention of protecting collective benefits from the client made the relationships more cohesive.



## Completion stage

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### BOX 4 PROJECT COMPLETION

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At the project level, Found Gamma and Build Gamma continued to deliver an integrated service, Found Gamma taking the responsibility of delivering service contents and Build Gamma providing information from the client about design changes and requirements of City Ltd. Build Gamma gave more flexibilities to Found Gamma in piling operations, allowing Found Gamma to manage piling on their own. Both parties maintained core staff. As actors became more familiar, they were willing to share resources and learn in the project. Found Gamma engineers introduced Build Gamma different types of pile and the requirements for their operations; Build Gamma shared their knowledge and experience as a main contractor. This knowledge helped Found Gamma's future business that the project required Found Gamma to deliver integrated solutions including piling and temporary works. The recurrent collaborative behaviour formed relational norms that actors complied with to maintain stability of relationship and ensure continuous benefits.

At the firm level, Found Gamma and Build Gamma secured future business. Communication increased and was future-oriented. Directors were more involved with each other. They inquired and advised each other about the future project. Build Gamma invited Found Gamma to their internal director forum so as to increase mutual understanding and early identify potential business opportunities.

The piling was completed in December 2016, two weeks prior to the programme. The experience of Project Gamma largely improved the relationship between Found Gamma and Build Gamma. By the end of the project, actors from both parties had a shared understanding of 'One Gamma UK' as comprising openness, honesty, flexibility, listening, understanding, sharing and non-blaming. Found Gamma gained 15-25% increase value of the work and improved their status internal to Gamma UK. They also gained reputation as engineers were invited to do a presentation by the client's consultant.

#### *Stabilising the relationship: trust as a rule of legitimation*

At the project level, bounded solidarity, economic reciprocity and equity of the service process and outcomes motivated actors to maintain relationship stability and the trusting and trustworthy way of interactions. As mentioned by the quantity surveyor of Found Gamma

*"...I will say in any project there's a chemistry of people managing it. So, the chemistry I would say is good enough to manage and establish trust, that follows that you actually say what you would do. You are*

*going to say as you do. Trust - you build on that. You just become a far better working relationship.”*

Actors nurtured norms of conduct in their day-to-day interactions, which in return constrained opportunism and encouraged trust and trustworthiness. In this manner, actor-generated norms were legitimised in the recurrent pattern of trust-based behaviour, generating trust as a rule of legitimation. Further, as actors referred to the norms, they were more likely to use trust as a mechanism for resource coordination than apply coercive power and opportunism. In this vein, trust as a rule of legitimation also strengthened trust as a rule of signification and trust as a resource of domination.

#### *The shadow of the future: social reciprocity*

Secured future projects meant that resources gained in the Project Gamma might be reused and/or recombined in the future, which helped maintain actor-generated norms at the project level. The engagement at the firm level, such as service exchanges for future businesses and project director forum, indicated an element of social reciprocity in the service provision. Social reciprocity induced actions with no specified return within the duration of the current project. The balance of exchange was expected in future businesses. The shadow of the future potentially extended social orientations and value co-creating beyond the project level.

#### *The value of trust*

As trust was recursively constituted as social capital in service interactions, the initiatives of sharing and learning increased especially on the Found Gamma's side. The scope of communication extended beyond problems and tasks within Project Gamma. At the project level, Found Gamma managers and engineers introduced their partners technical knowledge and learnt about main contractors' businesses. At the firm level, directors of both companies discussed their future projects and identified business opportunities. The aim was to increase mutual understanding of each other's operations and organisation. On the Build Gamma's side, they maintained responsiveness to problems and fairness in the

service process and outcomes. Actors knew more about each other, technically, organisationally and relationally, which made service experiences more informative, flexible and effective. As the project manager of Found Gamma mentioned

*“I think from both sides we were both quite open and honest with each other as to what the requirements were, or what was important to the project. So, we were able to very quickly come to the best solution between all of us, a) for the project, and second) for each party, which avoids the conflict...It [this good relationship] made it an easier place to work. Everyone knew what everyone did. It made it an enjoyable project to build.”*

Furthermore, trust as a rule of legitimation stabilised collaboration and increased relationship cohesion. The cohesion of relationship is evident as actors of both parties recognised the benefits of trust and trust relations with the other party and had a shared understanding of ‘One Gamma UK’.

Better service experiences enabled actors to lever service value and achieve higher performance. As actors became more informative, they gained resources that could be used in the future projects, such as knowledge and relationships with CityLtd for Build Gamma and main contractors’ operations and businesses for Found Gamma. The value proposition became more viable and acceptable to the client, which improved piling programme, cost and quality. From the perspective of Build Gamma, being able to deliver integrated solutions also increased the status and reputation in the broader market. Successful delivery of Project Gamma demonstrated Found Gamma’s capabilities and increased their status and reputation within Gamma UK. Relationship value increased as both companies benefited more than delivering piling as an end product.

## Discussion

### *The constitution of trust*

This chapter demonstrates five types of trust-generating interaction processes – learning, relating, controlling, collaborating, and routinising (Figure 2). From the beginning of the front end to completion, these processes recursively constituted trust by influencing actors' interpretative schemes, encouraging the use of trust to allocate resources and legitimising relational norms sustaining collaboration.

*Learning* is the underlying process of constituting trust. To generate the perception of trustworthiness, use trust relations to gain resources and value and legitimate relational norms, actors need to learn about their partners as well as the environment. The perception of trustworthiness could be a consequence of intentional assessment of past experiences but also an unintended consequence of discursive learning such as monitoring programme and shared learning about problems and tasks.

To generate trust requires a sense of familiarity and security. Familiarity and security help breed trust by furnishing a sense of assurance in repeated interactions and encouraging the leap of faith in the face of uncertainties (Luhmann, 1988; Gulati, 1995). We identified that relating, routinizing and controlling at the structure level could raise familiarity and security in construction supply chain relationships. *Relating* provides relational ties and informal socialisation mechanisms that help sustain communication between two parties. Informal socialization mechanisms help reconcile discrepancies in meanings, goals, and value (Grant, 1996; Carlile, 2004; Lawson *et al.*, 2009; Ballantyne *et al.*, 2011). The case study found controlling occurring mainly at the structure level, through establishing and adapting project structures for instance. Formal roles and positions, the adoption of standard procedures and project routines regularized expectations and increased predictability in operations. In this vein, controlling can form confidence and positive expectations on the other party's behavior because of structural influences (Möllering, 2005; Bachmann and Inkpen, 2011). Formal mechanisms create common knowledge, frame of

reference and collectively accepted norms of conduct (Olson *et al.*, 2002; Bechky, 2006; Maurer, 2010; Enberg, 2012), which 'can hardly be (mis-)used by them (individual actors) for opportunistic strategies' and 'can foster the efficient production of a high level of trust in trans-organizational relations' (Bachmann, 2001: pp. 358-359). Maintaining consistent core members of project teams, communication and service quality throughout the project lifecycle sustained shared meanings. *Routinising* effective and efficient service processes further strengthens the reliability of procedures and processes. On the basis of security and familiarity, *collaborating* creates shared experiences, in which trust as rules and resources is constituted. Project efficiency was the first driver for collaboration between organizations in IOPs. Furthermore, to sustain collaboration required perceived equity to make 'fair dealing' (Ring and Van de Ven, 1994: p. 93), in which organizations seek benefits proportional to their investments, with the condition of maintaining social relationships. A sense of reciprocity and bounded solidarity emerged as actors and organizations continuously exchanged service in a trusting and trustworthy way. Reciprocity and bounded solidarity tie organizations together by forming identities of each other and recognizing the limits of both parties relative to a third party (Portes, 1998), forming the desire to uphold the collaboration and use trust relations to allocate and integrate resources (Pervan, Bove and Johnson, 2009; Swärd, 2016). Relational norms emerged as collectives of actors continued to collaborate in a trusting and trustworthy way, which formed relational control and sustained the collaboration by refraining opportunism and encouraging trustworthiness. Relational norms control the behavior of those involved by generating a sense of responsibility, which induces care, empathy, and appreciation in interactions. In this vein, trust is not only about risk mitigation but also risk sharing. The various effects of controlling, including controlling at the structure and interaction levels and relational control, indicate a dynamic relation between trust and control, which can be both complementary and substitutive (Woolthuis, Hillebrand and Nooteboom, 2005). Trust, in return, sustains existing collaborating and promotes closer collaboration specifically under uncertainties. In other words, trust and collaboration form self-reinforcing cycles.

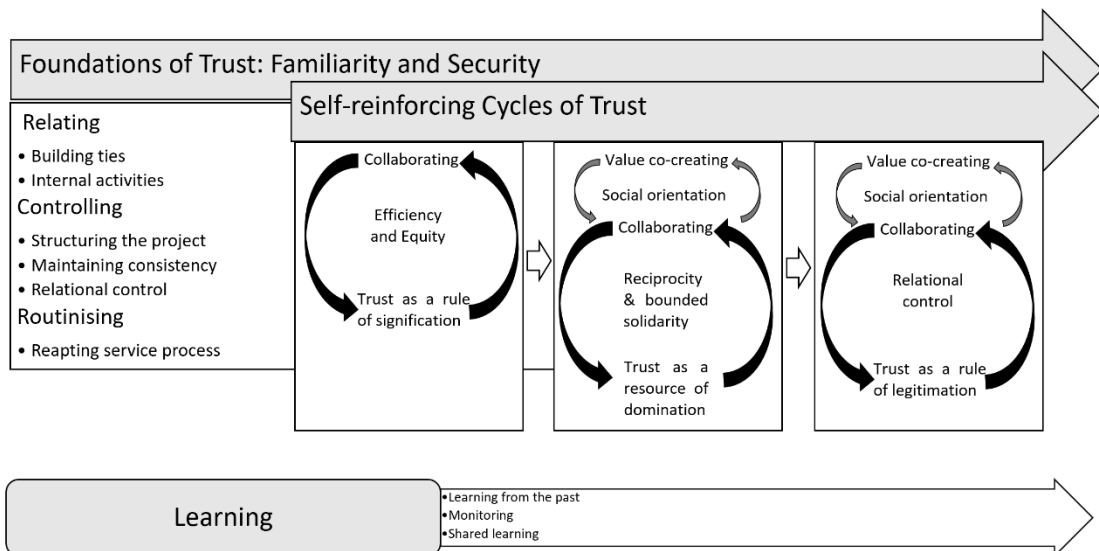


Figure 2 The process of constituting trust

Source: original  
*The value of trust*

Trust in the other party's competence first increases the intensity of service communication as actors become more open to each other. From the perspective of the main contractor, they are more willing to share information and acquire advice from the subcontractor. From the perspective of the subcontractor, the main contractors' openness is perceived as one of the first signals of trust, which gives them confidence in advising and sharing project information. As perceived trustworthiness increases, actors exchange information beyond the current project, so the communication becomes thicker. Competence trust also helps form a new relationship between previously unacquainted individuals, such as the relationship between the client and Found Gamma in this case, which increases the efficiency and effectiveness of communication in the project networks. By doing so, the phenomenon of trust forms a learning and sharing atmosphere in a network of relationships that makes service experiences more *informative* for both main contractor and subcontractor.

Trust also enables the delegation of authorities and tolerance of uncertainties. Trust mitigates perceived risks for those who take the first step of using trust as social capital and fulfilling their obligations in the service exchange (Coleman 1988). Trust creates the conditions for expecting serial equity that reduces the

need for instantaneous and equal compensation. Moreover, trust in the other party's specialist capabilities helps establish clear and specialised roles between the two parties. Hence, each party can concentrate on their own specialities. In this vein, both parties have a certain level of *flexibility* to programme works, make decisions and control their own operations. Cycles of trust and collaboration form relational norms, shared intentions and meanings that supply relational thinking and expectations and guide collectively-accepted practices, which helps maintain a stable and *cohesive* experience.

Where actors and organisations have better service experiences, this may further increase the *effectiveness* of service provision and outcome as they are able to understand the changing context and each other's expectations quickly, improve solutions and the value proposition to each other's requirements and preferences and exchange operant resources beneficial to future businesses. Figure 3 illustrates the value of trust.

*Conditions of trust: influences of service ecosystems and time*

At the organisation level, shared systems and internal collaborative policies from the parent organisation furnish common knowledge, facilitate joint activities and therefore form a conducive environment for trust development between internal companies. The positive effects of the internal relations are constrained by injecting market elements into the structure of the internal relationship because it:

- 1) Discourages the structuring of strategic relationship and hence trust between internal companies;
- 2) Helps routinise the transactional view on the internal relationship and its value;
- 3) Creates the paradox between the meaning of the internal relationship and practices between internal companies.

Moreover, such structure dramatically hinders trust development because:

- It leads to the use of internal companies as operand resources and/or the perception of unfairness, and
- Internal companies rely on structural arrangements to form collaboration and replace intention trust with the belief in the internal relationship.

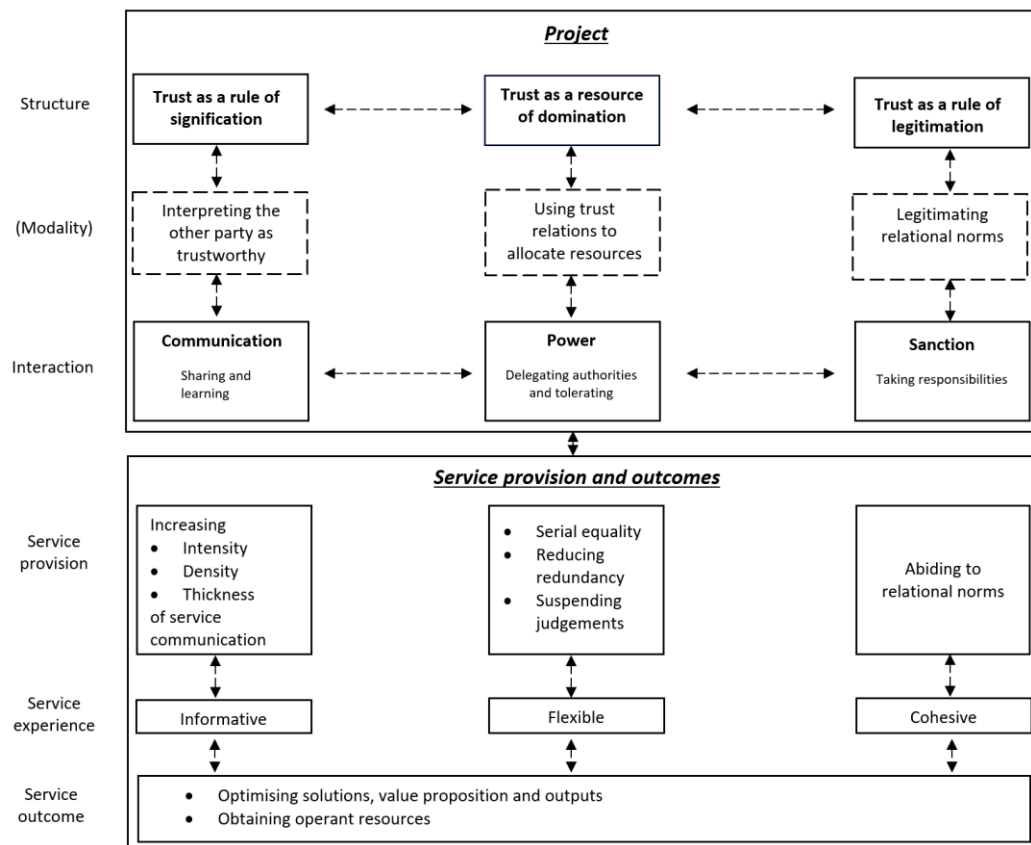


Figure 3 The value of trust

Source: original

At the network level, the procurement system, including both the main contract procurement and subcontract procurement, influences trust constitution. Compared with single-stage procurement for the main contract, two-stage procurement encourages the supply chain relationship as the main contractor and subcontractor can have earlier involvement in the procurement and jointly develop the value proposition before main contract submission, which mitigates potential conflicts of contractual contents between the main contract and subcontract. Two-stage procurement also balances the power relation between the main contractor and subcontractor, creating a sense of equity in interactions.



Past experiences and future opportunities between two companies affect interpretations of the other party's trustworthiness through the process of learning. The shadow of the past generated an initial condition for interactions. The path from prior history to trust and present projects was not direct. Rather, the influence of past experiences depends on whether supply chain partners can cognitively and behaviourally learn from the past lessons and experiences (Poppo, Zhou and Ryu, 2008; Elfenbein and Zenger, 2014; Buvik and Rolfsen, 2015). The shadow of future led to future-orientated learning, relational investment and social reciprocity since relationships and knowledge obtained in the present might be transformed and reused in the future (Ebers and Maurer, 2016).

## **Conclusions and recommendations**

This chapter has endeavoured to deepen the understanding of trust in the project lifecycle, specifically the process of trust development and the value of trust in supply chain relationships, and particularly between the main contractor and the second-tier subcontractor. The first part of this chapter argued that attempts to study trust in CPM focusing on projects or series of projects as repeated transactions, short-term profits and static snapshots of trust cloud understanding of the dynamics and value of trust. It then argued a 'becoming' ontology and S-DL as the basis of understanding trust in supply chain relationships and offered structuration theory as part of the analytical lens (Giddens, 1984) to view the interplay of trust, structures and process. The second part of this chapter used a case study to explore the issues discussed in the first part. The empirical findings demonstrate that the constitution of trust is an engineered but also emergent process and illustrates five fundamental processes of constituting trust. The interplays of these processes form a sense of familiarity and security, upon which trust is constituted. Self-reinforcing cycles of trust and collaboration in the service provision generate the interpretation of trustworthiness, promotes the use of trust relations and forms efficiency, equity, reciprocity and bounded solidarity that in return sustain the virtuous cycle. In the process of generating trust, actors and organisations had a higher level of security and were more informative, flexible

and cohesive in operations. Better experiences enabled actors and organisations to achieve higher levels of performance in the project.

On a broader level, this chapter also indicates the influences of organisations and inter-organisational networks in the context of multiple levels of service ecosystems. While trust benefits from shared systems, collaborative policy and common knowledge of the parent organisation, injecting market elements into the hierarchical structure to govern internal relationships weakens the positive effects but also induces transactional interpretations of internal companies and hinders the structuring of strategic relationships to lever value for internal units and organisation as a whole. The shadow of both the past and future between two companies also affects the constitution of trust as actors form interpretations of trustworthiness through learning about the past and future and allocating resources to exploit past experiences and/or explore future opportunities. At the inter-organisational network level, collaborative procurement for the main contract encourages the involvement of the client, balances power relations and constrains the use of power in actor-to-actor interactions.

This chapter presents trust development and value between an internal main contractor-subcontractor relationship, though the organisational structure induced market elements between the two companies. Future research needs to expand the research to external relationships. Such research should explore a wide range of structural influences of service ecosystems. Moreover, longitudinal research will help extend the shadow of the past and future beyond the most recent experiences and provide a more comprehensive view of trust over the course of time. It also facilitates the linking of trust at the project level to the firm level and offers opportunities for exploring the influences of trust on organisations and networks. Trust research needs to enhance knowledge and raise awareness among practitioners and researchers and establish healthy interdependences in the service provision so as to leverage value for end-users and clients but also main contractors and their supply chains as co-creators shaping and realising value propositions.

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