Building high-performing and integrated project teams

Dominic D. Ahiaga-Dagbui and Olubukola Tokede
School of Architecture and Built Environment, Deakin University, Geelong, Australia
John Morrison
Frontline Coach Pty Ltd, Mordialloc, Australia, and
Anthony Chirnside
Infrastructure Delivery, Barwon Water, Geelong, Australia

Received 17 April 2019
Revised 9 August 2019
27 November 2019
27 April 2020
Accepted 10 June 2020

Abstract

Purpose – Effective inter-organisational relationships are key to engendering innovation and ensuring the successful delivery of infrastructure projects. Relationship-based contracts are thus widely used to stimulate best-for-project ideals and attenuate the otherwise adversarial relationship that often exists between clients and contractors. This study examines the effectiveness and limitations of a project facilitation model as coaching tool for developing conducive inter-organisational relationships for construction project delivery.

Design/methodology/approach – The study adopts a case-study approach using evidence from triangulated data sources of focus group workshops, semi-structured interviews and document analysis.

Findings – (1) The facilitation model enabled an environment for psychological safety to be developed, which engendered a platform for effective cooperation for problem-solving and achieving quasi best-for-project ideals. (2) The model provides the mechanism to develop team behaviours that support enhanced performance and create an environment less adversarial and more collaborative than traditional contracting.

Originality/value – The novelty of this research is that relationship-based principles have been utilised as part of a traditional design-bid-build contract with lump-sum payment arrangements.

Keywords Coaching, Trust, Team performance, Project facilitation, Psychological safety, Social capital theory, Project success

Paper type Research paper

1. Introduction

"The soft stuff is always harder than the hard stuff." – Roger Enrico

Delivering infrastructure projects to their pre-defined objectives is a challenge due to complexities and uncertainties that often exist. In particular, the cost and time estimates developed at the initial stages of a project are often unreliable due to the limited scope and technical definition at the front-end of projects (Ahiaga-Dagbui and Smith, 2014b; Love *et al.*, 2016a). Design and construction errors, misguided trade-offs between cost, quality and risk, ambiguous contract documents, lack of transparent communication, and scope changes are innate features of infrastructure projects (Invernizzi *et al.*, 2018). The upshot of such a contracting environment is often cost overrun, disputes, delays, rework and other operational inefficiencies (Ahiaga-Dagbui *et al.*, 2017). This problem is often exacerbated by a contracting environment of competitive tendering and low-profit margins where the lowest evaluated bidders typically win the contract (Ahiaga-Dagbui and Smith, 2014a). There is evidence to support a claim that contractors often submit unrealistically low tenders, in the hope of winning the bid and finding ways of clawing back some of their initial loss from change-orders and claims (Coggins *et al.*, 2016).

A common mode for risk transfer for public sector clients, for example, has been the use of traditional lump-sum contracts based on design-bid-build frameworks (You *et al.*, 2018). However, traditional lump-sum contract environments generally set the commercial drivers

Engineering, Construction and Architectural Management
Vol. 27 No. 10, 2020
pp. 3341-3361

0969-9988
DOI 10.1108/ECAM-04-2019-0186

that define the strategic goals of clients and contractors on a collision course. When such contract types are used, then clients typically seek to acquire an asset at the lowest cost with the highest quality while contractors aim to increase their revenue and maximise profit. If contractors have been selected based on the lowest bid and have included a low margin then there is a tendency for them to consider post-contractual devices like change-orders, claims and extensions of time requests as "highly appropriate and critical" for increased profitably, even if opportunistic (Lumineau and Quélin, 2012; Lu *et al.*, 2016). According to Hayford (2017), such a contractual environment only perpetuates an adversarial *zero-gain mentality* ("my gain, your lose") which hampers trust, effective collaboration and high team performance.

Coaching and psychological safety have been identified as key enablers of high performance teams (e.g. Whitmore, 2002; Edmondson and Lei, 2014). The Association for Coaching® (2012) defines coaching as "a collaborative, solution focussed, result-oriented and systematic process in which the coach facilitates the enhancement of work performances, life experience, self-directed learning and personal growth of the coachee". The purpose of coaching is to empower an individual or a team to reach optimum performance. In a group context, coaching is valuable for removing relational barriers, forging team spirit, support reflection and learning from success or failures (Whitmore, 2002; Dimas *et al.*, 2016). Similarly, psychological safety has been defined as the favourable "perceptions of the consequences of taking interpersonal risks in a particular context such as a workplace" (Edmondson and Lei, 2014, p. 24). It has been identified as a critical factor in understanding phenomena such as individual voice, teamwork, learning and inter-firm cooperation towards shared outcomes (Liang *et al.*, 2012; Edmondson and Lei, 2014).

Against this backdrop, the research presented in this paper aims to examine the effectiveness and limitations of a Project Facilitation Model (PFM) as a coaching tool within the context of a traditional design-bid-build contract to engender conducive inter-organisational relationships. The PFM model was developed based on the experience of the client and project facilitator in delivering 129 water infrastructure projects worth AU$ 375 over a five-year period using project alliancing (Love *et al.*, 2015). This study thus examines the application PFM as coaching tool for team integration, cooperation and trust to support effective project delivery. Traditional design-bid-build contracts have been chosen as the context of study as the literature suggests that they are typically more adversarial than the relationship framework of project alliancing (Davis and Love, 2011; Lu *et al.*, 2016; Hayford, 2017). The paper commences with a review of the extant literature on building trust and cooperation within teams and the mediating role of psychological safety and coaching on team performance. These concepts are reviewed through the lens of social capital theory. This is then followed by a description of the PFM's structure, the research method adopted, as well as the findings identified as a result of the implementation of the PFM.

2. Engendering high performance in projects

Key antecedents of highly effective project teams that have been identified in the extant literature include collaboration and willingness to share information (Parker *et al.*, 1994), empowerment of the team through the development of psychological safety and trust (Edmondson, 1999; Delizonna, 2017); and a commitment to shared outcomes (Han *et al.*, 2018). The theory of social capital, after Bourdieu (1986) and Coleman (1988), is useful in making sense of the connections between the antecedents above as it enables individual members to cooperate effectively and overcome relational barriers that can hinder performance. Social capital as a concept is often defined specifically in terms of networks, stressing the value-laden nature of social interactions and collective abilities (Bourdieu, 1986; Coleman, 1988). The central proposition of social capital theory is that networks of relationships represent a

valuable resource for the conduct of social affairs, providing people within the network with "the collectively-owned capital" and "credential which entitles them to credit, in the various senses of the word" (Bourdieu, 1986, p. 249).

Accordingly, McElroy *et al.* (2006) simply describe social capital as the value of relationships between people in firms, as well as between different firms. Szreter and Woolcock (2004) propose a three-pronged framework for classifying social capital. These are (1) bonding social capital, referring to relations within or between relatively homogenous groups; (2) linking social capital – the relationships between people or groups at different hierarchical levels; as well as (3) bridging social capital, an outward looking value that helps to build connections within or between groups that do not necessarily share similar identities.

Putnam (1993) positions trust as a key component in social capital theory, observing that where relationships are high in trust, people are more willing to engage in social exchange in general, and cooperative interaction in particular. Coaching can also be crucial in supporting teams to develop the enablers for developing trust and cooperation so as to flourish and perform at their optimum best (Love *et al.*, 2015). The relationship between coaching, trust, psychological safety and social capital theory is conceptualised in Figure 1 and will form the basis of the literature review that follows hereinafter.

2.1 Coaching

The performance of a project team during construction significantly depends on how they work together to navigate uncertainties and respond to risks and changes. This is not always possible, particularly within the framework of transactional contracts where the commercial interests of clients and contractors are pitched against each other (Lu *et al.*, 2016; You *et al.*, 2018). Coaching has been identified as a means of empowering a team or individuals to achieve high performance (Ely *et al.*, 2010; Segers *et al.*, 2011). Ting and Hart (2004) described personal coaching as a one-on-one relationship "in which the coachee and coach collaborate to assess and understand. . . current constraints while exploring new possibilities, and to ensure accountability and support for reaching goals and sustaining development" (p. 116). The goal of team coaching is similar, but focusses on empowering *teams* with the resources and capabilities to circumvent challenges and remove relational barriers (Whitmore, 2002; Burke *et al.*, 2006); joint-problem solving (Grant, 2012); and reinforcing good performance (Berg and Karlsen, 2016).

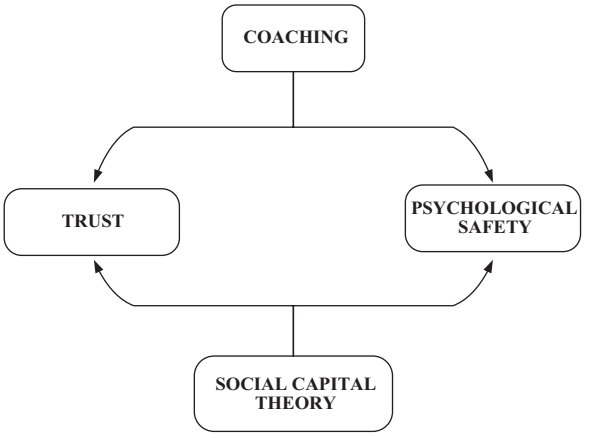

Figure 1.
Relationship between coaching, trust, psychological safety and social capital theory

It may be expedient to engage coaches from within an organisation (internal coaches) as they are familiar with the "politics", history and dynamics within the organisation and therefore are able to steer conversations to focus on strategic priorities (Hall *et al.*, 1999). However, internal coaches have to deal with the perceived conflict of interest as coachees may be circumspect in divulging information that could be used against them by their superiors. External coaches, usually a consultant, may struggle with the same issue of conflict of interest and confidentiality, but perhaps to a lesser degree, especially if they do not perform an assessment of coachees to management. Hall *et al.* (1999) suggested that external coaches may be more objective, provide a higher sense of confidentiality and dwell on their experience of working with many different organisations and teams. They may, however, be blindsided by the fact that they are usually not immediately aware of the organisational "politics and dynamics" that are critical for understanding the current state of affairs and how that impacts on desired objectives. The changes they identify may be unfeasible for the organisation as a result.

The approach adopted for coaching a team may be shaped by a number of conditions including the number of teams involved, the frequency and duration of sessions and whether the outcome of the coaching exercise relates to short-term or long-term goals. Whitmore (2002) popularised the goal-oriented "GROW" model of Goal Setting, Reality Check, Options Analysis and decisions regarding Ways Forward, seen in Figure 2, for attaining the goals of coaching. The model is intrinsically collaborative between the coach and the coachee(s). Here the coach generally facilitates the process through the GROW model but it is usually the coachee's responsibility to generate ideas and options, take necessary actions to achieve the set goals and commit to being accountable.

The coaching environment itself may be goal-oriented one-on-one sessions, facilitated workshops for groups, or a mixture of both. Where facilitated workshops are adopted for inter-organisational teams within project-based environments, they are usually aimed at building trust and cooperation towards the achievement of strategic goals (Dimas *et al.*, 2016). It is worth mentioning that project facilitation is uncommon on traditional design-bid-build contracts with lump-sum payment regimes. However, facilitators are usually integral to alliance frameworks due to the substantial change in the normal working relations expected from the parties within an alliance. Facilitators would typically be engaged to design and lead the culture management program within the alliance so as to support proactive joint-problem solving, team integration and effective conflict management. Their role usually focusses on the following key areas: (1) developing an environment of trust and co-operation;

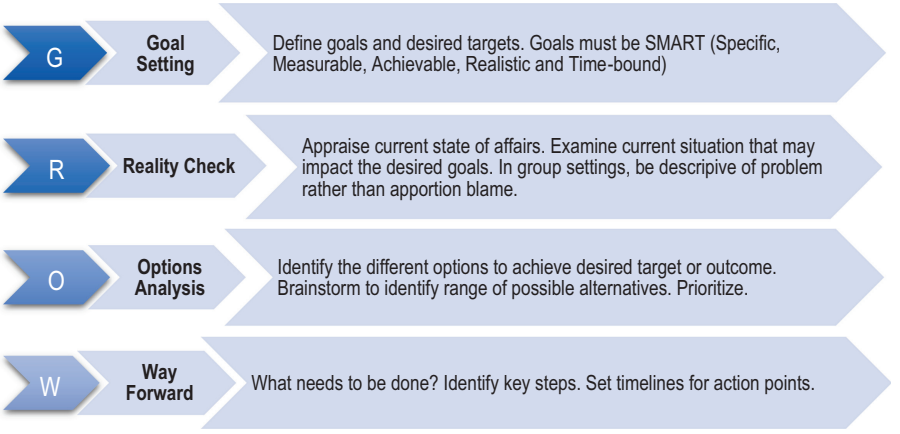

Figure 2.
"GROW" Model of coaching, after *Whitmore (2000)*

(2) supporting the team to focus on agreed project objectives; (3) encouraging innovative and proactive problem-solving through a culture of joint-problem ownership ("your problem is my problem"); and (4) enabling the team develop and commit to interpersonal relationship behaviours that support a healthy working environment.

2.2 Trust

The establishment, development and maintenance of relationships is key to sustainable business and hinges on the ability to build trust and cooperation between stakeholders (Davis and Love, 2011). While there is no universally accepted definition of trust, it may be conceived as a psychological state that enables people to accept a level of vulnerability based on positive expectations regarding the intentions and behaviours of other parties (Rousseau *et al.*, 1998). Trust may also be described as the expectation that other's future actions will be favourable to one's interests, such that one is willing to be vulnerable to those actions (Edmondson, 1999). Fukuyama (1995) defines trust as "the expectation that arises within a community of regular, honest, and cooperative behavior, based on commonly shared norms, on the part of other members of that community" (p. 26). Notably, trust changes over time – developing, declining, and even resurfacing in long-standing relationships giving the right conditions (Rousseau *et al.*, 1998). It may also vary depending on the relationship's history, its stage of development, in addition to other signals of change within the context of the relationship.

The investment in relationships as a means of harnessing the wider value that can be gained from effective working interactions, extending beyond the straightforward features of the transactional exchange, is referred to as *relationship management* (Ford *et al.*, 2003). The goal of relationship management in project-based organisations is to shape the owner-contractor or contractor-subcontractor interphase towards a shared vision, group synergy, collaboration and the so-called "win-win" relationship. Naturally, the concept of trust features heavily in the literature on relationship contracting as a means of circumventing the deficiencies in legal contracts drafted on the basis of bounded rationality. In a pure alliance, for example, trust may be engendered by adopting principles that encourage the parties to commit to behaviour and decision-making that consistently prioritizes the objectives and outcomes of the project, otherwise known as *best-for-project* (BfP) principles (Lloyd-walker *et al.*, 2014). Some of these principles include (1) A win-win culture – "we win together" or "we lose together"; (2) No-blame attitude – "we work through problems not by apportioning blame but by looking for solutions together"; and (3) Joint-problem ownership – "your problem is my problem".

Trust is heavily dependent on prior and repeated interactions between trustors and trustees. Its nature is also contingent on expectations and predictions of how the other party might behave (i.e. their trustworthiness (Mayer *et al.*, 1995)). Maurer (2010) observed that team members in inter-firm projects who have had prior collaboration or worked together previously had a greater capacity to develop mutual trust and cooperation. The transient nature of construction projects poses significant constraints on developing trust within project teams (Buvik and Rolfsen, 2015). The situation is exacerbated when teams are put together using transactional contracts with elements of deterrence, sanctions and damages. The expectation of trust for parties within a new relationship raises contradictions – "How much should I trust you?" and "In what areas and in what ways do I trust you?"

Proponents of trust-based relationships often fail to distinguish between *micro* (interpersonal) and *macro* (organisational) level analysis of trust and assume that individuals will exhibit the same behaviours as the organisations they are drawn from (Green, 2006). Interpersonal relationships at the site level have a significant bearing on the successful delivery of the project and the ability to mitigate the adverse effects of conflicts and unnecessary disruption to the project (Hanna, 2016). Trust needs to be approached using

paradigms that recognise the different forms, levels and dynamics within the concept. According to Rousseau *et al.* (1998) trust can be studied at the following levels: (1) multi-level trust (between individuals, groups; firms, and institutions); (2) trust within and between different organizations; (3) the multiple roles of trust (trust as a cause, outcome and/or and moderator); and (4) the dynamics of trust as impacted by organizational change. In particular, it is imperative to explore approaches that can aid the development of strong and resilient relationships both at the organisational level (*macro*) as well as the interpersonal level on sites (*micro*). This should support high team performance and develop relationship behaviours that could reduce the adversarial nature of construction delivery.

2.3 Psychological safety

One of the results of developing micro-level trust within a team is psychological safety (Edmondson, 1999; Baer and Frese, 2003). Team psychological safety is defined as "a shared belief held by members of a team that the team is safe for interpersonal risk-taking" (Edmondson, 1999, p. 354). Psychological safety is critical for reducing interpersonal risk, a necessary enabler for managing uncertainty and navigating change (Schein and Bennis, 1965). As noted by Edmondson (1999), team psychological safety involves but goes beyond interpersonal trust as it describes a team climates characterised by interpersonal trust and mutual respect in which people are comfortable being themselves.

A growing body of conceptual and empirical work has focused on understanding the nature of psychological safety, by identifying its contributory factors, and examining its implications for individuals, teams and organizations (Siemsen *et al.*, 2009; Buvik and Rolfsen, 2015; Shen *et al.*, 2015a). For example, learning from errors and adverse circumstances has been recognized as critical for individuals and organisations to respond to risk, uncertainty and change. However, it is not uncommon for people and organisations to become defensive when their mistakes are identified or even cover-up problems where they fear serious negative repercussions (Bazerman and Moore, 2008). Tjosvold *et al.* (2004) revealed that cooperation within a team promotes a problem-solving orientation, which in turn allows team members and leaders to discuss errors and learn from mistakes. The study by Tjosvold *et al.* (2004) supports the assertion that effective cooperation towards problem-solving, innovation and performance in teams is often moderated by the level of psychological safety within the team.

Some studies have explored the relationship between psychological safety and voice (i.e. speaking up) (Liang *et al.*, 2012; Cunha *et al.*, 2019). Liang *et al.* (2012) conceptualised two types of voice – the *promotive voice*, described as the expression of "new ideas or suggestions for improving the overall functioning of their work unit or organization" (p. 74). This type of voice is generally future-oriented in attempting to find ways of doing things better in the future. The second is the *prohibitive voice* that describes team's "expressions of concern about existing or impending practices, incidents, or behaviours that may harm their organizations" (p. 75). Liang *et al.* (2012) observed that nature of prohibitive voice is both past and future-oriented since it calls attention to factors that have resulted in the status quo or factors that could potentially cause future harm to the individual, team, project or organisation. Both promotive and prohibitive voices are, however, heavily moderated by the level of perceived psychological safety within the team or organisation.

Two characteristics are important for optimum psychological safety: (1) a clear team structure where members understand their role on the team (Bunderson and Boumgarden, 2010); and (2) strong relationships between team members (Shen *et al.*, 2015a). There is, however, no agreed approach to engendering and sustaining optimum psychological safety within a team or organisation. Edmondson and Lei (2014) observe that just as psychological safety takes time to build, through familiarity and positive responses interpersonally risky actions, it can equally be destroyed through a negative response to an act of vulnerability.

3. Research approach

An inductive case study research approach was adopted to examine the impact and limitations of coaching on developing some of the essential enablers of high performance within the team. This approach is chosen as it allows for a detailed, contextual, examination of coaching to support a narrative description of its possible impact on performance within the construction team (Eisenhardt, 1989). Case study research is particularly appropriate where an in-depth knowledge of an individual example is more useful than fleeting and superficial knowledge about a larger number of examples (Gerring, 2006). It is the preferred research strategy when the phenomenon and its context are not readily distinguishable and when a deeper understanding of practical issues on how things actually work is required (Denzin and Lincoln, 2011). The research process follows the outline provided by Eisenhardt (1989), i.e. defining the research question; selecting the cases for examining the phenomenon under study; developing the data collection instruments and protocols; actual data collection and data analysis to identify emerging constructs; and an interpretation of the findings by comparing them to the existing literature to ensure both internal and external validity. The research question for the study is two-fold: (1) how effective is project facilitation as a coaching tool for engendering collaboration and team working? and (2) what are the strengths and limitations of the model? The key departure of this research is that project facilitation model was implemented within a traditional design-bid-build project environment instead of a relationship delivery method such as an alliance.

3.1 Case selection

The case study organization for this study had previously delivered a series of 129 projects over a five-year period using an alliance procurement method. Process improvement through organization learning (Love *et al.*, 2016b) and rework prevention (Love *et al.*, 2015) had previously been studied within the context of this alliance to understand some of the essential enablers of effective project delivery. Coaching was used as part of the alliance to support the development of best-for-project ideals *to* drive integration, teamwork and greater cooperation. However, a post-completion review of a high-value, high-profile project delivered by the case study organization using traditional procurement after the alliance ended, revealed a number of key issues that had led to significant delays, disputes and cost growth. One of the recommendations of the post-completion review was that the client explores possibilities that could translate some of the alliance principles to the projects delivered using traditional procurement approach. The case study project selected for the facilitation represented a high-value and high-priority asset where the client anticipated a significant number of change requests during delivery. This was because the design stage of the project was fast-tracked to meet the accelerated timeline to operationalize the project. The project was originally expected to be delivered between 2018 and 2020. However, based on updated hydrology forecasts and water security assessment in September 2015, the completion date was brought forward by two years to mid-2017 under an accelerated programme [1].

3.2 Data collection

To evaluate the effectiveness of project facilitation model on the case study, triangulated data was collected from focus group interactions followed by semi-structured interviews. This was supplemented with an analysis of project documents obtained from client and the coaching team. Methodological triangulation, where multiple methods of data collection and analysis are used, was combined with data triangulation, the collection of different types of data at different stages of the project delivery to overcome problems of bias and validity (Eisenhardt, 1989; Love *et al.*, 2002). This approach helped to ensure the richness of the data

collected as well as ensure synergistic view of evidence. The sequential data collection process ensured that subsequent data collected enhanced and provided incremental clarity and detail regarding issues identified at the previous stage. The focus group data was collected by 3 researchers while the semi-structured interviews were undertaken by two researchers, who would later analysis all the data as well. Multiple researchers involved in the research ensured a diversity in perspective as well as strengthened the grounding of constructs generated during the analysis.

Focus group workshops were undertaken after the completion of the project. The focus group comprised the client's project delivery team members, Directors of all four principal contractors along with their site supervisors, project managers and representatives of the design consultant. There were 35 participants in the focus group workshops. Four separate parallel focus group workshops were held to capture the lessons learnt from each of the four packages of the project (Figure 3). Four other sessions were held to review the effectiveness of the facilitation for the project delivery, what went right and what did not work. Twelve hours of audio data (1.5 h × 8) was collected and transcribed verbatim for analysis.

While there are no deterministic guidelines for sample sizes for interviews, the highly cited article, "*Building theories from case study research*", Guest *et al.* (2006) observed that after 60 in-depth interviews, theoretical saturation, the point at which no new information or themes are observed in the data, was achieved after the first twelve interviews. In this current studies. In our study, a series of 27 semi-structured interviews were conducted with project participants to further explore some of the issues identified in the focus group sessions. The interviewees included a variety of personnel including Project Managers, Site Supervisors, Design Engineers, Safety Quality and Environment (SQE) Manager, Project Delivery Managers and Construction Coordinators. With prior permission from the interviewees, all the interviews were digitally recorded. Some of the questions asked were "what impact did the facilitation programme have on the project?", "what aspect of the facilitation programme do you think was most important and why?", "what changes would you make to the facilitation programme?", "What type of project would you use the facilitation programme on?", "how did the best-for-project environment influence the way you approached problem-solving on the project?" etc. Notes were also taken by the researchers to supplement interview data that was obtained. The interviews were either conducted face-to-face or over the phone where it was impractical to meet the interviewee. The interviews lasted between 45 and 90 min and which were also digitally recorded and transcribed. Over 30 h of interview data

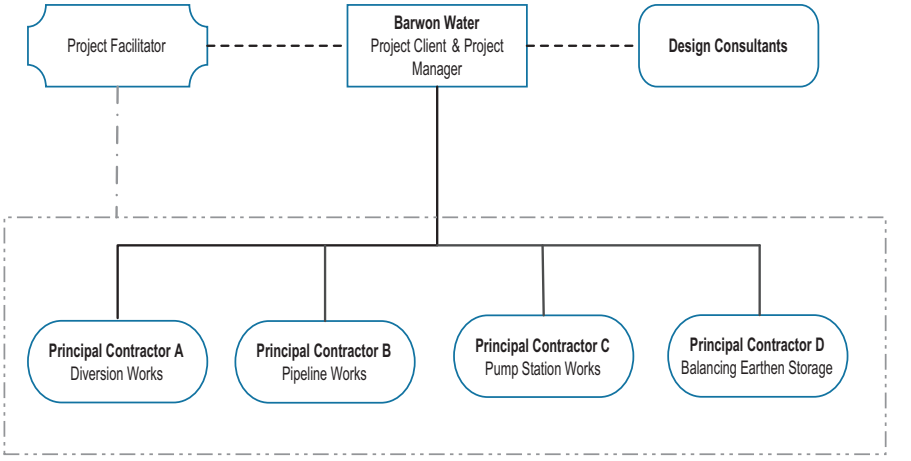

Figure 3.
Main parties involved in the Colac Water Supply Upgrade project

were collated, professionally transcribed verbatim for analysis. All the interviews were conducted by two of the co-authors.

Finally, content analysis was carried out on the lessons learned register compiled by the client organisation, in addition to the minutes and other documentary materials used by the independent consultant for the facilitation programme. This was done to mainly supplement the primary data collected by the research team. Altogether, 24 documentary sources from the facilitated workshops were carefully reviewed to provide a deeper appreciation of the dynamics of interaction and relationship between the project team members throughout the delivery stage.

3.3 Data analysis

While qualitative data analysis typically occurs simultaneously with the data collection, the detailed interpretation and sensemaking of the information gathered was done in the following manner: (1) becoming thoroughly familiar with the data by critically reading and re-reading all the transcripts and documents gathered; (2) line-by-line inductive coding of the data to with labels that make it easier to index, organise and retrieve relevant parts of the information collected. Two researchers independently coded the transcripts using the qualitative data analysis software, NVivo 11. The initial codes from the two researchers were then aggregated to establish categories like "communication", "best-for-project", "coaching", "shortcomings of coaching", "trust", and "psychological safety". This process allowed the researchers to move away gradually from the descriptive level of the initial coding toward an increasingly more analytic level; and (3) identification of conceptually consistent first-order themes and constructs. At this stage, the researchers sort to also ascertain recurring patterns and connections between the themes and concepts while also exploring the evidence for the "why?" behind these constructs – this is a crucial step for establishing internal validity (Eisenhardt, 1989)

3.4 Case background

The case study used for this research is the Colac Water Supply Upgrade (CWSU) completed in the state of Victoria, Australia. The client organisation is Barwon Water (BW), the State of Victoria's largest regional urban water corporation, with over $2.7 billion worth of water infrastructure assets (Barwon Water, 2017). BW supplies water to over 300,000 permanent residents over 8,100 square kilometres. In 2012, BW identified the need for increased water supply capacity to the Colac area based on predicted population growth, climate change and drought. The existing water reservoirs fill quickly when it rains but also can also swiftly empty a during drought period. An additional 700 to 1,000 million litres a year of water supply, effectively doubling the existing water capacity, was required to future-proof the district's supply until 2026 (Barwon Water, 2016). Early cost estimates indicated the project could cost about $19 million. The Budget at Completion after tenders were received was set at $16.8 million. The project eventually delivered at $14.3 million in 2017 (Barwon Water, 2016, 2017).

The project consisted of four main components (Figure 4). The first involved diversion of water from the Wurdee Boluc Inlet Channel near Murroon to a new earthen balancing storage and the construction of diversion regulator gates. The second package was a 50 ml earthen balancing storage comprising the main earthworks, a portion of the drainage installation and valve installations. The third component involved the construction of a 15 ml per day pump station, located at the Gerangamete water treatment plant. The fourth package was an 11 km pipeline installation that connects the pump station to the existing Colac Water supply infrastructure. Each package was tendered and awarded to a different principal contractor on lump-sum contracts. Additionally, an independent consultant was engaged by BW as the

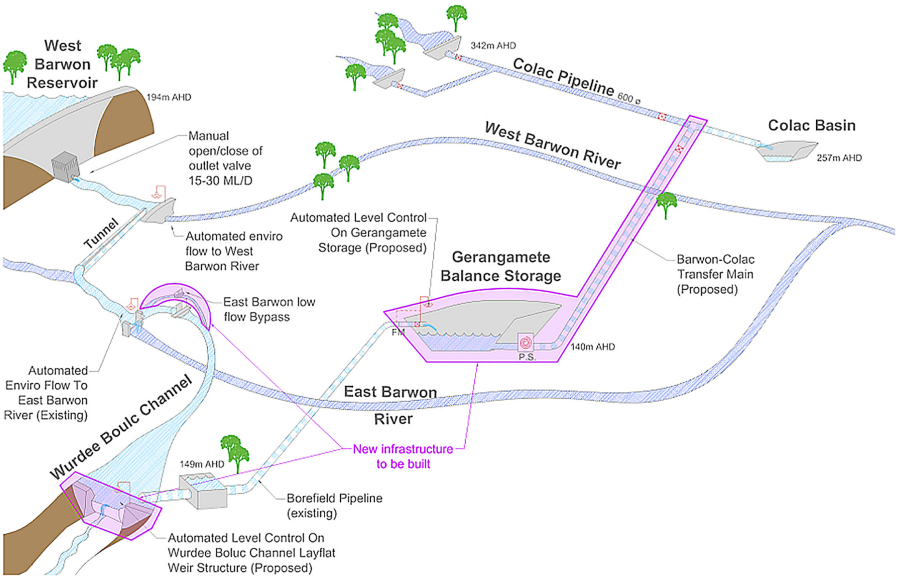

Figure 4.
Overview of project scope of the Colac Water Supply Upgrade

Project Facilitator to run a dedicated coaching programme of on-site facilitated workshops during project delivery to engender effective client-contractor relationships for enhanced project performance. Project Management services were undertaken by an internal team within the Infrastructure Delivery Department of the client organisation.

3.5 The project facilitation process

The facilitation process (Figure 5) commenced with a three-hour Kick-Off meeting at the beginning of the project between key members of each of the four Principal Contractors, the Client Project Management team, the Design Consultant. The representatives from the contractors included personnel with traditional responsibilities and authority on the project, (i.e. Contract Managers and/or Directors, along with their Project Managers, Superintendents and Construction Supervisors). The Kick-Off meeting was used to introduce team members working on different packages of the project, identify the needs and requirements of each party and jointly set project team *ground rules* – the policies or guidelines which a group establishes to define and baseline behavioural model for its members in addressing how to communicate, cooperate or deal with problems. Some of the agreed ground rules include transparency regarding the sharing of information in a timely manner, commitment to working through challenges together, reporting all Safety Quality and Environment (SQE) incidents and the sharing of key lessons learnt during the project. Team ground rules can be a useful way of enabling effective and productive team dynamics and behaviour. The establishment of ground rules was perhaps a recognition that successful project delivery depends on managing both the technical aspects of the project as well as the often-complex people and organization dynamics.

During the construction stage, the facilitation program was targeted at achieving two objectives: (1) engender effective working relationships between client and contractors; and (2) develop joint-problem solving capabilities through collaboration. This was done through monthly workshops, led by the Coach, to assess project team culture (the so-called "team health checks") and review agreed ground rules and *showstoppers*. Each contractor identified

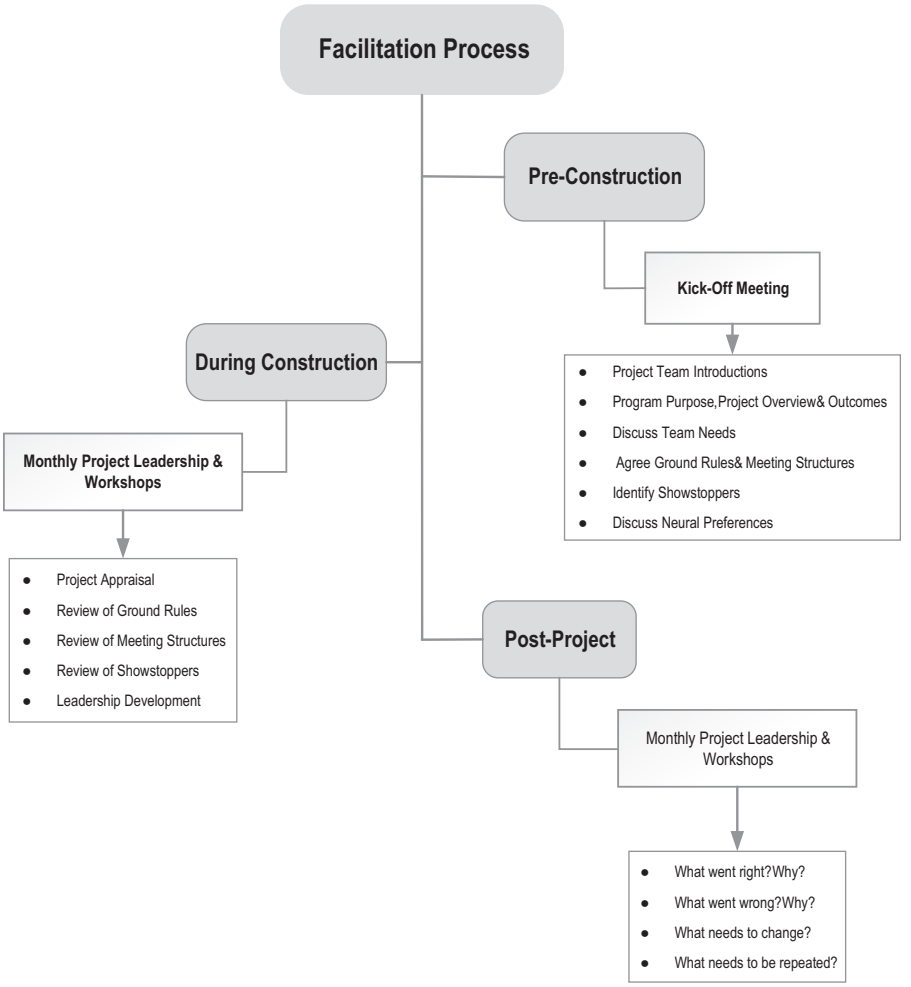

Figure 5.
Project facilitation process

showstoppers and their potential mitigation strategies. These were the critical issues that can halt, threaten or derail the successful delivery of the project. Specific examples on this project include "leaks in the embankment and rock beaching non-compliance"; "damage to the existing pipeline and pump station"; "motor not arriving on time and equipment not being fully installed before a rain event"; "pipe leaks during project commissioning" and "major safety incident". The role of the Coach is crucial at this stage to facilitate conversations towards a focus on collaborative and best-for-project outcomes.

The facilitation meetings also allowed for deliberation on these questions: "How is the team working together?", "What problems are being encountered?", "How effective is the current communication between the different parties?", "What is inhibiting progress?" and "What actions need to be taken?" A crucial part of the team health checks included each team rating itself and other on the agreed ground rules and providing honest feedback on how they and other team were performing in relation to the ground rule. This was sometimes confronting for some team members as it led to some robust discussions about performance

and expectations. However, it afforded the opportunity to proactively identify areas of the team that were working effectively so they can be celebrated and reinforced as well as areas that needed attention. Further, each contractor completed scorecards assessing themselves and the client on how they were each performing in relation to the agreed ground rules. The client also did the same for each contractor on a monthly basis. This allowed for feedback between the client and the contractors, as well as a level of accountability. It also provided an opportunity to discuss how performance on ground rules might be affecting project delivery.

The final stage of the facilitation process occurred soon after project completion to review lessons learned during the delivery stage. The main objective at this stage was to address the following questions: "What went right and why?", "What did not go well and why?", "What changes need to be made?" and "What needs to be repeated on future projects?" These questions are particularly critical to support absorptive learning and process improvement (Love *et al.*, 2015) particularly if the same teams are delivering a program of works together.

4. Findings and discussions

A PFM model was adopted in this research to coach the team towards developing client-contractor and contractor-subcontractor relationships that might enhance project performance and innovation. The model was reviewed using triangulated data gathered from the team at the end of the project to access its effectiveness, limitations and areas that need improvement. The findings of the study demonstrate the mediating role of the Coach was beneficial in bridging the usual gap between clients and contractor, as well as attenuate the otherwise adversarial, "them versus us", relationship between clients and contractors. The client team noted that the program was a "good insurance policy to have for a project which had a tight deadline and interfaces. The construction was completed within budget and within schedule [2]. The client and contractors" staff observed that the workshops provided an opportunity to build team relationships, maintain high morale throughout the team and enable a better understanding of each company's drivers. The facilitation workshops further provided a platform to work through site issues quickly, identifying diagnostic action points before they could snowball into major problems and disputes. Essentially, the facilitated workshops seem to have created the platform that was useful in developing a level of psychological safety and trust within the project team necessary for open communication in relation to problem ownership and resolution. These are all critical antecedents to effective performance of any team, according to Wing (2005) and Edmondson and Lei (2014). The relationship between team performance, coaching and psychological safety that emerged from the case study are conceptualized and presented in Figure 6. The conceptual model is a simple abstraction to help visualise the connections between the different constructs that emerged from the data collected.

4.1 Best for project (BfP) principles and high performance

The BfP principles of a win-win culture, no-blame attitude and joint-problem ownership have previously been linked to cooperation and team performance (Lloyd-walker *et al.*, 2014; Walker, 2015). BfP was thus integrated into the facilitation model by introducing the team to the concept, dynamics and out-working of BfP at the beginning of the project. To provide an impetus for BfP, it was important to reinforce the tripartite need for a high level of trust, accountability and collaboration. The client was especially encouraged to exemplify BfP behaviour for the contracting team as trust begets trust and collaboration begets collaboration (Putnam, 1993).

Feedback from the contractors suggests there had not always been the optimum team environment for delivering projects in the past with the client organization. They, however,

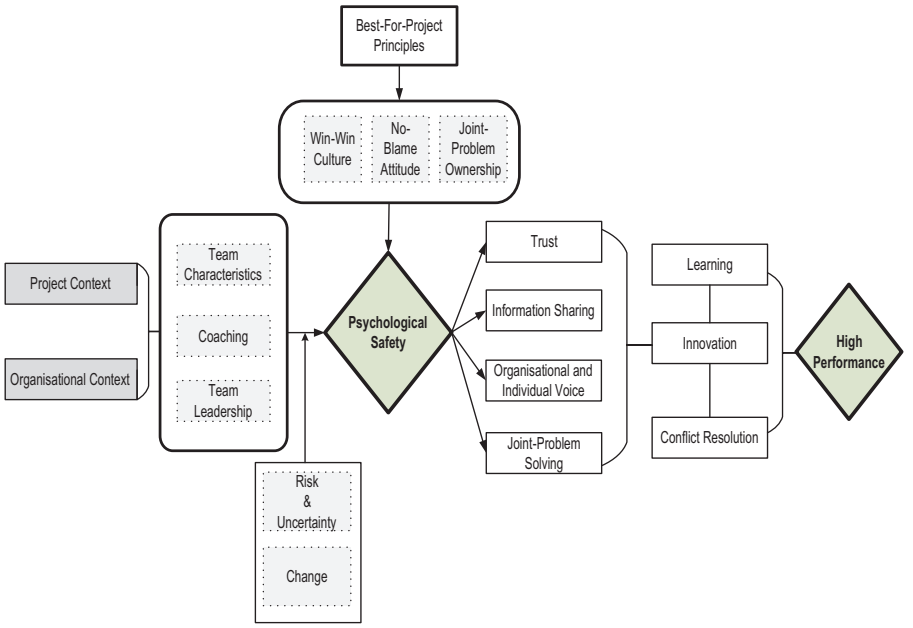

Figure 6.
Coaching, psychological safety and team performance

indicated that their experience was better under the facilitation program. For example, a contractor noted:

> On previous projects, there was a "them versus us" mentality that came from both sides and the relationships were really hostile. Whereas this [project] was completely different

In addition, one of the construction supervisors observed:

> This has been the best team from BW we have worked with so far in this regard. It was much easier to be open and honest about issues we faced

It would seem that the continuous encouragement to approach problems as collaborators and prioritise project-first ideals helped in creating an environment of mutual compromise and trust, particularly when navigating difficult conversations regarding change, cost and schedule. A contractor's Project Manager indicated:

> The sense of teamwork that BW had with us on this project was completely different from other projects. I am not sure whether that was deliberate or because of the personnel involved but the [BW staff] really worked well with us

This observation is consistent with the team dynamics posited in social capital theory (Coleman, 1988; Putnam, 1993). Putnam (1993) rightly noted that where relationships are high in trust, people are more willing to engage in social exchange in general, and cooperative interaction in particular. Accordingly, "trust lubricates cooperation. The greater the level of trust within a community, the greater the likelihood of cooperation. . ." (p. 171). It is, however, important to strike the right balance of people management and technical expertise from both client and contractors. This would ensure proactive problem identification and resolution devoid of a non-combative leadership style. Where the project team perceives the client, or their consultants, as aggressive or belligerent, they would usually revert to traditional adversarial behaviours as well. This is perhaps even more important when things go wrong.

Blame and criticism almost very reliably escalate conflict and disagreement with defensive positions becoming even more entrenched. The project team was coached to practice the use of *Humble Enquiry* – "the art of asking, instead of telling" (Schein, 2013) in seeking out solutions to problems together as this approach disarms the opponent, illuminates blind spots in communication skills, according to Delizonna (2017).

While the principles of BfP were useful in creating social capital and team spirit on the case study project, it may be an unrealistic expectation in lump-sum contracts due to competing commercial drivers. For contractors, the ideal environment to foster a win-win mentality, for example, would be one with the opportunity of continuous and regular volume of work from clients that are sufficiently profitable. This is perhaps the case for only a small minority of large contractors. However, they too have to deal with the challenge of managing subcontractors and suppliers that are equally fighting for their survival in a highly competitive and fragmented industry, with generally low barriers of entry for new competitors and prolonged low-profit margins. Thus, even where there are relationship-based agreements at the inter-firm level of business transactions, this does not always translate into the social value expected at the personnel at the coalface of project delivery.

It is no surprise, therefore, that client organisations have traditionally tried to achieve their goals through an arms-length transactional arrangement with several provisions to protect themselves against possible contractor non-compliance (Hayford, 2017). Some members of the Client Project Management were thus concerned that pursuing BfP would mean "letting contractors off the hook" for poor performance, ultimately damaging the client's interests. They feared that in the absence of a multiparty agreement, it may promote opportunistic behaviour.

However, the overall benefits of pursuing BfP ideals, balanced with the requirements of accountability may outweigh the challenges, especially if complemented with a process akin to the facilitation process to continuously reset team culture and behaviour. Also, there will be cases where teams or companies just do not work well together and no amount of "team-building" or "culture creation" would be useful – in these cases, the coach may be in a good position to enable the team to focus their energies on delivering their contractual obligations in the contract. This is perhaps why it is important that key members for the facilitated workshops are carefully selected based on their ability to collaborate and energise their respective teams towards "we are in this together" attitudes.

Further, establishing and maintaining a project environment that supports a culture of transparency, teamwork and best-for-project ideals involves a lot more commitment, especially from the client organization than would normally be required under traditional project delivery frameworks. Project managers need to be resourced to build and maintain relationships with team members over and above their usual roles. A highly involved and responsive client organization is crucial, even if they employ the services of external project management consultants.

4.2 Open and effective communication

One of the recurring themes that emerged from the data analysis was that PFM assisted in creating an environment for open communication of project issues and develop a better understanding of each contractor's specific role and how it connects with the other aspects of the delivery programme. The facilitated workshops reduced some of the usual barriers to communication in construction teams such as accessibility to design consultant and improved interactions between the different project teams. The team was encouraged to express their concerns in relation to emergent problems and progress. According to one of the project team members:

> The facilitated workshops were a valuable tool that formed a big part of the overall project success. They fostered an open and honest workplace that enabled all facets of the project to be dealt with efficiently.

The usefulness of the facilitation model for engendering critical trust and open communication on the project is perhaps summarized in the observation by the Project Managers of one of the Contractors, a relatively young construction firm:

> As a new/young contractor, forming strong relationships with our client was a very important goal for us. By having your client's trust there is always a subtle positive shift in relationships on-site and in the office. This shift has a significant impact on project delivery and site dynamics.

The monthly facilitated workshops were different from the traditional site meetings. In this case of this project, there were weekly contractor-led site meetings to mainly review construction progress. In addition, bi-weekly client-led site meetings were review actions points related to non-conformances and progress. The monthly facilitated workshops were led by the Coach, whose focus was on developing effective working relationships between client and contractor organizations towards successful project delivery and joint problem-solving. The actions point and continuous "project health check" worked to keep parties accountable. For example, the feedback gathered suggests that the showstoppers were useful for proactive identification of risks to plan potential responses and mitigation strategies. Because the showstoppers were discussed at the facilitation meeting, each party became aware of the issues that could derail the other parties' progress. This is crucial, particularly if there are significant interdependencies and overlaps between the work packages performed by the different parties. A project team member thus noted:

> the showstoppers are a useful addition to complement the overall risk management process as well as a constant reminder not to "take your eye off the ball" due to complacency.

Several studies have demonstrated the importance of effective communication to team performance, continuous improvement and problem solving (Gorse *et al.*, 2003; Murray *et al.*, 2007; Wikforss and Löfgren, 2007; Bendoly, 2014). In most cases, the parties responsible for creating a problem are very crucial in solving it also. Delizonna (2017) proffers that a positive outcome to problem diagnosis and solution typically depends on their input and buy-in. The monthly project facilitation meetings afforded the opportunity to ask questions such as "why do you think this problem occurred?"; "How can the situation be improved?" or "How could I support you to solve the problem?" Allowing time and space to discuss these questions on a regular basis, along with the role of the independent consultant, was very critical in supporting both promotive and prohibitive voice in the team. This created the ability to communicate openly particularly those regarding issues with possible commercial implications for the contractors.

4.3 Psychological safety and high performance

Team psychological safety has already been defined as "a shared belief held by members of a team that the team is safe for interpersonal risk-taking" (Edmondson, 1999, p. 354). It has been shown to be one of the necessary enablers for managing uncertainty and navigating change (Shen *et al.*, 2015b). The existing literature indicates that there is considerable value in encouraging the project team to communicate openly, share information and pursue BfP principles (Wing, 2005; Bendoly, 2014; Lloyd-walker *et al.*, 2014). At their best, it provides an environment that enhances the efficiency and effectiveness of project delivery and engenders the level of psychological safety necessary to create a high performing team (Baer and Frese, 2003; Edmondson, 2004). However, as presented in earlier parts of this article, the differences in contractor and client expectations, along with their differing commercial goals can

generate misunderstandings and paradoxical tensions in trying to create an environment of psychological safety.

Psychological safety was promoted within the team by (1) empowering the team to "speak up" where there are issues; (2) approaching conflict as a collaborator rather than as an adversary; and (3) replacing blame with a problem-solving approach. The existing theory on psychological safety indicates that it provides the ability to explain why employees or team members share information and knowledge (Siemsen *et al.*, 2009); learn (Tjosvold *et al.*, 2004); speak up about problems or make suggestions for organizational improvements (Cunha *et al.*, 2019); and perform (Delizonna, 2017).

Where psychological safety exists, individuals tend to focus more on collective goals and problem-solving rather than on self-protection and playing blame games (Baer and Frese, 2003; Shen *et al.*, 2015a). Team members become more open-minded, transparent in their communication, motivated towards improved performance and innovation and thinking outside the box. In this study, psychological safety had engendered the willingness to communicate openly about project issues that have possible commercial implications without the fear of being penalised. The ethos of this sort of relationship is perhaps aptly summarised in the comment of one of the contractor Company Directors:

> Because of the commercial nature of hard-dollar contracts [lump-sum contracts], contractors often feel it may not be in their best interests to share too much information with the client. But. . .bringing someone in, like an independent facilitator, creates a level of trust that they can start to share information, knowing that they are not going to be harmed by sharing that information.

However, it would seem that encouraging open and transparent communication, particularly in a lump-sum contract environment, was not always favourably perceived as "good commercial strategy" by all team members. The invitation to "speak up" and "be open" may have raised what we would refer to here as *commercial dilemmas* – a simultaneous presence of apparently contradictory but interrelated dualistic messages for some of the project team members. Contractors, in particular, were reticent of being completely open and transparent as they were unsure whether the information volunteered might be used against them later. They were perhaps cautiously suspicious in the beginning, often asking "I know you say 'trust me'. But, can I? Should I?"" This kind of tension has previously been described as the "paradox of speaking up" by Cunha *et al.* (2019). The paradox may be heightened when the team is faced with intense schedule and cost pressure or when progress on site is subjected to delays. The possibilities are that some team members may simply revert to "business as usual" during a project's delivery. The role of the coach is important to assist the team to navigate these tensions, using "requisite imagination" (Adamski and Westrum, 2003) to anticipate and proactively attenuate possible reversionary tendencies.

5. Conclusions

Inter-firm relationships in construction are often governed by contracts to allocate risks between parties with provisions like performance bonds and guarantees, liquidated damages and retentions that attempt to enforce performance. What is often overlooked is that such contractual environments often lead to adversarial mentalities; an "us *versus* them" environment between clients and contractors that usually leads to disputes, variation-seeking behaviour, delays and limitations on value-adding project innovation. Using evidence from triangulated data sources, the study explored the effectiveness and limitations of project facilitation as a coaching model to develop conducive client-contractor relationships that could support enhanced performance. The key departure of the study is that relationship-based principles have been utilised as part of a traditional design-bid-build contract with lump-sum payment arrangements.

Overall, the data sustains a claim that the coaching program provides the mechanism to develop team behaviours that support enhanced performance and create an environment less adversarial, and more collaborative than traditional contracting. The facilitation process within the environment of traditional lump-sum contracting provided the client with an extra "soft insurance measure" to influence the performance of the team. The results indicate that the facilitated workshops help develop and sustain best-for-project principles and psychological safety – these in turn created the platform for open and more effective communications for problem-solving. The project was delivered within schedule and within budget with the model being rolled out on other projects by the client organisation.

Despite the possible benefits of project facilitation, it might be poor advice to recommend its adoption across all types of projects or client organisations. Relationship contracting may not always have the strategic strength to ensure compliance and performance, or even curb the traits of opportunism in transactional frameworks. This may be due to the interplay of power positions between clients and contractors, the nature of competitive tendering within the industry and the low operating margins that contractors generally operate on, particularly in periods of low economic growth. It will generally be difficult to incentivise contractors and suppliers to make relationship-related adjustments without a guaranteed return, usually in terms of repeat work or profitability. The facilitation model may thus be most suited for large clients with a continuous volume of work and regularity of relationship with the same partners. Such clients may be able to develop the conducive power and incentive structures to ensure that their project delivery partners are moved towards increased collaboration and best-for-project ideals.

The findings and conclusions presented have some implications for research. For example, the success, or otherwise, of the project facilitation process may be contingent on the capabilities of the facilitator and the perceived value of the process to the construction team. Thus further research is needed to explore the characteristics, experience and profile of the project facilitator to achieve success. Also, research is required to empirically determine the types of projects that would benefit from the use of a facilitator. Further explication and testing of the model on different projects and teams is necessary to explore its efficacy and limitations.

Notes

1. The design period normally takes about 12–18 months for BW projects. The design for the CWSU project was completed in seven months to allow construction to begin under an accelerated timescale.
2. Construction was delivered ahead of schedule and within budget. At the time of writing, the project was yet to be commissioned for operation.

References

Adamski, A. and Westrum, R. (2003), "Requisite imagination. The fine art of anticipating what might go wrong", *Handbook of Cognitive Task Design*, pp. 193-220.

Ahiaga-Dagbui, D.D. and Smith, S.D. (2014a), "Dealing with construction cost overruns using data mining", *Construction Management and Economics*, Vol. 32 Nos 7-8, pp. 628-694.

Ahiaga-Dagbui, D.D. and Smith, S.D. (2014b), "Rethinking construction cost overruns: cognition, learning and estimation", *Journal of Financial Management of Property and Construction*, Vol. 19 No. 1, pp. 38-54.

Ahiaga-Dagbui, D.D., Love, P.E.D., Smith, S.D. and Ackermann, F. (2017), "Toward a systemic view to cost overrun causation in infrastructure projects: a review and implications for research", *Project Management Journal*, Vol. 48 No. 2, pp. 88-98.

Association for Coaching (AC) (2012), "Association of coaching definition of coachingAssociation for coaching (AC)", available at: https://www.associationforcoaching.com/page/CoachingDefined (accessed 25 May 2018).

Baer, M. and Frese, M. (2003), "Innovation is not enough: climates for initiative and psychological safety, process innovations, and firm performance", *Journal of Organizational Behavior*, Vol. 24 No. 1, pp. 45-68.

Barwon Water (2016), *Colac Water Supply Upgrades*, Barwon Region Water Corporation, available at: www.barwonwater.vic.gov.au/projects/colac-water-supply-upgrades (accessed 20 March 2018).

Barwon Water (2017), *Barwon Water Annual Report (2016-17)*, Barwon Region Water Corporation, Geelong, Australia.

Bazerman, M.H. and Moore, D.A. (2008), *Judgment in Managerial Decision Making*, John Wiley and Sons, New York.

Bendoly, E. (2014), "System dynamics understanding in projects: information sharing, psychological safety, and performance effects", Vol. 23 No. 8, pp. 1352-1369, doi: 10.1111/poms.12024.

Berg, M.E. and Karlsen, J.T. (2016), "A study of coaching leadership style practice in projects", *Management Research Review*, Vol. 39 No. 9, pp. 1122-1142.

Bourdieu, P. (1986), "The forms of capital", in Richardson, J.G. (Ed.), *Handbook of Theory and Research for the Sociology of Education*, Greenwood, New York.

Bunderson, J.S. and Boumgarden, P. (2010), "Structure and learning in self-managed teams: why 'bureaucratic' teams can be better learners", *Organization Science*, Vol. 21 No. 3, pp. 609-624.

Burke, C.S., Stagl, K.C., Klein, C., Goodwin, G.F., Salas, E. and Halpin, S.M. (2006), "What type of leadership behaviors are functional in teams? A meta-analysis", *Leadership Quarterly*, Vol. 17 No. 3, pp. 288-307, doi: 10.1016/j.leaqua.2006.02.007.

Buvik, M.P. and Rolfsen, M. (2015), "Prior ties and trust development in project teams – a case study from the construction industry", *International Journal of Project Management*, Vol. 33 No. 7, pp. 1484-1494, doi: 10.1016/j.ijproman.2015.06.002.

Coggins, J., Teng, B. and Rameezdeen, R. (2016), "Construction insolvency in Australia: reining in the beast", *Construction Economics and Building*, Vol. 16 No. 3, pp. 38-56.

Coleman, J.S. (1988), "Social capital in the creation of human capital", *American Journal of Sociology*, Vol. 94, pp. 95-120.

Cunha, M., Simpson, A., Clegg, S. and Rego, A. (2019), "Speak! Paradoxical effects of a managerial culture of 'speaking up'", *British Journal of Management*, Vol. 30 No. 4, pp. 829-846.

Davis, P. and Love, P. (2011), "Alliance contracting: adding value through relationship development", *Engineering Construction and Architectural Management*, Vol. 18 No. 5, pp. 444-461, doi: 10.1108/09699981111165167.

Delizonna, L. (2017), "High-performing teams need psychological safety. here's how to create it: harvard business review", available at: https://hbr.org/2017/08/high-performing-teams-need-psychological-safety-heres-how-to-create-it (accessed 7 April 2018).

Denzin, N.K. and Lincoln, Y.S. (2011), *The Sage Handbook of Qualitative Research*, Sage Publications, Newbury Park, California.

Dimas, I.D., Rebelo, T. and Lourenço, P.R. (2016), "Team coaching: one more clue for fostering team effectiveness", *Revue Européenne de Psychologie Appliquée/European Review of Applied Psychology*, Vol. 66 No. 5, pp. 233-242, doi: 10.1016/j.erap.2016.05.003.

Edmondson, A.C. (1999), "Psychological safety and learning behavior in work teams", *Administrative Science Quarterly*, Vol. 44 No. 2, pp. 350-383.

Edmondson, A.C. (2004), "Psychological safety, trust, and learning in organizations: a group-level lens", in Kramer, R.M. and Cook, K.S. (Eds), *Trust and Distrust in Organizations: Dilemmas and Approaches*, Sage Foundation, New York, Russell.

Edmondson, A.C. and Lei, Z. (2014), "Psychological safety: the history, renaissance, and future of an interpersonal construct", *Annual Review of Organizational Psychology and Organizational Behavior*, Vol. 1 No. 1, pp. 23-43.

Eisenhardt, K.M. (1989), "Building theories from case study research", *The Academy of Management Review*, Vol. 14 No. 4, pp. 532-550, doi: 10.2307/258557.

Ely, K., Boyce, L.A., Nelson, J.K., Zaccaro, S.J., Hernez-Broome, G. and Whyman, W. (2010), "Evaluating leadership coaching: a review and integrated framework", *The Leadership Quarterly*, Vol. 21 No. 4, pp. 585-599, doi: 10.1016/j.leaqua.2010.06.003.

Ford, D., Gadde, L.-E., Håkansson, H. and Snehota, I. (2003), *Managing Business Relationships*, Wiley, Chichester.

Fukuyama, F. (1995), *Trust – the Social Virtues and the Creation of Prosperity*, Free Press Paperbacks, New York.

Gerring, J. (2006), *Case Study Research: Principles and Practices*, Cambridge University Press, New York.

Gorse, C.A., Emmitt, S.J.E. and Construction and Management (2003), "Investigating interpersonal communication during construction progress meetings: challenges and opportunities", *Engineering, Construction Architectural Management*, Vol. 10 No. 4, pp. 234-44.

Grant, A.M. (2012), "An integrated model of goal-focused coaching: an evidence-based framework for teaching and practice", *International Coaching Psychology Review*, Vol. 7 No. 2, pp. 146-165.

Green, S.D. (2006), "Discourse and fashion in supply chain management", in Pryke, S. and Smyth, H. (Eds), *The Management of Complex Projects - a Relationship Approach*, Blackwell Publishing, Oxford.

Guest, G., Bunce, A. and Johnson, L. (2006), "How many interviews are enough?", *An Experiment with Data Saturation and Variability*, Vol. 18 No. 1, pp. 59-82, doi: 10.1177/1525822x05279903.

Hall, D.T., Otazo, K.L. and Hollenbeck, G.P. (1999), "Behind closed doors: what really happens in executive coaching", *Organizational Dynamics*, Vol. 27 No. 3, pp. 39-53, doi: 10.1016/S0090-2616(99)90020-7.

Han, S.J., Lee, Y., Beyerlein, M. and Kolb, J. (2018), "Shared leadership in teams: the role of coordination, goal commitment, and knowledge sharing on perceived team performance", *Team Performance Management: An International Journal*, Vol. 24 Nos 3/4, pp. 150-168, doi: 10.1108/TPM-11-2016-0050.

Hanna, A.S. (2016), "Benchmark performance metrics for integrated project delivery", *Journal of Construction Engineering and Management*, Vol. 142 No. 9, 04016040.

Hayford, O. (2017), "Relationship contracting", in Bueno, J.C. (Ed.), *The Projects and Construction Review London*, Law Business Research, London, available at: http://www.TheLawReviews.co.uk.

Invernizzi, D.C., Locatelli, G. and Brookes, N.J. (2018), "The need to improve communication about scope changes: frustration as an indicator of operational inefficiencies", *Production Planning and Control*, Vol. 29 No. 9, pp. 1-14.

Liang, J., Farh, C.I. and Farh, J.L. (2012), "Psychological antecedents of promotive and prohibitive voice: a two-wave examination", *Academy of Management Journal*, Vol. 55 No. 1, pp. 71-92.

Lloyd-walker, B.M., Mills, A.J. and Walker, D.H. (2014), "Enabling construction innovation: the role of a no-blame culture as a collaboration behavioural driver in project alliances", *Construction Management and Economics*, Vol. 32 No. 3, pp. 229-245.

Love, P.E.D., Holt, G.D. and Li, H. (2002), "Triangulation in construction management research", *Engineering Construction and Architectural Management*, Vol. 9 No. 4, pp. 294-303.

Love, P.E.D., Teo, P., Ackermann, F. and Morrison, J. (2015), "From individual to collective learning: enacting rework prevention in a program water infrastructure alliance", *ASCE Journal of Construction Engineering and Management*, Vol. 141 No. 11, 05015009.

Love, P.E.D., Ahiaga-Dagbui, D.D. and Irani, Z. (2016a), "Cost overruns in transportation infrastructure projects: sowing the seeds for a probabilistic theory of causation", *Transportation Research Part A: Policy and Practice*, Vol. 92, pp. 184-194.

Love, P.E.D., Teo, P., Davidson, M., Cumming, S. and Morrison, J. (2016b), "Building absorptive capacity in an alliance: process improvement through lessons learned", *International Journal of Project Management*, Vol. 34 No. 7, pp. 1123-1137, doi: 10.1016/j.ijproman.2016.05.010.

Lu, W., Zhang, L. and Zhang, L. (2016), "Effect of contract completeness on contractors' opportunistic behavior and the moderating role of interdependence", *Journal of Construction Engineering and Management*, Vol. 142 No. 6, 04016004, doi: 10.1061/(ASCE)CO.1943-7862.0001110.

Lumineau, F. and Quélin, B.V. (2012), "An empirical investigation of interorganizational opportunism and contracting mechanisms", *Strategic Organization*, Vol. 10 No. 1, pp. 55-84.

Maurer, I. (2010), "How to build trust in inter-organizational projects: the impact of project staffing and project rewards on the formation of trust, knowledge acquisition and product innovation", *International Journal of Project Management*, Vol. 28 No. 7, pp. 629-637, doi: 10.1016/j.ijproman.2009.11.006.

Mayer, R.C., Davis, J.H. and Schoorman, F.D. (1995), "An integrative model of organizational trust", *Academy of Management Review*, Vol. 20 No. 3, pp. 709-734, doi: 10.5465/amr.1995.9508080335.

McElroy, M., Jorna, R. and Engelen, J. (2006), "Rethinking social capital theory: a knowledge management perspective", *Journal of Knowledge Management*, pp. 10124-136, doi: 10.1108/13673270610691233.

Murray, M., Dainty, A. and Moore, D. (2007), *Communication in Construction: Theory and Practice*, Routledge, Taylor & Francis, New York.

Parker, S.K., Mullarkey, S. and Jackson, P. (1994), "Dimensions of performance effectiveness in high-involvement work organisations", *Human Resource Management Journal*, Vol. 4 No. 3, pp. 1-21.

Putnam, R. (1993), *Making Democracy Work – Civic Traditions in Modern Italy*, Princeton University Press, Princeton, NJ.

Rousseau, D.M., Sitkin, S.B., Burt, R.S. and Camerer, C. (1998), "Not so different after all: a cross-discipline view of trust", *Academy of Management Review*, Vol. 23 No. 3, pp. 393-404, doi: 10.5465/amr.1998.926617.

Schein, E.H. (2013), *Humble Inquiry: The Gentle Art of Asking Instead of Telling*, Berrett-Koehler Publishers, California.

Schein, E.H. and Bennis, W.G. (1965), *Personal and Organizational Change through Group Methods: The Laboratory Approach*, John Wiley & Son, New York.

Segers, J., Vloeberghs, D., Henderickx, E. and Inceoglu, I. (2011), "Structuring and understanding the coaching industry: the coaching cube", *Academy of Management Learning and Education*, Vol. 10 No. 2, pp. 204-221, doi: 10.5465/AMLE.2011.62798930.

Shen, Y., Tuuli, M.M., Xia, B., Koh, T.Y. and Rowlinson, S. (2015a), "Toward a model for forming psychological safety climate in construction project management", *International Journal of Project Management*, Vol. 33 No. 1, pp. 223-235, doi: 10.1016/j.ijproman.2014.04.009.

Shen, Y., Tuuli, M.M., Xia, B., Koh, T.Y. and Rowlinson, S.J.I.J.O.P.M. (2015b), "Toward a model for forming psychological safety climate in construction project management", Vol. 33 No. 1, pp. 223-235.

Siemsen, E., Roth, A.V., Balasubramanian, S. and Anand, G. (2009), "The influence of psychological safety and confidence in knowledge on employee knowledge sharing", *Manufacturing and Service Operations Management*, Vol. 11 No. 3, pp. 429-447, doi: 10.1287/msom.1080.0233.

Szreter, S. and Woolcock, M. (2004), "Health by association? Social capital, social theory, and the political economy of public health", *International Journal of Epidemiology*, Vol. 33 No. 4, pp. 650-667.

Ting, S. and Hart, E.W. (2004), Formal coaching, in McCauley, C.D. and Van Velsor, E. (Eds), *The Center for Creative Leadership Handbook of Leadership Development*, John Wiley & Sons, San Francisco.

Tjosvold, D., Yu, Z.y. and Hui, C. (2004), "Team learning from mistakes: the contribution of cooperative goals and problem-solving", *Journal of Management Studies*, Vol. 41 No. 7, pp. 1223-1245.

Walker, A. (2015), *Project Management in Construction*, Wiley-Blackwell, New Jersey.

Whitmore, J. (2002), *Coaching for Performance*, Nicholas Brealey Publishing, London.

Wikforss, Ö. and Löfgren, A.J.J.O.I.T.I.C. (2007), "Rethinking communication in construction", Vol. 12 No. 23, pp. 337-346.

Wing, L.S. (2005), "Leadership in high-performance teams: a model for superior team performance", *Team Performance Management: An International Journal*, Vol. 11 Nos 1/2, pp. 4-11.

You, J., Chen, Y., Wang, W. and Shi, C. (2018), "Uncertainty, opportunistic behavior, and governance in construction projects: the efficacy of contracts", *International Journal of Project Management*, Vol. 36 No. 5, pp. 795-807, doi: 10.1016/j.ijproman.2018.03.002.

Corresponding author
Dominic D. Ahiaga-Dagbui can be contacted at: dominica@deakin.edu.au