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# Relational factors in owner–contractor collaboration: The mediating role of teamworking

Mohammad Suprapto *, Hans L.M. Bakker, Herman G. Mooi

*Faculty of Civil Engineering and Geosciences, Stevinweg 1, 2628 CN Delft, The Netherlands*

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**Abstract**

We hypothesized that teamworking quality, defined as an inter-team collaborative process, is the mediator that links the efficacy of three antecedents—relational attitudes (relational norms and senior management commitment), collaborative practices (team integration and joint working procedures), and teams' joint capability (the project team's overall competence and experience)—in improving project performance (efficiency, effectiveness, perceived satisfaction, perceived success). Using a sample of 113 capital projects, we applied partial least squares structural equation modeling to test our hypotheses. The results confirm that the three antecedents indirectly influence project performance through teamworking quality. There is no empirical evidence that these antecedents directly influence project performance: relational attitudes, teams' joint capability, and collaboration practices do not automatically lead to a successful collaboration without day-to-day managerial intervention in teamworking processes. We also found that the parties' expectations regarding continuing relationships, as a consequence of good project performance, are directly affected by relational attitudes.


*Keywords:* Capital project; Collaboration; Relational; Teamworking; Trust

## 1. Introduction

There is broad agreement that shortfalls in project performance are rooted in inadequate inter-firm collaboration and a lack of attention to its social dynamics (Morris, 1994; Morris and Pinto, 2004, 2007; Smyth and Pryke, 2008; Walker and Hampson, 2003). In the light of this, owners have increasingly looked to alternative ways of working with contractors. The result has been the development of formal collaborative working arrangements known as relational contracting, partnering, and alliancing, all of which are intended to align project objectives with common business goals in order to create a more cooperative and productive working atmosphere (Rahman and Kumaraswamy, 2005; Xue et al., 2010). The success of partnering or alliancing arrangements has been reported in various countries, for example, the United States (Drexler and Larson, 2000; Larson, 1995), the United Kingdom (Barlow, 2000; Black et al., 2000), Hong Kong (Bayliss et al., 2004; Chan et al., 2004, 2006), and Australia (Walker and Hampson, 2003; Yeung et al., 2009). Despite the reported successes, a number of case studies show that even though a formal partnering arrangement had been adopted, project participants often encountered practical problems, such as a lack of top management commitment, a lack of collaborative mind-set, and insufficient initial effort to establish a shared culture (Alderman and Ivory, 2007; Bresnen and Marshall, 2002; Chan et al., 2012; Smyth and Edkins, 2007).

Although there has been a significant adoption of collaborative working arrangements, we also observe a lack of managerial attention to the underlying factors and mechanisms that make people in project teams work together across the boundaries of the permanent organizations. Bresnen and Marshall (2002) highlight

* Corresponding author at: Infrastructure Design and Management, Faculty of Civil Engineering and Geosciences, Stevinweg 1, 2628 CN Delft, The Netherlands. Tel.: +31 15 278 4330.
*E-mail addresses:* m.suprapto@tudelft.nl (M. Suprapto), h.l.m.bakker@tudelft.nl (H.L.M. Bakker), h.g.mooi@tudelft.nl (H.G. Mooi).

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that current practices of project-based collaboration might put too much emphasis on formal mechanisms (such as contracts, procedures, and techniques). Such formalization often underplays the important social dimension of collaboration in practice, and the dynamics of relationships among different people within an organization and between different organizations.

In seeking the essence that makes collaboration work, another research stream has focused on identifying critical success factors (CSFs) for project-based collaboration. A number of CSFs have been suggested to influence the quality of owner–contractor collaboration, such as top management commitment (Black et al., 2000; Rahman and Kumaraswamy, 2008), team integration (Baiden and Price, 2011; Bosch-Rekveldt et al., 2011; Suprapto et al., 2015), joint working (Black et al., 2000; Chan et al., 2004; Meng, 2012; Rahman and Kumaraswamy, 2008), owner's in-house capability (Miller and Lessard, 2000; Rahman and Kumaraswamy, 2008), and teamwork (Baiden and Price, 2011; Chan et al., 2004; Cheung et al., 2009; Rahman and Kumaraswamy, 2008; Suprapto et al., 2015). While such contributions recognize the factors that contribute to owner–contractor collaboration, there is a lack of empirical studies that provide an integrative model and empirical validation of how these factors relate to each other and contribute to project performance.

Taking into account the aforementioned gaps in our knowledge, we investigated how collaboration factors influence owner–contractor collaboration quality and, in turn, project performance as the outcome of the collaboration. Adopting Mankin et al.'s (2004) conceptualization of complex collaboration, we define owner–contractor collaboration as *a process in which owner and contractor jointly create norms, rules, and structures governing their teams, their working relationships, and ways to act or decide on the issues emerging during the course of a project, in order to bring about mutually satisfactory project outcomes*. This definition considers two interaction levels in a collaboration process: that between two permanent organizations (owner's and contractor's firms) and that between two project teams (owner's and contractor's teams). The former refers to inter-firm interactions in the development of common norms, rules, and structures to govern the project teams. The latter refers to inter-team interactions within the project teams in performing their collective actions.

In line with Smyth and Pryke's (Pryke and Smyth, 2006; Smyth and Pryke, 2008) view that the way in which people work together in teams largely determines the effectiveness and efficiency of project execution, we focused on inter-team collaborative processes. We use the term *teamworking quality* as a measure of inter-team collaborative processes. We adopted the idea and conceptualization of *teamwork* from Salas et al. (2005) and of *teamwork quality* from Hoegl and Gemuenden (2001). Salas et al. (2005) define *teamwork* as "a set of interrelated thoughts, actions, and feelings of each team member that are needed to function as a team and that combine to facilitate coordinated, adaptive performance and task objectives resulting in value-added outcomes" (p. 562). The definition implies the multidimensional nature of the functioning of teams. Based on an extensive literature study, Salas et al. propose eight components of teamwork, namely team leadership, mutual performance monitoring, backup behavior, adaptability, team orientation, shared mental models, mutual trust, and closed-loop communication. Hoegl and Gemuenden (2001) propose, and empirically establish, teamwork quality, defined as "a measure of collaboration in teams" through six facets capturing the internal performance measures of task-related and social interaction within teams, that is, communication, coordination, balance of member contributions, mutual support, effort, and cohesion (p. 436). Salas et al.'s eight components and Hoegl and Gemuenden's six facets overlap in terms of idea and meaning, with the exception of mutual trust. Relating the works of Hoegl and Gemuenden (2001) and Salas et al. (2005), we define teamworking quality as *a set of underlying mechanisms reflecting the task-related and social interactions between the owner's team and the contractor's team in executing a project.* The mechanisms include five task-related interactions—*communication*, *coordination*, *balanced contribution*, *aligned effort*, and *mutual support*—and two social interactions, *cohesion* and *affective trust*.

- *Communication* is the extent to which a team and its members are able to inform the other team and share their ideas with it both openly (without hiding important information) and effectively (the information exchanged can be articulated as intended). The quality of communication is reflected in the sufficiency, structure, openness, and timeliness of the information exchange between teams and team members (Dietrich et al., 2010; Hoegl and Gemuenden, 2001; Salas et al., 2005).
- *Coordination* is the process of synchronizing and aligning the activities in sequence and timing between one team in relation to the other team and to the overall project activities (LePine et al., 2008). The quality of coordination refers to the degree of shared understanding of goals and the synchronization of tasks between teams (Hoegl and Gemuenden, 2001).
- *Cohesion* is the sense of "we-ness" between individuals, or individuals' willingness to work together with members of different teams to achieve a common goal (Cartwright, 1968; Cohen and Bailey, 1997). Hoegl and Gemuenden (2001) argue that an adequate level of cohesion is necessary to maintain individuals in a team and to engage in collaboration, and thus to build the basis for high teamworking quality.
- *Balanced contribution* is the extent to which the teams and its members contribute their knowledge and expertise to the teams' tasks balanced in accordance with their specific potential (Hoegl and Gemuenden, 2001). Everyone does not necessarily bring in the same amount of ideas but should not be restricted in contributing relevant knowledge and expertise.
- *Aligned effort* is the priority and intensity of efforts made by one team in relation to the other team and accepting the work norms underlying these (Hoegl and Gemuenden, 2001).
- *Mutual support* is the degree to which two teams support each other to solve problems that emerged in their interdependent tasks. Mutual support is reflected in such behaviors as mutual respect, support, and co-development of team members' ideas and contributions to anticipate unforeseen incidents (Ahola, 2009; Hoegl and Gemuenden, 2001; Salas et al., 2008).