In the shadow of a negative past: repairing and developing trust in construction projects

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Abstract

Trust is foundational to establishing and maintaining relationships. Construction project management research has long touted the importance of trust for project organisation and performance. Yet there has been less research interest in repairing and developing inter-organisational trust once trust has been violated and reduced. This study presents a process-based case study of restoring and enhancing trust in a main contractor and subcontractor relationship after project experiences that deteriorated trust. Drawing upon conceptual frameworks of trust repair and development, the research analysed the practices of both main contractor and subcontractor companies. The analysis reveals that, although involving different project teams, the violation of trust in the past experiences impacted relationships and interactions in the focal project. To repair and develop trust requires a process of discovering causes and accepting responsibility, forming interventions to repair dimensions of trustworthiness that has been damaged and evaluating the effectiveness of intervention. The research identifies three types of mechanisms that facilitated trust repair and development in construction: sense-making, structural control and relational approaches. This study contributes to knowledge in that it recognises the temporal embeddedness of inter-organisational relationships in construction projects and empirically demonstrates the process and practices of repairing and developing inter-organisational trust.

Keywords

Business, management, project management.

1. Introduction

Trust in construction projects has been researched to an extent (Kadefors, 2004; Manu *et al.*, 2013; Swärd, 2016; Challender, 2017). In particular, the concept of trust has been mobilised to achieve a rapid and effective response, encourage cooperation, reduce transaction costs and increase project performance (Challender, Farrell and Sherratt, 2014; Chalker and Loosemore, 2016; Lawani, Hare and Cameron, 2019). Research has recognised the multiple dimensions of trust (Kadefors, 2004; Smyth and Edkins, 2007) and practices of building trust (Maurer, 2010; Buvik and Rolfsen, 2015; Swärd, 2016). Nevertheless, there have been few attempts to examine trust-repairing processes and practices after an unsatisfactory project experience that deteriorates trust in relationships between construction firms and their suppliers.

Relationships between main contractors and second-tier subcontractors are of value for both project delivery and project businesses (Meng, 2012; Aagaard, Eskerod and Madsen, 2015). However, main contractor and subcontractor relationships are characterised as transactional and do not always generate effective working practices (Alderman and Ivory, 2007; Eriksson, 2010). It is not uncommon that established trust can be violated by incompetent or opportunistic behaviour that does not meet partners' expectations (Manu *et al.*, 2013). It has been argued that relationships with supply chain partners need more attention in the construction project management (CPM) community (Egan, 1998; Meng, 2012). CPM studies often focus on trust in temporary relationships (e.g., Kadefors, 2004; Laan *et al.*, 2011; Swärd, 2016). The effects of the past on present relationships have been neglected. Although projects are temporary, actors and organisations involved in them have earlier experiences and future orientations (Jones and Lichtenstein, 2008; Sydow and Braun, 2018). In particular, relationships between construction partners remain at least as 'sleeping relationships' post completion until they are reactivated for future projects (Smyth, 2015; Bengtson, Havila and Åberg, 2018).

Moreover, research has focused more on the governance structure for collaboration in one project or a series of projects as a programme (Bresnen, 2009). Specifically, a considerable body of CPM studies have focused on the critical success factors, best practices or design of governance mechanisms at the front end (e.g., Eriksson and Laan, 2007; Challender, 2017).

Researchers still lack an understanding of how predesigned mechanisms, such as partnering conditions as established in relational contracts, are implemented in practices (Bresnen, 2009; Eriksson, 2010). Furthermore, formal tools and arrangements are identified as not sufficient for nurturing collaborative relationships and organisations face difficulties in translating these into practices in dynamic contexts (Bresnen, 2009; Aagaard, Eskerod and Madsen, 2015). To counteract this trend, some researchers have proposed a shift of attention towards the temporal, processual and emergent aspects of management practices in construction (Cicmil *et al.*, 2006; Bresnen, 2009; Bygballe and Swärd, 2019).

Thus, the research question we address is "How is trust, from main contractor and second-tier subcontractor, restored and enhanced after trust violation in their past experience?" The present study is based on data from a case study on an inter-organisational relationship between a main contractor and its subcontractor in the UK construction industry. Specifically, the research drew upon a conceptual framework of trust repair to investigate the process of restoring the relationship between the two parties. Different types of trust-repairing mechanisms were then identified, through a process-based perspective. The study focused on actions and practices of both main contractor and subcontractor. Our purpose in this paper is to advance the CPM literature on trust and relationship management by explicating mechanisms for restoring organisational trustworthiness and inter-organisational trust in main contractor and second-tier subcontractor relationships.

We have organised our analysis as follows. First, we briefly indicate how we conceptualise inter-organisational trust, trust decline and trust repair. We then present the methodology and methods for this research, followed by case findings and discussion about mechanisms for trust repair in the context of construction supply chain relationships. Finally, we conclude with key issues and implications for practice.

2. Literature review

2.1 Conceptualising trust

The topic of trust has drawn a diversity of disciplinary attention (e.g., Rotter, 1967; Luhmann, 1979; Mayer, Davis and Schoorman, 1995; Rousseau *et al.*, 1998; Smyth, Gustafsson and Ganskau, 2010). Despite the differences between the conceptions of trust offered by scholars, trust has been commonly recognised as a current psychological state or intention to rely on the actions of another party in the face of uncertainties (Luhmann, 1988; Mayer, Davis and Schoorman, 1995). Uncertainties might come from the business environment but also from relationships, such as the other party's competence and intention (Das and Teng, 2001). To trust is to reduce perceived environmental risks by engaging in relationships with others, and to accept the risk of loss if the trusted party falls short of the trust bestowed.

The positive expectation regarding the other party's trustworthiness, such as capability, integrity and benevolence to perform and commit, is key to establishing trust (Mayer, Davis and Schoorman, 1995; Manu *et al.*, 2013). In relationships between main contractors and subcontractors, competence trust concerns contractors' and subcontractors' technical and organisational capabilities and intention trust concerns honesty, integrity and benevolence, such as refraining from opportunism when an opportunity arises, performing to their best in dealing with challenging tasks and working as a team (Zaghloul and Hartman, 2003; Hartmann and Caerteling, 2010). To fully understand the phenomenon of trust, however, perceived trustworthiness needs to be studied in relation to trusting behaviour – that is, to undertake a risky course of action based on a positive expectation (Lewis and Weigert, 1985; Nooteboom, 2002). The process and outcome of taking risks subsequently maintained, strengthened or reduced the positive expectation (Mayer, Davis and Schoorman, 1995). To increase trust, actors and organisations need to signal and make sense of each other's competence and intention through interactions (Barney and Hansen, 1994; Fawcett, Jones and Fawcett, 2012). In this vein, restoring and enhancing trust in construction supply chains entails resuming and increasing positive expectations about supply chain members' trustworthiness in interactions.

Based on extant research (Mayer, Davis and Schoorman, 1995; Rousseau *et al.*, 1998; Sydow, 1998; Smyth, Gustafsson and Ganskau, 2010), this research uses a working definition of trust as an actor's current intention to rely on the actions of or to be vulnerable to another party,

based on the positive expectations of the competence and intention of that other. Particularly, the paper focuses on the main contractor's trust in the subcontractor. Inter-organisational trust is based upon the sum of the key interactions and individuals (Zaheer, McEvily and Perrone, 1998).

2.2 Trust decline and repair: a process-based perspective

Inter-organisational trust declines when the conduct of an organisation, in this case the subcontractor organisation, fails to meet the expectation and threatens the perception of organisational trustworthiness (Gillespie and Dietz, 2009). The failure might cause negative outcomes related to the main contractor's risk-taking behaviour, which reduce the positive expectation that constitutes the relationship and/or raise negative expectations. Consequently, the main contractor organisation becomes less willing to rely on the subcontractor (Dirks, Lewicki and Zaheer, 2009). Based on this understanding, we posit that trust repair is to partially or completely restore the willingness of reliance by increasing the dimensions of perceived trustworthiness that have been damaged (Tomlinson and Mayer, 2009). Trust repair, therefore, cannot be achieved by simply imposing legalistic remedies or economic penalties to re-establish reliance and seemingly trusting behaviour (Nakayachi and Watabe, 2005). Instead, the process of repairing and developing trust involves interactions between the main contractor and subcontractor and both parties can play an active role in the process (Kim, Dirks and Cooper, 2009).

Extant organisation studies have proposed insightful models of trust repair (e.g., Lewicki and Bunker, 1996; Pfarrer *et al.*, 2008; Gillespie and Dietz, 2009). Despite the different focuses and contexts of research, these models recommend multiple stages of restoring and developing trust. Trust repair starts with both parties acknowledging the violation and openly discovering the causes. Discovery is not to transfer liability and blame. Instead, it is a process of building a shared understanding of what happened, how and why (Bachmann, Gillespie and Priem, 2015). Apart from cognitive learning about the past experiences, preventing the further decline of trust at this early stage requires an "immediate response" (Gillespie and Dietz, 2009), hence behavioural learning to assure the violation will not occur in the future. The outcome of this

stage is the clear explanation for “What happened and why it happened” and acceptance of responsibility. In some cases, the transgressor also needs to accept some punishment, either voluntarily or not, to re-establish a sense of equity in the relationship (Nakayachi and Watabe, 2005; Pfarrer *et al.*, 2008; Gillespie and Dietz, 2009).

The second stage is forming interventions to repair damaged dimensions of trustworthiness. The interventions can be relational, such as building ties between individuals and going the extra mile in the project delivery, as well as structural, such as adapting routines and setting new roles to support relationship management (Kramer and Lewicki, 2010; Bachmann, Gillespie and Priem, 2015). Such interventions signal the determination to purge negative influences and assure future performance. However, to restore dimensions of trust that were damaged in the past requires the main contractor to realise the subcontractor’s efforts to rebuild organisational trustworthiness and legitimacy (Gillespie and Dietz, 2009). Therefore, the last stage is evaluating the effectiveness of the interventions in interactions in terms of meeting and exceeding positive expectations. The perception of trustworthiness is gained or reduced in interactions, which is manifested in trusting behaviour.

Drawing on the stage model of trust repair, the rest of the paper takes a process-based approach to investigate the processes and practices of restoring and developing trust in a relationship between a construction firm and its subcontractor.

3. Methodology and methods

This research undertakes a qualitative case study method to examine the dynamic processes and practices of trust repair. By investigating the participants’ live experiences and the flow of events over time, and interacting between empirical findings and theoretical concepts, single case studies allow researchers to build explanations for the dynamics of the social phenomenon in the local context (Eisenhardt, 1989; Yin, 2009). The topic of trust repair after a decline of trust in the past project experiences remains under-researched in CPM research. Therefore, case A was chosen for the purpose of this research. Case A involved an inter-organisational relationship between a major construction firm, referred to herein as Office Plc., and a piling

subcontractor, referred to herein as Pile Ltd. At the firm level, Office Plc. and Pile Ltd. had repeat business over a number of years. Collaboration was on a project-by-project basis. The most recent project involved Pile Ltd.'s London business stream, and some quality issues occurred due to the company's concrete supply. This experience negatively influenced Office Plc.'s perceptions regarding Pile Ltd.'s competence. To gain project A, as well as future business with Office Plc. Pile Ltd. needed to restore the contractor's perception of their trustworthiness and trust.

This case study collected data at the procurement, then execution and completion stages of the subcontracting projects (Pettigrew, 1990). The primary data collection method was semi-structured interviews. To capture a more detailed and balanced picture of the phenomenon, the research involved interviewees from both the main contractor and subcontractor organisations. The interviewees had roles in different functional units and at different hierarchical levels, including positions such as bid manager, supply chain manager, project director, project manager, quantity surveyor and site engineer. To better investigate changes of perceived trustworthiness and trusting behaviour, the study attempted to follow the same interviewees throughout the research. However, due to the dynamics of the project process, some interviewees were substituted by others with similar roles. For instance, the subcontractor's bid manager was replaced by the project director after the procurement. This research design mitigated perception bias resulting from different functional roles and organisations and ensured the dyadic and processual nature of the research. In total, 17 semi-structured interviews were conducted.

An interview topic guide was developed to maintain the reliability of the research. The unit of analysis was the inter-organisational relationship. Interview questions were therefore designed to ask informants' views on their *own organisation and the other organisation*. Individual views and attitudes were aggregated to form collective views and attitudes representing their organisations. All interviews were recorded and transcribed by the researcher. Data analysis was conducted simultaneously with the data collection process so that emergent findings at a certain stage were further explored in the next wave of interviews. A chronological history of the

case was firstly established (Van de Ven and Poole, 2005). A framework analysis approach (Ritchie *et al.*, 2013) was then used to uncover the process of repairing trust and the practices used by the main contractor and subcontractor. The first version of the framework drew upon the interview topic guide but was also emergent from the first-round analysis. We tried to identify and trace practices that restored the perceived competence and good intentions of the subcontractor, which are the first-order themes. This process was essentially abductive, meaning that extant theories were used as a guideline for analysis but they were subject to revision based on empirical findings (Langley, 1999; Dubois and Gadde, 2002). Meanwhile, this iterative process enabled the researcher to identify interrelations among the first-order themes, leading to second-order themes that represented theoretical concepts at a more abstract level (Gioia, Corley and Hamilton, 2013; Ritchie *et al.*, 2013).

4. Findings

4.1 Case background

As mentioned, the case study involved an inter-organisational relationship between Office Plc. and Pile Ltd., who had a negative experience in their past collaboration. The focal project involved piling works for an office building in a city redevelopment scheme. The client was a private-public joint venture, consisting of the City Council and two private-sector partners. The office building project was competitively tendered and awarded under a lump sum contract. From April 2014, Pile Ltd. had engaged with Office Plc. to help the main bid development. The client was responsible for planning and design, while Office Plc. was in charge of construction. The design and build of the piling works were competitively tendered among three piling contractors in August 2014, and Pile Ltd.'s Southern business stream was awarded the contract in January 2015. The construction of the piling project started in August 2016 and was completed in March 2017.

At the micro-level, Office Plc.'s project director for project A had worked with Pile Ltd. on more than five projects and had maintained active ties with the Southern business stream's managers over a number of years. They had continuous informal business interactions to ask each other's

advice on their own projects. Such continuous relationships and interactions can sustain a mutual understanding of each other's requirements and interpersonal trust.

4.2 Discovering the causes and accepting responsibility

Before bidding for project A's piling works, the Southern business stream proactively learned about what had happened in the recent project and identified the immediate cause of quality issues as concrete supply and the root cause as their supply chain management. During the first contact between Pile Ltd.'s Southern business stream and Office Plc.'s management team, the Southern business stream accepted their responsibility in the London project and explained the causes.

> *The previous contract, we didn't help ourselves where we didn't achieve what we said we were going to achieve, contractual wise and [in] the programme. And there's a number of quality issues on that job as well.* (Quantity surveyor, Pile Ltd.)

The acceptance of responsibility was associated with a demonstration of efforts to ensure performance in project A, especially supplier selection criteria and quality insurance approach.

Moreover, Pile Ltd. engaged with Office Plc. to help the main bid development. They analysed risks and addressed potential hazards in project A, which enhanced value propositions early on. The company allocated a specific bid manager who had a long-term relationship with Office Plc.'s project director as the main contact. Also, to establish consistent ties and communication throughout the project delivery, Pile Ltd.'s project manager was involved at this stage. Established interpersonal relationships between key actors drove a spirit of improving business reputation within Pile Ltd. to *"make a good impression"* and *"get back into [Office Plc.'s] good books"* (Project engineer, Pile Ltd.). This spirit laid a good foundation for trustworthy behaviour in subsequent interactions. Through this process, Office Plc.'s perception of trustworthiness increased, as expressed by the company's project director,

> *I think that [confidence in Pile Ltd.] has been [increased by them] putting the right staff on [the project]. And early engagement with us to understand what our drivers are, what*

restrictions are for the project. They just understand the project. And they [were] involved early on, before the bid, to give us some early advice.

Intense interactions and proactive engagement with the main contractor to help the main bid signal the subcontractor's competence but also their willingness to help, which are conducive to restoring perceived trustworthiness. Trust attitudes were further reflected in Office Plc.'s choice to award Pile Ltd. the piling contract, even though other contractors submitted lower bids.

Apart from Pile Ltd.'s efforts to signal trustworthiness, interpersonal relationships were found to be a driving mechanism for trust repair at this stage. Continuous interactions and mutual understanding between Office Plc.'s project director and managers at Pile Ltd. generated a sense of security and had implications for trust at the organisation level. Office Plc.'s senior management were initially suspicious about Pile Ltd.'s capabilities due to the experiences on the London project, but their project director had meetings with the senior management team and shared his experiences with Pile Ltd. – how they had collaborated to deliver projects and maintained goodwill for mutual benefits over the years. They also discussed causes of the problems in the London project and how to mitigate these problems. In addition, the project director and project team analysed the capabilities of Pile Ltd. and its competitors in relation to project characteristics. In doing so, confidence at the organisation level increased and the collective view was that, compared to other contractors, Pile Ltd.'s expertise and competence would be better able to reduce the risks in project A.

4.3 Forming trust repair interventions

Pile Ltd. were involved early on to help design and apply value engineering. They set up design meetings and risk workshops with Office Ltd. to share project information, identify risks and discuss solutions, and, in this way, optimise piling design as well as the overall scheme. For instance, the ground condition of project A was uncertain, and the risk of disturbing service tunnels was high. In order to gain better solutions and mitigate the risk, Pile Ltd. shared their specialist knowledge and produced variable risk assessment and methods statements. Both the process and outcome of design demonstrated Pile Ltd.'s professionalism and rigorous

procedures and systems. The perception of competence and integrity emerged reflexively, as Office Plc.'s project manager said,

> *During the tendering, they were with us. When they won the job, they worked with us to make sure that we've got a) the right solution, b) understood the problem of the main tunnel. There's been a lot of communication, coordination and consultation about working close to that road tunnel underneath. So, before and after they won the job, in terms of communication and working with us and solving problems, they've been really good.*

Perceived competence and integrity were manifested in the increased consultation at the project level. Moreover, trust encouraged Office Plc. to facilitate Pile Ltd.'s design works by proactively seeking and sharing quality information.

At the micro-level, Pile Ltd. allocated a specific project director who also maintained active ties with the project director of Office Plc. to substitute the bid manager. They also ensured that none of the actors in project A had been involved in the London project. These staffing and relationship management practices indicated that Pile Ltd. learned from the past, foresaw potential problems and mitigated relational risks in advance, which reduced the possibility of trust eroding and enhanced communication at the project and firm levels. On Office Plc.'s side, they had a package manager to work with Pile Ltd. on site. The allocation of the package manager and the involvement of the project director, both having engineering knowledge and experience, ensured mutual understanding between the two parties from operations to management levels.

Since the piling project started in August 2016, Office Plc. had established multiple routes and levels of communication with Pile Ltd. At the firm level, Office Plc.'s supply chain management (SCM) unit made monthly and quarterly assessments of subcontractors and suppliers' performance. Results were retained at the firm level but also fed back publicly on a board on site, which can align understanding between the firm level and project level. On the operations side, project directors from both companies maintained regular contact. At the project level, Office Plc. and Pile Ltd. had regular meetings between supervisors, project managers and

quantity surveyors. Furthermore, the two companies maintained two-way communication where both parties expressed their own views and listened to the other's. The purpose was to reach *"somewhere in the middle"* and *"a fair conclusion"* (Quantity surveyor, Office Plc.).

The two-way communication and equivalent knowledge bases between the two parties enhanced trust in particular Pile Ltd.'s intentions. Suspicion and misunderstanding due to communication barriers were mitigated. Multiple routes and levels of communication created abundant connections that ameliorated the need for 'safety nets' to prevent communication breakdown.

4.4 Evaluating interventions and enhancing trust

Project meetings, regular performance assessment and feedbacks as well as informal interactions created shared experiences that enabled Office Plc. to learn about Pile Ltd.'s efforts and performance. Pile Ltd. kept achieving and excelling in the programmes but also went the 'extra mile' to help Office Plc. For instance, when Office Plc. was unable to provide sufficient areas for pilling operations, Pile Ltd. agreed to leave the site for one month to help Office Plc. save costs and reserved piling equipment that was hard to book to ensure a quick restart. Another example was that, when Office Plc. had difficulties in setting-up certain areas for piling operations during weekdays, Pile Ltd. proactively proposed working at weekends in order to facilitate Office Plc.'s works and keep the programme on target. This relationship-specific investment signalled Pile Ltd.'s benevolence and commitment to the relationship.

> *We can rely on them doing what they say they are going to do. If they are going to do 10 piles a week, they did 12 piles a week, which is good. So, they always slightly exceeded the expectation. We've had some problems on the project because of tunnels and other things. [Pile Ltd.] have worked with us to solve any problems on site, which has been very good. They are certainly not looking to take advantage of situations. They sort of take great pride in delivering a quality product in time.* (Project manager, Office Plc.)

The perception of Pile Ltd. 'taking great pride' indicated Office Plc.'s increased perception of their competence and intentions, which was revealed in interactions with the subcontractor. For

instance, existing foundations were found during execution and obstructed piling operations. To minimise the risk of damaging tunnels, Office Plc. took on board Pile Ltd.'s solution of changing to coring piles, instead of removing the obstruction. While Office Plc. could have retained the lump sum contract and paid a higher price to transfer most risks to Pile Ltd., the two parties jointly formulated a re-measured contract. Under the re-measured contract, payment was made on the basis of the actual amount of work Pile Ltd. carried out. The final cost depended on project conditions but also on Pile Ltd.'s capability and integrity. In other words, Office Plc. relied on Pile Ltd. to deal with project uncertainties. Although partly because of the financial problem, the decision was driven by perceived trustworthiness accumulated in previous interactions. Trust was also manifested in the increased flexibilities that the main contractor gave to the subcontractor. As Pile Ltd.'s project manager said, *"They basically let us get on [with] the job and don't meddle too much in what it is and how it is doing."*

The perception of being trusted, in turn, drove the subcontractor's trustworthy actions.

> *We felt like we will be listened to when we have problems and that makes you want to go on and do the extra bits to be able to help solve the problems. We were open and honest when we had mistakes. We had to put something right and we do it. Such two-way communication and behaviours all the time.* (Project director, Pile Ltd.)

Trust and trustworthiness were reciprocated to each other. A virtuous cycle of trust development emerged, which restored but also enhanced trust at the project level, as expressed by the main contractor's quantity surveyor, *"You got the same sort of values that you have. They understand the bigger picture. They want the project to be a success, not just get their work done and go."* The enhanced trust was demonstrated in Office Plc.'s willingness to take responsibilities in collaboration.

> *Working together, collaboratively, understanding each other's drivers and trying to help each other. We have to do what we say on the table. If you are a gentleman, if you have a handshake, you have to stick to. Integrity and honesty. It should go for both companies.* (Project director, Office Plc.)

Norms of conduct, such as openness, honesty and mutuality, helped sustain trust by creating a shared understanding of expectation that guided the behaviour of both parties.

5. Discussion

Empirical findings have been presented. This section draws on theoretical concepts from extant theories to discuss the mechanisms for restoring and enhancing trust between project businesses in construction. Figure 1 summarises the process of repairing and enhancing trust in the Case A.

[Insert Figure 1 The process of repairing and enhancing trust]

Sense-making is the underlying mechanism that repairs and enhances perceived trustworthiness. Sense-making is in essence a shared learning process (Weick, 1995), which provides opportunities for jointly discovering the causes and responsibilities of trust violation. The aim is not transferring liabilities and blaming the other party. Instead, the process of sense-making is to establish a shared understanding of what happened, how and why (Bachmann, Gillespie and Priem, 2015). Furthermore, the cognitive learning should be accompanied by preventative actions that ensure future performance. Such behavioural learning helps avoid 'cheap talk' and demonstrates that lessons have been learnt (Tomlinson and Mayer, 2009; Kramer and Lewicki, 2010). However, different from other industries, trust violation in construction usually occurs in temporary projects. The findings of this study reveal that, while negative experiences could spread from the project level to the firm level, learning from the past was not self-evident. The shadow of the past affected perceptions, actions and practices in the current project, although past and present projects involved different individuals and teams. This points to the long-term impact of past experiences and relationships on project businesses (Smyth, 2015; Bengtson, Havila and Åberg, 2018) and the myriad role of organisational learning across projects in discovering the causes of trust violation and increasing perceived trustworthiness (Brady and Davies, 2004; Söderlund, 2008).

The current study found that the process of restoring and enhancing perceived trustworthiness could be a consequence of intentional learning that assessed partners' capabilities in order to make trust-related decisions. It could also be unintentional. The meaning of learning was

twofold. On the surface was monitoring outputs or learning together in joint activities. Through monitoring and joint learning, collectives of actors knew about the other party's competence and intention reflexively. In other words, the mechanism for repairing and developing trust in construction projects is not necessarily a strategic intention derived from the rational calculation (cf. Williamson, 1993); it can be an unintended consequence of project organising and involves both cognition and intuition (Doz, 1996; Ring & Van de Ven, 1994; Smyth et al., 2010).

Construction firms can use structural control as a mechanism to restore trust, such as establishing formal roles and positions, adopting standard procedures and routinising communication (Maurer, 2010; Buvik and Rolfsen, 2015). Structural control regularised expectations and increased predictability in operations. Controlling involves accountability that ties actions with "the normative component of the rationalisation of action" (Giddens, 1979, p. 85) . Control mechanisms can form confidence in and positive expectations of the other party's behaviour because of structural influences (Möllering, 2005; Bachmann and Inkpen, 2011). Extant research has portrayed the trustor as a relatively passive receiver in trust repair and development (e.g., Tomlinson and Mayer, 2009; Zheng *et al.*, 2017). The findings of the current study demonstrate that not only was the trustor's intention to accept the efforts of the trustee important for trust repair but also that the trustor's actions could influence the process of trust repair and development (Kim, Dirks and Cooper, 2009).

The case study also demonstrated the emergence and role of relational mechanisms in project governance. Relational mechanisms include interpersonal relationships, multilevel and two-way communication, relationship-specific investment and relational norms. Ties connected individuals and organisations over time and facilitated informal communication between key actors. Two-way communication helps create and recreate a shared understanding between organisations (Bechky, 2003; Söderlund, 2008). Further, having equivalent knowledge bases, in the sense that actors are able to understand each other's specialised knowledge, reduces suspicion due to cognitive distance and thus the sense of insecurity. The existence of multiple routes and levels of communication creates a shared understanding of the other party's trustworthiness between project and firm levels and across functional units. Relationship-

specific investment signals commitment and thus reduces perceived risks in interactions. This can be small actions such as excelling goals and big actions such as prioritising the other party's needs and doing extra-mile works (Swärd, 2016). Relational norms enact a shared understanding of expectation in the relationship and symbolic acts to maintain trust-based interactions. By doing so, they generate a sense of responsibility that controls an actor's own behaviour to maintain and develop trust and trustworthiness in relationships.

6. Conclusion

This research explicates the process and practices of repairing and developing inter-organisational trust in the context of construction, which is an under-researched area in construction project management. This is the first contribution of this study. A process-based case study was conducted and contributes to a dynamic picture of trust repair and development. The dynamic and empirical nature of the findings distinguishes this study from other research that focuses on abstract and momentary strategies. The analysis drew on extant theories to build an explanation for empirical findings, which in turn refined theories in construction project management. Specifically, to repair and enhance trust requires a process of discovering the causes and accepting responsibility, forming structural and relational interventions, and evaluating the effectiveness of interventions. In the context of construction, three mechanisms are used in above process, sense-making, structural control and relational approaches. The efforts of both main contractors and subcontractors are of importance for the process and outcome of trust repair and development. The paper also demonstrates how trust repair and development is an engineered but also emergent process by introducing the concept of two-fold learning. Apart from intentional learning, experiential and reflexive learning also induce the interpretation of competence, integrity and benevolence.

The limitation of this research points out some paths for future research. The present study mainly focused on the violation of competence trust. Additional research can be carried out to explore the process of trust repair and development after the subcontractor commits opportunistic behaviour and thus violates intention trust. A comparable study can use the

methodology and method to examine trust repair after the main contractor violates the subcontractors' trust and to compare the findings of different cases.

7. Implications for practice

The findings of this research lead to some practical implications. Although the research findings make clear that trust repair and development is often an unintended consequence of shared experiences, this does not mean trust cannot be generated by management intervention. On the contrary, trust can be intentionally and reflexively nurtured. To do so, main contractors and subcontractors should set the tone of collaboration, a code of behaviour to clarify roles and duties, behavioural programmes to nurture interpersonal relationships. Interpersonal relationships from past experiences can help trust building at the firm level. The sustainability and development of inter-organisational trust and relationships, however, rely on the systems and processes of communication. As Case A demonstrated, Office Plc. and Pile Ltd. maintained regular communication between project directors, project managers, operatives as well as project management and supply chain management units. Multiple communication routes ensured a shared understanding of Pile Ltd.'s trustworthiness across hierarchical levels and different functions. Furthermore, two-way communication enabled two companies to build mutual understanding but also a sense of equity in interactions. Project meetings were regarded as channels for openly expressing one's own opinions and listening to the other party's views, instead of conveying one-way information. Therefore, to repair, sustain and enhance trust, main contractors and supply chain members need to initiate responsibilities, procedures and tools of interactions. Furthermore, the communication needs to be two-way and involves multiple levels and functions.

Initiating joint routines for learning from the experiences and building shared understanding of what happened, how and why is conducive to inter-organisational trust. For instance, through risk workshops and progress meetings, Office Plc. and Pile Ltd. gained common knowledge about technical issues but also each other's expectations and needs. In addition, shared understanding is built upon the competence of individuals. Managers and operatives of both parties need to have the knowledge and experiences to support the learning process. Last but

not least, joint routines should go beyond the project level and involve firm level in order to enable inter-organisational learning across projects and over time. Case A demonstrated that the shadow of the past can influence perceptions, actions and practices in the current project, even though project teams varied. To maintain trust-based relationships across projects, construction firms and supply chain members should implement behavioural programmes to institutionalise relational norms of conduct, such as openness, equity and reciprocity, into inter-organisational interactions.

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Case A	*Pile Ltd.*		
Interaction Process	• Discovering causes of quality issues and showing the willingness to take the responsibility (sense-making) • Strengthening supply chains (behavioural learning) • Proactively engaging in the main bid development (signalling trustworthiness) • Staffing for relationship management (structural control)	• Setting up piling design meetings and risk workshops (structural control) • Sharing knowledge and effectively mitigating risks, showing resource commitment and maintaining consistency (signalling trustworthiness)	• Maintaining good performance and going the "extra mile": e.g., helping Office Plc, during piling disruption, working on weekends (signalling trustworthiness)
	Office Plc. • Relying on past relationships between the project director and Pile Plc.'s managers to build trust (relational mechanism) • Internal communication between the project director and managing director (relational mechanism)	• Allocating a package manager to work with Pile Ltd. on site (structural control) • The project director and package manager having engineering background (relational mechanism) • Establishing multiple communication routes (structural control) • Assessing and feedbacking performance (sense-making)	• Giving Pile Ltd. more flexibilities in operations (structural control) • Taking responsibilities in project works (relational mechanism)
	Joint activities • Building mutual expectations in procurement (sense-making) • Equivalent knowledge between directors and managers (relational mechanism)	• Joint learning about project information, piling design, risks and solutions (sense-making) • Regular and two-way communication at firm and project levels (relational mechanism)	• Jointly formulating the re-measured contract (structural control) • Conducts guided by openness, equity and reciprocity (relational mechanism)
Dimensions of Trust	Perceived competence started to restore Perceived benevolence gained Selecting Pile Ltd. despite the slightly higher price	Perceived competence significantly increased Perceived integrity gained • Sharing information to facilitate Pile Ltd.'s works • Seeking Pile Ltd.'s advice	The level of perceived competence was high Perceived benevolence significantly increased • Changing contract type: from lump sum to re-measured contract • Delegating authorities and tolerating uncertainties
Trust-repair Process	**Discovering the causes and accepting responsibility**	**Forming trust repair interventions**	**Evaluating interventions and enhancing trust**

Figure 1 The process of repairing and enhancing trust