

# **Managing trust and control when offshoring information systems development projects by adjusting project goals**

**Jan Terje Karlsen\***

BI Norwegian Business School,  
0442 Oslo, Norway

Email: [jan.t.karlsen@bi.no](mailto:jan.t.karlsen@bi.no)

\*Corresponding author

**Hans Solli-Sæther**

NTNU Norwegian University of Science and Technology,  
6025 Ålesund, Norway

Email: [haso@ntnu.no](mailto:haso@ntnu.no)

**Kim E. van Oorschot**

BI Norwegian Business School,  
0442 Oslo, Norway

NTNU Norwegian University of Science and Technology,  
6025 Ålesund, Norway

Email: [kim.v.oorschot@bi.no](mailto:kim.v.oorschot@bi.no)

**Anne Live Vaagaasar**

BI Norwegian Business School,  
0442 Oslo, Norway

Email: [anne.l.vaagaasar@bi.no](mailto:anne.l.vaagaasar@bi.no)

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## Biographies

**Jan Terje Karlsen** is a Professor of project management at the BI Norwegian Business School. He holds a doctoral degree in project management from NTNU Norwegian University of Science and Technology. His research interest is projects management with a special focus on leadership, stakeholder relationships, knowledge management and risk management.

**Hans Solli-Sæther** is a Professor of strategy at NTNU Norwegian University of Science and Technology. He received his doctoral degree in leadership and organization from BI Norwegian Business School. His research interests are located at the interface between strategy, organization and project management with a particular emphasis on topics of outsourcing and offshoring.

**Kim E. van Oorschot** is a Professor of project management at BI Norwegian Business School, and holds an adjunct position at NTNU Norwegian University of Science and Technology. She received her doctoral degree in industrial engineering from Eindhoven University of Technology, The Netherlands. Her research interests include decision making, trade-offs, and tipping points in dynamically complex settings such as new product development (NPD) projects.

**Anne Live Vaagaasar** is an Associate Professor of project management at BI Norwegian Business School. She received her doctoral degree in project management from BI Norwegian Business School. She is head of BI's executive programs for project management. She publishes within the field of temporary and project based organizing, and her research focuses on time, temporality, collaboration, routines and knowledge work in the context of temporary and project based organizing.

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## **Abstract**

This article presents a study of two projects focusing on the relationships of two Nordic clients with suppliers in low-cost countries. It explores the interplay between trust and control when offshoring information systems development projects. The key insight reveals that trust is not a substitute for control, no matter its level. Both projects started with high levels of trust. In one, the high trust was combined with a multitude of control mechanisms, and the project was a success. In the second, the client executed control activities but relied more on swift trust, which turned out to be unjustified. This caused a loss of trust that then forced the client to introduce more control (substitution). Ultimately, this project did not succeed. The paper offers several contributions. First, we build a conceptual model for exploring the relationship between trust and control and the role of actual project performance in shaping this relationship. Second, the empirical study reveals that trust supports a team's willingness to share knowledge, and control facilitates its ability to do so. Thus, trust and control are required to boost performance. Furthermore, our analysis shows that the impact of trust and control on project performance is better managed through the adjustment of project goals instead of adjusting the levels of trust and control. Finally, we contribute to theory through the development of a causal model of trust, control, actual performance, and project goals that integrate balancing and reinforcing loops and feature project goal adjustment as an endogenous element.

**Keywords:** offshoring, control, trust, performance, project goals, IS development, project management, qualitative research

## 1 Introduction

Western firms increasingly conduct information systems development (ISD) activities offshore, primarily in low-cost countries (Mähring et al., 2018) and mostly to enhance their competitive advantages, through saving costs or expanding their knowledge and resource bases (Gopal and Gosain, 2010; Gregory et al., 2013; Srivastava and Teo, 2012; Zheng et al., 2018). ISD activities are often run as interorganizational projects, where two or more actors from distinct organizations work together to develop the system in limited time (Jones and Lichtenstein, 2008, p. 234). It is well known that solving interdependent activities across organizations is very demanding (Jones and Lichtenstein, 2008), and offshore projects become even more demanding when the partners are relative strangers with different languages, cultures, and time zones. A successful offshoring project requires personnel, skills, the identification and allocation of other resources, the proper organization and coordination of activities (Bapna et al., 2010), and shared knowledge (Zimmermann and Ravishankar, 2014).

Prior research notes that interorganizational projects demand trust and control between partners (Smets et al., 2013); however, the complex relationship between trust and control remains somewhat controversial (Long and Sitkin, 2018). One research tradition regards the two aspects as substitutes, where one can replace the other (Das and Teng, 2001; Edelenbos and Eshuis, 2012; Inkpen and Currall, 2004; Woolthuis et al., 2005; Zwikael and Smyrk, 2015). For example, a high level of trust might eliminate the need for costly control mechanisms because both parties expect mutual, complete fulfillment of their commitments with no opportunistic behavior. Explicit control mechanisms also might lead to suspicion or signal distrust, setting off a vicious cycle in which low trust leads to more control and further reduces trust. Another research stream argues that trust and control are complements that enable each other (Edelenbos and Eshuis, 2012; Ning, 2017; Persson et al., 2012). For example, control may increase trust by generating expectations for cooperation and creating relationship commitment. In this perspective, control provides a framework for establishing trust. For example, trust facilitates knowledge transfer between partners (Zimmermann and Ravishankar, 2014), which supports the execution of control (Edelenbos and Eshuis, 2012).

However, questions about the either/or dichotomy of substitution versus complementarity stem from empirical evidence of other possible dynamic relationships between trust and control, in which they oscillate between acting as substitutes and complements (Huber et al., 2013; Long and Sitkin, 2018; Vlaar et al., 2007). Indeed, there are a few studies offering a dynamic perspective on trust and control (Gregory et al., 2013; Heiskanen et al., 2008; Smets et al., 2013; Zimmermann et al., 2013; Zimmermann and Ravishankar, 2014). For example, Gregory et al. (2013) focused specifically on feedback loops between control balancing and shared understanding. However, the question of whether and how project goals should be adjusted in response to actual performance as a way to manage the trust–control nexus has been given limited attention by researchers. For example, Gregory et al. (2013) and Smets et al. (2013) assume that project goals are static. In line with Alvesson and Sandberg (2011), we question this assumption and problematize the process of adjusting project goals in response to actual performance, as a way to manage trust and control. In other words, if trust and control are entwined and actual performance and project goals influence their interaction, we need to understand how they are balanced (Gregory et al., 2013). Hence, our study aims to answer the following questions: (1) *How should trust and control be managed to support actual performance—as substitutes or complements?* (2) *How can project goal adjustment be used to influence actual performance?*

We pursued our research questions through a qualitative case study (Yin, 2009) of two ISD projects: Case One where the client firm is named *Mature*, and Case Two where the client firm is named *Novice*. The paper offers several contributions. In the literature review, we first build a conceptual model for exploring the dynamic relationship between trust and control and the role of actual project performance in shaping this relationship. Second, we develop key insights based on the empirical cases. Our findings reveal that trust and control should not be treated as substitutes but as complements, as both are required to advance actual performance. This result corroborates findings from Dyer and Chu (2003), Goo et al. (2009), and Persson et al. (2012). Our findings also suggest it may be more beneficial to increase project goals (goal adjustment), for example, by increasing the number or scope of offshoring activities when trust, formal control, and actual performance are high (as in Case One), instead of decreasing control. Furthermore, our findings indicate that it is more beneficial to the project and the relationship to decrease project goals (goal adjustment), for example, by decreasing the number or scope of offshoring activities when trust and actual performance are low, rather than increasing controls. Finally, we contribute to theory development through the development of a dynamic causal model of trust, control, actual performance, and project goals. By using balancing and reinforcing feedback loops, this model shows that project goals should not be treated as constants. Rather, project goals can be adjusted based on levels of trust, control, and actual performance.

## 2 Literature review

### 2.1 Definition of concepts

The concepts of project goals, actual performance, trust, and control have received ample attention from various disciplines, and although prior research has put forth diverse interpretations of the concepts, a common core emerges. Table 1 contains an overview of the analytical framework with all the applied concepts used in this paper. The (causal) relationships between these concepts identified in the literature are discussed in the following subsections. The links are numbered from 1 to 12, depicted in our conceptual model (Figure 1), and listed in Table 2. Note that Table 2 lists three additional causal links that were found during our case study and will be discussed later (in Figure 2).

**Table 1** Definition of concepts

Concepts	Definitions
Expected performance (project goals)	Project goals express what the project is expected to achieve during its lifetime, that is, software to be developed according to the budget and schedule and user requirements (scope) (Lee et al., 2012). As such, project goals are equal to expected performance.
Actual performance	The project's progress toward the achievement of the project goals (i.e., time, budget, scope, and quality) at a specific point in time (Wiener et al., 2016).
Formal control	Written, management-initiated mechanisms focus on behavioral and outcome control. There are three types of formal control: input (e.g., training and introductory sessions), process (e.g., supervision and structural meetings), and output control (e.g., evaluation and quality check) (Das and Teng, 2001; Jaworski, 1988; Ouchi, 1979).
Informal control	Unwritten, typically worker-based social interactions that influence behavior. Focus is on the development of shared values, beliefs, and goals to achieve appropriate behavior (Das and Teng, 2001; Jaworski, 1988; Ouchi, 1979).
Knowledge-based trust	Trust based on the assessment of team members' behavior (Robert et al., 2009).
Swift trust	Trust based on team members' characteristics (Robert et al., 2009).

## 2.2 Expected performance (project goals) and actual performance

The project planning process starts with the client firming up the project goals (Jurison, 1999). In the context of ISD, project goals express what the project is expected to achieve during its lifetime (Lee et al., 2012). The goals provide the overall direction for the project. Researchers recognize several dimensions of project goals, typically defined in terms of three factors: cost, time, and scope, where the combination of these three determine the project quality. The cost goal refers to finishing the project according to the budget, and the time goal refers to finishing the project according to the schedule. The scope goal covers the extent to which the developed software meets the requirements or needs of the intended users (Gopal and Gosain, 2010). Actual performance of a software project is assessed in terms of its progress at a specific point in time in relation to attaining the cost, time, and scope goals (Wiener et al., 2006). According to the Standish Group report (The Standish Group, 2014), a software project is successful if its actual performance meets expected performance (i.e., all three project goals). This definition of successful is consistent with that found in other studies of software development projects (e.g., Jørgensen et al., 2017).

**Table 2** Causal relationships between concepts

Link	Assertions about causal relationships in Figures 1 and 2	References
1	Expected performance (project goals) has a positive effect on the gap in performance.	Abdel-Hamid, 2011; Brandtstädter and Rothermund, 2002; Sterman, 2000
2	Actual performance has a negative effect on the gap in performance.	Abdel-Hamid, 2011; Brandtstädter and Rothermund, 2002; Sterman, 2000
3	The gap between expected and actual performance has a positive effect on the need to have control of the offshore team.	Inkpen and Currall, 2004; Kirsch, 2004; Long and Sitkin, 2018; Ouchi, 1979; Smets et al., 2013; Tiwana and Keil, 2007
4	The need to have control of the offshore team has a positive effect on the amount of formal control mechanisms implemented.	Bello and Gilliland, 1997; Long and Sitkin, 2018; Smets et al., 2013
5	The amount of formal control mechanisms implemented has a positive effect on the number of rules, meetings, and workshops.	Bello and Gilliland, 1997; Das and Teng, 2001; Jaworski, 1988; Mähring et al., 2018
6	The number of rules, meetings, and workshops has a positive effect on the ability to share knowledge.	Cardinal, 2001; Jaworski, 1988; Krishnan et al., 2006; Liang et al., 2016; Paulraj et al., 2008; Smets et al., 2013
7	The ability to share knowledge has a positive effect on actual project performance.	Bello and Gilliland, 1997; Krishnan et al., 2006; Liang et al., 2016; Paulraj et al., 2008; Smets et al., 2013
8	The number of rules, meetings, and workshops has a positive effect on the social interaction between onshore and offshore teams.	Krishnan et al., 2006; Long and Sitkin, 2018; Paulraj et al., 2008; Rottman, 2008; Smets et al., 2013; Westner and Strahringer, 2010
9	The social interaction between onshore and offshore teams has a positive effect on the trust between onshore and offshore teams (knowledge-based trust).	Atuahene-Gima and Li, 2002; Aulakh et al., 1996; Olaisen and Revang, 2017

10	The trust between onshore and offshore teams has a positive effect on the willingness to share knowledge.	Carnevale and Wechsler, 1992; Long and Sitkin, 2018; Maurer, 2010; Olaisen and Revang, 2017; Oorschot et al., 2018; Westner and Strahringer, 2010
11	The willingness to share knowledge has a positive effect on actual performance.	Carnevale and Wechsler, 1992; Maurer, 2010
12	The gap in performance has a negative effect on the trust between onshore and offshore teams (knowledge-based trust).	Lin, 2011; Robert et al., 2009
<b>Link</b>	<b>Assertions about causal relationships in Figure 2</b>	<b>References</b>
13	The gap in performance has a negative effect on the belief in the offshore team's capabilities (swift trust).	Findings from our case studies, Inkpen and Currall, 2004; Stevens et al., 2015; Vlaar et al., 2007
14	The belief in the offshore team's capabilities has a positive effect on the scope of the offshoring activities.	Findings from our case studies, Abdel-Hamid, 2011; Barlas and Yasarcan, 2006; Gino and Bazerman, 2009; Oliva and Serman, 2001; Stevens et al., 2015
15	The scope of the offshoring activities has a positive effect on project goals (expected performance).	Findings from our case studies, Abdel-Hamid, 2011; Barlas and Yasarcan, 2006; Gino and Bazerman, 2009; Oliva and Serman, 2001; Westner and Strahringer, 2010

### 2.3 Control

Control refers to any attempt to motivate others to behave in a manner consistent with organizational goals (Kirsch, 2004; Ouchi, 1979). Its importance, as a means to manage interorganizational relationships, has been widely emphasized (e.g., Bello and Gilliland, 1997; Das and Teng, 2001; Inkpen and Currall, 2004). Control is often thought to be dyadic, in the sense that there is a controller (client), who is the source of the control, and a controllee (supplier), who is the target of control (Mähring et al., 2018; Wiener et al., 2016). The control process allows for monitoring of the supplier's actions in a manner that promotes desirable performance (Inkpen and Currall, 2004; Smets et al., 2013; Tiwana and Keil, 2007). As a result, the need for control arises from a gap between expected performance (as expressed in the project goals) and actual performance. The larger this gap, the higher the need for control to stimulate actual performance (Smets et al., 2013). In Figure 1, this is depicted by the causal links 1 to 4. These links reflect an archetypical goal-seeking feedback strategy for controlling many processes in daily life (Abdel-Hamid 2011; Brandtstädter and Rothermund, 2002; Serman, 2000). The actual state of the system (actual performance, link 2) is compared to the goal (project goals, link 1), and, if a discrepancy is detected (gap in performance, link 3), corrective action is taken to close the gap and bring the system back in line with the goal (implement formal control, link 4) (Bello and Gilliland, 1997; Long and Sitkin, 2018; Smets et al., 2013). Prior research identifies two types of control. First, formal control entails specific rules to regulate the use of resources, procedures, or outcomes and, thereby, secures a supplier's actual performance. Second, informal or social control (Das and Teng, 2001) leverages a supplier's commitment to the project's goals and the client's values and behavioral expectations (Jaworski, 1988).

Formal control implies that the client has formulated and uses set rules, procedures, and policies (Bello and Gilliland, 1997; Das and Teng, 2001; Jaworski, 1988; Mähring et al., 2018), which are depicted in Figure 1 by link 5. Three types of formal control exist: input, process, and output. Input control requires measurable actions prior to the start of a supplier-executed project, such as training, colocation, team member selection, or introductory sessions (Jaworski, 1988). By anticipating the resources (e.g., knowledge, skills, abilities, motives) needed from the supplier's project members, the client uses input control to prevent a gap in performance between the project goals and actual performance that might be difficult to resolve after the project has started (Cardinal, 2001). Process control refers to efforts to influence the procedures used to achieve project goals, such as supervision of developers, structural meetings, or video conference calls (Jaworski, 1988). Continuous monitoring of behaviors and procedures used by the supplier's system developers means that the client secures a more efficient execution of system development (Bello and Gilliland, 1997). Finally, output control applies to performance standards, which must be set, monitored, and evaluated, usually in a final quality check (Jaworski, 1988). Evaluating actual performance and comparing it to expected performance enables the client to keep the supplier's efforts focused on realizing the project goals (Bello and Gilliland, 1997). As such, these three types of formal control create opportunities for the onshore and offshore teams to discuss the project, its goals, and the actual performance. This means that formal control has a positive effect on the ability to share knowledge between the client and supplier (link 6 in Figure 1) (Liang et al., 2016). Furthermore, through its positive effect on the ability to share knowledge, formal control has been found to positively impact the actual performance of the supplier (link 7 in Figure 1) (Liang et al., 2016; Smets et al., 2013).

The seven links we have described thus far form a balancing feedback loop (loop B1 in Figure 1) that describes a goal-seeking process. This loop describes the effect of the gap between expected performance (project goals) and actual performance on formal control. When actual performance is low (i.e., a large gap between expected and actual performance), the client perceives a greater need to control the supplier's activities. Thus, formal control is likely to increase. The client will install more rules, procedures, meetings, and workshops to enable knowledge-sharing processes between onshore and offshore teams. The resulting positive effect on actual performance should reduce the performance gap. We refer to this loop as "adjustment of formal control based on actual performance" because the level of formal control can be adjusted according to the actual performance of the supplier.

Actual performance by the supplier also might be encouraged by informal, clan control (Das and Teng, 2001; Gregory et al., 2013; Kirsch, 1997; Wiener et al., 2016), depending on the supplier's commitment to the client's goals, values, and behavioral expectations (Jaworski, 1988). Informal control is comparatively inexpensive because it lacks the costs related to writing, monitoring, and enforcing rules, procedures, or policies (Dyer and Chu, 2003). However, this hands-off approach often lessens communication between the client and supplier, which may increase the possibility of product- or performance-related errors (Krishnan et al., 2006; Paulraj et al., 2008; Smets et al., 2013). Therefore, the client must be aware that relying on informal control can lead, over time, to substandard actual performance, which increases total costs. This behavior can also be represented by link 6 and 7 in Figure 1. When there are fewer rules, procedures, and structures, the ability for the client and supplier to share knowledge may be decreased (for example, because no formal meetings are scheduled), which in turn negatively influences actual performance.



## 2.4 Trust

Trust is a micro level phenomenon that has its basis in individuals (Dennis et al., 2012). The concept of trust is widely discussed in management literature, yet there are so many different definitions and views that these discussions tend to confuse more than clarify (Misztal, 1996). Trust is a dynamic, complex construct with multiple bases, levels, and determinants (Rousseau et al., 1998). It appears in a range of theories and concepts that are applied in different fields, according to their unique natures and characteristics (Frost et al., 1978; Good, 1988; Jones and George, 1998). For example, the phenomenon of trust is integrated in software development to enable the development of secure systems (Pavlidis et al., 2014). Thus, there is no universal description of trust (Beslin and Reddin, 2004; Hirsch, 1977; Hoffman, 2002; Das and Teng, 1998). According to Kirsch (1997) and Gregory et al. (2013), trust can be understood as a subdimension of informal clan control that relies on shared norms, rules, beliefs, and values. We generally agree with Rousseau et al. (1998, p. 395), who define trust as “a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another.” As such, trust implies that the trusting party accepts some degree of vulnerability.

There are two streams of theorization concerning trust development (Kuo and Yu, 2009). Lewicki and Bunker (1995) suggest a path of trust development, where the trust moves from calculus-based trust, through knowledge-based trust, to identification-based trust. Within this traditionally history-dependent view, trust is seen as a result of personal reviews of past behavior, gradually developing over time based on positive results from repeated behavior. According to Robert et al. (2009), this traditional view of trust development predicts low levels of trust at the start of a project because the project team members have geographical dispersion, different cultures, and little history. However, in contrast to the theory of Lewicki and Bunker (1995), high levels of trust have been observed among members of temporary project teams from the start of the project (Meyerson et al., 1996). Researchers who have studied trust development in temporary project teams and work-oriented virtual teams have stressed the importance of high levels of trust at the beginning of an organizational relationship (Jarvenpaa et al., 2004). Therefore, in this paper, we distinguish between swift trust and knowledge-based trust between members of two virtual teams. Swift trust can be imported and given *ex ante* among individuals with no prior history (Robert et al., 2009). This form of trust is present at the start of the project, even before the team members have had any chance to interact. Swift trust refers to the judgement and assumptions that team members make about other team members before the project starts, based on information about their professions, organizational roles, third-party recommendations, reputations, and so forth.

However, once a team member has personal knowledge of another’s behavior, the team member will be able to perform a knowledge-based assessment regarding this person’s trustworthiness (Robert et al., 2009). At this point, the basis of trust judgement shifts from a disposition to trust to personal-based cognitive processing. This is determined by an assessment of the other person’s competence (ability and competence to get the work done), benevolence (willingness to feel interpersonal care and concern for others), and integrity (intentions and honesty to meet agreed obligations and not to behave opportunistically) (Lin, 2011, Robert et al., 2009). Social interactions between the client and supplier can be triggered by formal control, such as colocation, supervision, or meetings (link 8 in Figure 1). Some authors refer to this as liaison quality: the degree of personal connection between the client and supplier to achieve goals (Rottman et al., 2010). Through these interactions among the members of project teams, knowledge-based trust develops (link 9 in Figure 1) (Atuahene-Gima and Li, 2002; Aulakh et al., 1996; Long and Sitkin, 2018; Olaisen and Revang, 2017).

Trust enables cooperative behavior and commitment, promotes adaptive organizational forms, reduces damaging conflicts and transaction costs (Müller et al., 2014), and promotes more effective responses to crises (Rousseau et al., 1998). Trust is also important for problem solving because “it encourages the exchange of relevant information, and determines whether team members are willing to permit others to influence their decisions and actions” (Carnevale and Wechsler, 1992, p. 471). Furthermore, mutual learning increases because trust enhances the partners’ motivation for sharing knowledge (Maurer, 2010; Long and Sitkin, 2018; Olaisen and Revang, 2017; Oorschot et al., 2018; Westner and Strahringer, 2010). As a result, a causal link is identified between knowledge-based trust and the willingness to share knowledge (link 10 in Figure 1). Accordingly, willingness to share knowledge is expected to have a positive impact on actual performance (link 11 in Figure 1). Finally, knowledge-based trust is based on competence (Lin, 2011), thus good project performance (or a small gap between expected and actual performance) has a positive impact on trust (link 12 in Figure 1).

Two loops are now added to our conceptual model: a balancing loop (B2) and a reinforcing loop (R). The former loop demonstrates that formal controls increase the number of times the two teams meet and discuss the project. Therefore, these controls increase the interactions between the teams, which enables the teams to get to know each other and form social relationships. These trends should benefit the levels of trust between the two teams. In turn, trust has a positive influence on willingness to share knowledge, which has a positive effect on actual performance. This loop is labeled “adjustment of trust based on (in)formal control” because the trust between the two teams is facilitated by formal and informal control mechanisms that cause the teams to interact. The latter loop is reinforcing in nature, meaning it can cause virtuous or vicious behavior. Virtuous behavior arises when increased performance (i.e., a reduced gap between expected and actual performance) increases trust between the two teams. Higher levels of trust strengthen the willingness to share knowledge, which further stimulates actual performance, leading to even higher levels of trust (all else being equal). When the cycle is vicious, low performance reduces trust, which reduces knowledge sharing and further limits actual performance (Sabherwal, 1999). This loop is labeled “adjustment of trust based on actual performance” because trust is influenced by actual performance.



review of the control–trust research). Several scholars approach trust and control as a zero-sum game after uncovering their negative relationships (Das and Teng, 2001; Edelenbos and Eshuis, 2012; Inkpen and Currall, 2004; Woolthuis et al., 2005), wherein a high level of trust might remove the need for costly control mechanisms because both parties expect mutual fulfillment of all their commitments, with no opportunistic behavior. This means that loop R becomes so strong that the need for formal control (which is a part of loops B1 and B2) diminishes. This also implies that, when trust is high, team members are willing to share knowledge with each other and will find ways to do so, even when there are no formal rules or procedures in place for knowledge sharing. Alternatively, if trust and control are complements, they might enable each other (Edelenbos and Eshuis, 2012; Persson et al., 2012; Sabherwal, 1999), such that control enhances trust by generating expectations of cooperation and creating relationship commitments. In this case, trust facilitates the relationship between the client and supplier to complement the effects of formal control (Goo et al., 2009; Smets et al., 2013). Control provides a framework within which trust can be established (Müller et al., 2013). For example, trust facilitates knowledge transfer between partners (Zimmermann and Ravishankar, 2014), which supports the execution of control (Edelenbos and Eshuis, 2012). This complementary view of trust and control implies that loops B1 and B2 are both necessary to stimulate actual performance (regardless of the strength of loop R), meaning that not only do team members have to be willing to share knowledge but also formal rules and procedures should be in place to facilitate the ability to do so.

In recent years, this either/or dichotomy has come under closer scrutiny because empirical evidence indicates other possible, dynamic relationships in which trust and control evolve from substitutes into complements or vice versa. Table 3 summarizes research specifically focused on capturing the dynamic feedback behavior of trust and control.

**Table 3** Overview of research with dynamic perspectives on trust and control

Study	Context	Included in the dynamic view	Not included in the dynamic view
Gregory et al. (2013)	IS offshoring projects	Feedback loop between control balancing and shared understanding	<ul style="list-style-type: none"> <li>Goals are assumed static. The process of goal adjustment is not included in the control balancing process.</li> </ul>
Heiskanen et al. (2008)	IS outsourcing relationships	Oscillation between trust and control	<ul style="list-style-type: none"> <li>Oscillation of trust and control suggests a balancing loop, but such a loop is not mentioned.</li> </ul>
Huber et al. (2013)	IS outsourcing projects	Different causal loops that explain the trust–control nexus and how trust and control oscillate between being complements or substitutes	<ul style="list-style-type: none"> <li>Oscillations are set in motion by exogenous events (triggers related to the goals of the outsourcing relationship), but these triggers can also be a side effect (endogenous) of the behavior of the dynamic system of trust, control, knowledge sharing, and so forth.</li> </ul>
Smets et al. (2013)	Maritime engineering outsourcing projects	Balancing and reinforcing feedback loops among control, trust, and performance	<ul style="list-style-type: none"> <li>Goals are static. The process of goal adjustment is not included in the control balancing process.</li> </ul>
Vlaar et al. (2007)	Inter-organizational relationships	Multiple causal relationships among trust, distrust, formalization, interpretation,	<ul style="list-style-type: none"> <li>No empirical test of the model</li> <li>Thresholds with respect to trust and control (below or above which they</li> </ul>

		and performance, including substitution and complementary views of trust and control	become counterproductive) are not clearly defined. <ul style="list-style-type: none"> <li>• No clear overview of balancing and reinforcing (virtuous and vicious) loops between concepts</li> </ul>
Zimmermann et al. (2013)	IT offshoring relationships	Vicious or virtuous cycles between performance, offshoring attitudes, and relational behaviors	<ul style="list-style-type: none"> <li>• No limiting factors. Cycles always continue to increase (explode) or decrease (implode).</li> </ul>
Zimmermann and Ravishankar (2014)	IT offshoring relationships	Reinforcing loops between trust, willingness to transfer knowledge, transfer success, shared understanding, and the ability to transfer knowledge	<ul style="list-style-type: none"> <li>• Loops do not include the role of formal control or its relationship with trust.</li> </ul>

Vlaar et al.'s (2007) study consisted of multiple causal relationships among trust, distrust, formalization, interpretation, and performance, including substitution and complementary views of trust and control. Substitution and complementarity coexist because Vlaar et al. (2007) distinguished between trust and distrust. This means that partners can trust each other in one respect but distrust each other in another. In the presence of distrust, trust and control should be substitutes, whereas for decreasing levels of distrust, trust and control enable each other. Vlaar et al. (2007) also suggested thresholds with respect to trust and control, such that very low levels of trust and excessive formalization can be detrimental to performance. Virtuous and vicious cycles between offshoring attitudes and relational behaviors (e.g., trust), as identified by Zimmermann et al. (2013), describe the positive effect of performance on offshoring attitudes, which in turn encourages relational behaviors that positively impact performance. This reinforcing cycle is either virtuous (the elements of the cycle influence one another in a good way) or vicious (the elements in the cycle influence one another in a bad way). Other reinforcing loops that influence IT offshoring relationships have been described as well (Zimmermann and Ravishankar, 2014), including the positive relationships among trust, willingness to transfer knowledge, transfer success, share understanding, and the ability to transfer knowledge. Huber et al.'s (2013) adaptation process model described the trust–control nexus in different causal loops, explaining how trust and control evolve into complements in some ISD projects but substitutes in others. An external adaptation trigger usually linked to goal fuzziness, goal conflict, or goal misalignment initiates the process. Huber et al. (2013) claimed that contractual and relational governance oscillate between complementarity and substitution, but these oscillations are set in motion by exogenous events or adaptation triggers, not by endogenous variables. Oscillation between trust and control also appears in Heiskanen et al.'s (2008) study. From a system dynamics perspective (Sterman, 2000), this oscillation implies the existence of a balancing loop, whereas previous research mainly identified reinforcing loops without mentioning balancing feedback loops. Gregory et al. (2013, p. 1217) and Smets et al. (2013) specifically focused on control balancing, defined as “making adjustments to the control configuration periodically in terms of control types, control degree, and control style, to allow the ISD offshoring project and relationship to progress.” Their findings reveal a feedback loop between control balancing and shared understanding in outsourcing relationships. Control not only is influenced by project and relationship-related events but also influences the evolution of the project and the relationship.

## *2.6 Goal-adjustment using the trust–control nexus*

Besides Huber et al. (2013), all studies cited in Table 3 assume that project goals are static or at least external to the feedback loops between actual performance, trust, and control. In general, this implies that goal seeking is the primary management policy: choosing to maintain the established project goals while being willing to adjust the levels of trust and control to reduce any gaps between project goals and actual performance. A more realistic goal-related policy is called a floating goal policy. In this situation, the goal is not fixed, but it can be lowered or pushed higher depending on the gap between the project goals and the actual performance (Barlas and Yasarcan, 2006; Senge, 1990; Sterman, 2000). Previous research shows that actual performance in distributed projects is often quite poor (Bahli and Rivard, 2013; Holmstrom et al., 2006; Sarker and Sahay, 2004). It appears that shifting control is not sufficient to bring actual performance closer to the expected performance stated in project goals. Rather, one may have to adjust the goals as well (e.g., extending deadlines, increasing budgets, or reducing scope). Abdel-Hamid (2011) described this goal adjustment process as seeking to close the gap between project goals and actual performance by lowering the goal rather than by taking corrective actions. This is also known as goal erosion (Barlas and Yasarcan, 2006; Gino and Bazerman, 2009; Oliva and Sterman, 2001). The opposite may also occur; the goal may be pushed higher when actual performance exceeds expectations. This is the case of the evolving goal (Barlas and Yasarcan, 2006). This goal adjustment policy was not included in the control balancing processes described by Gregory et al. (2013) or Smets et al. (2013); however, there are preliminary findings that suggest that deliberately adjusting goals, based on actual performance, can lead to higher performance levels compared to a situation with fixed goals (Barlas and Yasarcan, 2006). Still, it is unclear how goal adjustment may affect offshoring projects. More specifically, if goals can be adjusted, is it still necessary to adjust trust and/or control? Accordingly, there is a theoretical gap regarding the adjustment of project goals in response to actual performance that may or may not influence the trust–control nexus. In other words, if trust and control are entwined and goals and performance influence their interaction, we need to understand how they should be managed (Gregory et al., 2013). It is for this reason that we included project goals (or expected performance) in our conceptual model in Figure 1. We know, based on previous research, that project goals influence trust, control, and actual performance, but we do not know yet if there is a link that feeds back into project goals and consequently leads to goal adjustment (indicated by the broken arrow in Figure 1).

## **3 Research methodology**

This is an explanatory study of managing the client–supplier relationship in ISD offshoring projects. The unit of analysis is the relationship between trust and control in the client–supplier relationship. We chose a qualitative case study design, including two cases, to follow this relationship. We developed an analytical framework on project goals, actual performance, trust, and control to obtain a firm empirical grounding that would help focus the study and shape data collection and analysis (Gibberts et al., 2008). We describe the essentials of the research process below.

### *3.1 Qualitative case study design*

Due to the “how” nature of the research question, we chose a qualitative case study (Eisenhardt, 1989; Yin, 2009). We found it difficult to access the conceptual relationships with a quantitative approach, as we lacked clear understanding of the trust–control nexus in the context of the client–supplier relationship in ISD projects (Gregory et al., 2013). A qualitative case study lets the importance of each dimension emerge from the analysis through the interpretation of respondents’ statements about their encounters during the offshore endeavor

(Miles and Huberman, 1994). The fact that the relationships of interests are highly dynamic and embedded in a social setting strengthens the appropriateness of a qualitative case study approach (Eisenhardt, 1989), as this can deal with rich data and observe dynamic phenomena over time (Yin, 2009). In this study, we chose to follow phenomena in real time.

We decided on a multiple case study research design (Eisenhardt, 1989; Flyvbjerg, 2011) using two cases. According to Yin (2009), using more than one case provides the possibility of predicting similar results and contrasting results but for predictable reasons. The first means describing under which conditions a particular phenomenon is likely to be found, and the second describes the conditions when a particular phenomenon is not likely to be found. In addition, including more than one case can broaden and add robustness to the findings (Yin 2009). As in similar studies (e.g., Dibbern et al., 2008; Mathiassen and Vainio, 2007), we strove to gather information from two comparable cases to study the trust–control nexus across ISD offshoring projects in similar contexts.

### 3.2 Case selection

We purposefully sampled the cases looking for two offshoring projects with the following similarities: Nordic client companies, suppliers from Southeast Asia (India and Bangladesh), client aim (to save money), project duration (12–15 months), medium-sized project teams, project execution model (one scrum team abroad in each case), and relationship structure between the client–supplier representatives (see Table 4). There were also contextual factors such as cross-cultural issues, geographical distance, time zones, and language differences (see Dibbern et al., 2008). An important criterion for case selection was difference in maturity of the client in terms of governing the offshoring relationship. We expected that differences in the maturity of the relationship could produce interesting insights. Hence, we adopted literal replication (Miles and Huberman, 1994; Yin, 2009), to see if our conceptual model was useful across offshoring relationships, and theoretical replication (Miles and Huberman, 1994; Yin, 2009), to explore differences in managing the trust–control nexus in such relationships.

**Table 4** Two ISD offshore cases

Case	Client company	Origin	Length of project	Supplier company
One	Payment services	Nordic	12 months	Global service supplier in India
Two	Software company	Nordic	15 months	Local consulting company with delivery center in Bangladesh

We sought cases in which we could include client and supplier perspectives, which have often been absent in prior scientific investigations (Choudhury and Sabherwal, 2003; Dibbern et al., 2008). The empirical material is based on information from the client and the supplier, including almost equal numbers of interviews with both (see Tables 5 and 6 for an overview). Initially we wanted the cover of perspectives to be balanced. In practice, this proved difficult, due to practical challenges of language and availability. Therefore, the empirical material, to some extent, contains more information from the client’s perspective. However, it is common to analyze software projects from the perspective of the client because the client’s evaluation of the actual performance of a project is essential, as it is the client who will evaluate whether or not the software project is a success and whether or not time or cost overruns are a major problem (Jørgensen et al., 2017).

**Table 5** Interviews Case One

Interviewees	Duration & form	Topics
Sourcing manager, Client	1,5 hours, semi-structured 1 hour, follow-up 1 hour, follow-up	Motivation for offshoring; sourcing model; organization; control, trust, performance
IT line manager, Client	1 hour, semi-structured	Control, trust, performance
IT project manager, Client	1 hour, semi-structured	Control, trust, performance
Business product owner, Client	Semi-structured questionnaire	Organization; control, trust, performance
On-site coordinator, Supplier	1 hour, semi-structured 1 hour follow-up	Project methodology; organization; control, trust, performance
Project manager, Supplier	1 hour, semi-structured (video conference)	Project methodology; control, trust, performance
Scrum master, Supplier	1 hour, semi-structured (video conference)	Project methodology; control, trust, performance

**Table 6** Interviews Case Two

Interviewees	Duration & form	Topics
Project owner, Client	1,25 hour, semi-structured 1 hour follow-up	Project management; control, trust, project success
System architect (and product owner), Client	1 hour, semi-structured	Project context; control, trust, performance
Interface designer, Client	1,25 hour, semi-structured	Control, trust, performance
Project coach, Supplier	1,25 hour, semi-structured	Control, trust, performance
Scrum master, Supplier	1,5 hours, semi-structured (video conference)	Project context; control, trust, performance
Project member, Supplier	1,5 hours, semi-structured 1 hour, follow-up	Motivation for offshoring; sourcing model; organization; control, trust, performance

### 3.3 Data collection

The primary data collection consisted of semi-structured interviews with the clients and the suppliers. We sought to avoid key informant bias by interviewing multiple informants and key members of each project (Miles and Huberman, 1994; Yin, 2009). Case study findings are often erroneously assumed to lack rigor or reliability (Flyvbjerg, 2011). To avoid any such concerns, we followed Yin's (2009) recommendation for collecting data, such that we developed a case study protocol and included an interview guide to ensure the same procedures in each case and consistent sets of questions across interviews. We developed and implemented the interview guidelines in accordance with suggestions by Cassell and Symon (2004) for semi-structured interviews (see Tables 7 and 8 for topics). The interview guide primarily focused on level two questions (Yin, 2009) related to the trust-control nexus, performance, and project goals.

All interviews lasted one to two hours, and the interviewees were all given an assurance of anonymity to encourage their openness. We scheduled interviews as personal meetings with most informants, but some supplier interviews were conducted as video conferences. Extensive notes taken during the interviews were transcribed immediately afterward. We wrote a brief of each case and sent these to the respondents for approval. In some cases, a subsequent, informal meeting with an interviewee enabled us to confirm or clarify information obtained during the interviews. We explicitly asked informants about their perceptions of past, present, and future



relationship developments. To deepen our understanding, we supplemented the data from the interviews with other materials, including presentations, internal reports, press releases, annual reports, and Internet data. To improve transparency, we provide rich descriptions of our findings in terms of quotes from interviewees (Bansal and Corley, 2011).

### *3.4 Data analysis*

We analyzed the interviews and documents based on an initial crude coding of trust, control, actual performance, and project goals. Subsequently, we refined the coding to distinguish between formal (input, process, and output) and informal control and swift and knowledge-based trust. As a final step, we used the analytical framework to identify and evaluate differences, nuances, patterns, or similarities in the data provided by the interviewees. We gave special attention to trust–control relationships and triggers for changes or reciprocity in the relationships. The overview of prior literature (see Tables 1 and 2) helped us focus (Gibbert et al., 2008), guiding the interpretations of the material and enabling pattern matching. Tables 7 and 8 show typical interpretations.

Peer reviews of transcripts can enhance rigor too, so all four members of the research team separately conducted within-case and cross-case analyses before scrutinizing these together (Gibbert et al., 2008; Yin, 2009). In addition, we sought to establish construct validity through the combination of the conceptual model we developed and returning the interpretation of the empirical material to the informants (Yin, 2009). Internal validity was strengthened through developing and matching patterns across cases and building the explanatory model, which is the causal loop diagram. Through the replication logic, we strengthened external validity, while the presentations of the data collection and analysis strengthen the reliability of the study (Yin, 2009).

## **4 Control and trust analyses**

We present the results of the within-case analysis first. The analytical framework represents formal control activities related to the start-up of the project (input control), its development (process control), and the project results (output control). We also analyze the degrees of informal control and trust. Thereafter, we present a cross-case analysis, focusing on the differences between the two projects with regard to trust, control, and actual performance.

### *4.1 Case One*

The client company (named: Mature) is a leading Northern European supplier of electronic payment and information solutions. This client company operates in five countries (Denmark, Norway, Sweden, Finland, and Estonia). Mature offshored part of its application development and maintenance to a global service supplier based in India more than ten years ago. Every year, a number of calls are made for individual project contracts. During the years, Mature has developed a set of eight different sourcing models for a given project by outlining tasks/roles that are sourced to an external offshore provider, tasks/roles retained by Mature, organizational structures, methodology used to operate the model (e.g., Scrum or Waterfall), and key sourcing governance mechanisms. These sourcing models include, for example, application maintenance (AM), application development (AD), production support, and testing. These are all aimed at increasing the offshore rate and, hence, resource flexibility and cost reduction.

The project started when Mature was revising its sourcing option for a portal solution. The project primarily entailed developing and maintaining a web portal. According to Mature's product owner, the portal solution was selected for offshoring because it was a stable product with easily defined service level requirements, a predictable and sufficient work load, and

limited technological and process interdependencies. The motivations for offshore outsourcing in this specific project included increased flexibility, lower labor costs, and greater innovation and knowledge transfer. The contract included four releases per year, with an automatic renewal.

Mature's onshore team consisted of the business product owner, IT project manager, and quality assurance personnel (architect and technical expert). The business product owner's role was to describe requirements and then prioritize and make decisions about the content in the releases. The IT project manager was responsible for the daily operations of the project and monitoring an established sourcing model, as well as serving as the contact point for the offshore team. The offshore project development team consisted of an on-site coordinator, colocated with the client company, and a team leader, developers, and a tester who were located offshore at a service branch in India. The project manager had responsibility for four to five development teams, all of whom had worked with portal solutions. The team leader took the role of scrum master and was responsible for release planning, software development, testing, and demos. System developers and the tester performed the programming and testing. According to Mature's sourcing manager, "this was a robust and flexible model for offshoring that has proven to work."

They used scrum methodology to develop and maintain the application, thus the teams had daily scrum meetings, backlog meetings, weekly meetings, and live demo meetings with business unit(s). All team members were trained, and some members were scrum certified. During their long relationship, the two companies had built trust and communicated well using English as a common business language, according to Mature's IT project manager. The supplier provided employees with an internal training program to help them understand Nordic values and culture, as stated by the supplier's on-site coordinator.

Key governance mechanisms were on the operational level. Deliverables were validated through a set of QA roles; a process handbook described all processes and interfaces between the parties; and the supplier's on-site coordinator and Mature's IT project manager maintained dialogue on business requirements (release planning, etc.) and prioritization of tasks in the product backlog. On a tactical level, Mature's IT line manager and the supplier's project manager scaled the team and project's scope on a yearly basis and kept track of resource load and forecasting on a biweekly basis.

#### *4.1.1 Control*

As an *input control* activity, Mature initiated an introductory session, a physical meeting of members of the onshore and offshore teams. As Mature's IT line manager explained:

"The aim of the face-to-face meeting was to increase motivation, shorten startup time, bridge the gap between the client's operation onshore and the offshore team, make sure both parties learn and understand the aim and objectives, define the project organization, roles, responsibilities, processes, methods, expectations and culture."

Mature's IT line manager was also actively involved in the process of selecting and staffing the offshore team. Through the long relationship between the client firm and the global supplier, they had developed a formal start-up procedure: for every new project, the client and supplier discussed resources on an individual level. "It is very important for us as clients to be sure that the development team is made up of experienced and skilled personnel," noted Mature's IT line manager. Mature sensed the need for skilled team members, which was noted

by the training given in working methods. The supplier's on-site coordinator and its project manager confirmed this. As Mature's IT line manager revealed, "If a team member lacks important knowledge or is not updated on the working methods, we will give him the necessary training."

In terms of *process control*, Mature had an on-site coordinator from the supplier who worked closely with the client company. This on-site coordinator showed that Mature sensed the need for a link or liaison to assist with communication and cooperation between the team in India and the client. The supplier's on-site coordinator met with subject matter experts regularly, for example, Mature's IT project manager, to discuss items for the next release. According to the supplier's on-site coordinator, "the process and interactions were highly informal and quick, which would have been impossible without being colocated with the client company." For example, in developing a project handbook, Mature exhibited its perceived need for procedures to control the project. This handbook specified the project's general approach, scope, resources, knowledge management, project management process, quality, agreements, project process (methodology), and contacts. In addition to serving as a control mechanism, the daily scrum, backlog, and demo meetings provided a shared space for knowledge transfer. During these structural meetings via Skype, direct interpersonal interactions took place. Participants discussed technical challenges, reported to and informed one another about progress made and difficulties encountered, and coordinated task work. During scrum meetings, the onshore team monitored the behavior and procedures used by the offshore team and secured the execution of the project in terms of software work increments. The presence of additional physical meetings illustrated that the management group sensed inefficiencies in these interactions and decided to invest in face-to-face meetings, which were "important because they represent a way to direct, communicate, coordinate, and shape the process," according to Mature's sourcing manager. The need for supervision further demonstrated that Mature encountered complicated issues related to information sharing and language problems.

As an *output control* activity, all software was tested and quality checked, implying that Mature sensed the need for a final control stage in the process. As Mature's IT project manager stated, "The control activity was merely aimed to ensure the deliverables were in accordance with the quality specifications." By controlling the deliverables, Mature illustrated a more unilateral control style. According to the sourcing manager, "performance pricing model was fixed milestone-based pricing for defined outcomes, e.g., new releases." In addition, the supplier investigated expectations and perceptions of partnership quality. According to the supplier's project manager, a customer satisfaction questionnaire was sent to Mature's IT project manager every sixth months.

Finally, goal commitment represented an *informal control* mechanism in the relationship. The project goal was elucidated during the introductory session, so that all participants understood it. Mature's IT project manager said, "We viewed the offshore team as motivated by the goals, because the team showed determination to achieve project success." The offshore team's scrum master agreed, "The achievement of technical and business goals was important to offshore team members because success would influence their bonuses and future careers."

#### 4.1.2 Trust

Initially, swift and knowledge-based trust between Mature and the offshore team was high. The parties found each other competent and loyal. Trust had been built up in earlier cooperative projects, in terms of competence and intentions. Mature's IT project manager emphasized that earlier successful experiences made them confident that they could achieve success again: "Our

trust in the offshore team was high from the start and it remained high for the rest of the project.” The supplier’s on-site coordinator confirmed this in another interview: “We have worked together in more than ten years and we have a very good relationship.”

Activities, such as personal direct contact between offshore and onshore team members, working electronically together on the same platform, and positive feedback from Mature’s IT project manager, also helped build and maintain knowledge-based trust. The supplier was perceived as highly skilled in technology and in following standardized work routines but sometimes fell short in terms of business understanding. According to Mature’s IT project manager, “they sometimes have trouble seeing the solution in a business context.”

In Table 7 and in Table 8, we display a mixture of summary phrases and direct quotes from the interviews related to control and trust in the two cases. The tables also present an overall adequacy judgement by the researchers that ranges from absent to low, present, and high, which is based on Miles and Huberman (1994). This rating indicates the level of control, trust, and actual performance in the two cases. The quotes are useful as they help to justify and illuminate the ratings.

**Table 7** Control and trust in Case One

Concepts	Activities	Sources*
Input control	<i>Present</i> —introductory session, selection of resources at individual level, and method training. (“All stakeholders were trained to understand their roles and responsibilities.”)	IT line manager (M) On-site coordinator (S) Project manager (S)
Process control	<i>High</i> —on-site coordinator served as liaison between teams, project handbook with procedures, and scrum methodology. (“The process and interactions was highly informal and quick, which would have been impossible without being co-located with client.”)	Sourcing manager (M) IT project manager (M) On-site coordinator (S)
Output control	<i>High</i> —software testing and quality check, performance pricing, and customer satisfaction questionnaire. (“The control activity was merely aimed to ensure the deliverables were in accordance with quality specifications.”)	Sourcing manager (M) IT project manager (M) Project manager (S)
Informal control	<i>Present</i> —commitments to performance goals were measured throughout the project. (“Achievement of goals were important to team members because success would influence bonuses and future careers.”)	IT project manager (M) Scrum master (S)
Swift trust	<i>High</i> —built up in earlier projects. (“Our trust in the offshore team was high from the start, and it remained high for the rest of the project.”)	IT project manager (M) On-site coordinator (S)
Knowledge-based trust	<i>High</i> —high skills about technology and standardized procedures, some problems with business understanding. (“They sometimes have trouble seeing the solution in a business context.”)	IT project manager (M)
Actual performance	<i>High</i> —quality requirements were met. Finished according to schedule and budget. (“The achievement of technical and business goals was important to the offshore team members.”)	IT project manager (M) Scrum master (S)

\* M = Mature, S = Supplier

## 4.2 Case Two

The client company (named Novice) is a leading provider of open-source web application acceleration software. The development of this software dates back several years as an idea by Norway's largest online newspaper. Today, leading websites all over the world rely on this software, including Facebook, Twitter, eBay, and *The New York Times*. The software development provider was a Norwegian outsourcing and consulting company, with administrative offices in Norway and a main services and development department in Bangladesh. The supplier, a small- to medium-sized enterprise, offered IT development and maintenance services to European organizations. It was founded in 2010, reflecting managers' previous experiences with offshoring to Bangladesh and India. The client had no experience with offshoring software development activities to low-cost countries. The main motivations for the arrangement were lower development costs, better access to skilled developers, and contributions to local community development.

The offshore project was organized as a scrum-based software development with a duration of 15 months. The purpose was to develop software to configure the web accelerator. Novice signed a contract with the supplier in Norway, which gave it access to a systems development team of five IT workers in Bangladesh. Novice's project owner was responsible for the program development, which included a description of user stories and architecture. The supplier office in Norway assisted and coached the process, including helping with the scrum methodology, communications, and culture building. The plan was that Novice would communicate directly with the offshore team after a start-up period.

The two development teams, one in Norway and one in Bangladesh, worked closely together. The team in Norway had three participants: a project owner, a system architect and a user interface designer. A scrum master led the team in Bangladesh, which consisted of four system developers and a tester responsible for QA. These teams were established across organizational divisions with the intention of improving understanding of the business process, providing insight into technical and business challenges, as well as using each other's professional expertise. At the start of the project, a joint meeting was organized in which the onshore and offshore teams met. The purpose of the face-to-face meeting was to increase motivation; reduce start-up time; close the gap between the two teams; and ensure that both teams understood the project mandate, project management, roles, responsibilities, and scrum method process management.

#### *4.2.1 Control*

As an *input control* activity, a special "onboarding program" was initiated by the supplier's office in Norway. According to a project member of the supplier, these were physical meetings between members of the onshore and offshore teams, conducted over one week. The aim was to increase motivation, shorten start-up time, and bridge the gap between the client's onshore operations and the offshore team. According to Novice's project owner, the need for this program became clear when "we sensed a cultural and organizational mismatch between the onshore and offshore team during the initial face-to-face meeting." To reduce this gap, training of the offshore team took place, to teach them about the aim and objectives, project organization, roles, responsibilities, processes, methods, expectations, and culture. In addition, the supplier's project coach trained the offshore team in the scrum methodology. Novice took part in setting up the software development team in Bangladesh. Novice's project owner interviewed all potential team member candidates via Skype and then decided, with the supplier office in Norway, who should join the team: "For us it was of vital importance that the software developers had the necessary programming skills." The supplier's project coach confirmed

this: “All employees are educated at approved universities, and they have work experience with foreign customers.”

Several *process control* activities illustrated Novice’s need to govern and follow up on the work. Initially, communications of all administrative information went through the supplier office in Norway. This office initiated the interaction and communication between Novice and the offshore team. They oversaw the project start-up and helped facilitate working processes and communication. As Novice’s project owner explained, “The idea was that the supplier office should help to reduce some of the uncertainties caused by cultural, structural, personal barriers. Later, in the project, the onshore and offshore teams communicated more and more directly with each other.” Another process control mechanism was the use of scrum as the working method. For example, daily scrum meetings via Skype allowed for coordinating and controlling the development. According to Novice’s project owner, there was considerable need for supervision and coordination of the work: “Information sharing, both for client follow-up and control, as well as for the decisions required for the offshore team, was troublesome at some point.” For example, Novice’s project manager expressed dissatisfaction with the information exchange related to time, costs, and sprint progress from the offshore team because he was not given the whole picture. He further explained, “In Bangladesh, they have a very strong master–apprentice relationship where employees do what the boss says.” As Novice’s system architect stated, “The scrum team was doing just what they were told to do. Asking questions to solve problems could be threatening to people concerned with losing face.” He offered an example: “When Novice asked if the programming task had been solved, it always received a ‘yes’ answer, even though the job was not finished.” This scenario created problems and a considerable need for monitoring, direct control, and coordination of the work. Information exchanges between the two sites took place several times every day by videoconference, e-mail, Wiki, and Skype. In the onshore team, a software specialist (user interface designer) worked full time on Bangladeshi hours to follow up on the project with the delivery center. In addition, Novice had internal access to controlled web pages containing project documentation and information, which the members of the project used. This need for more control was, according to Novice’s project owner, mainly due to a lack of competence in the offshore team and a result of acknowledging the greater task dependency between the onshore and offshore team than was planned at the beginning.

The extensive use of *output control* showed Novice had challenges in clarifying deliverables (e.g., scope, specifications, and quality). In particular, Novice’s system architect confessed:

“We experienced that the specifications (i.e., user stories) were too open, leaving room for interpretation in the offshore team. This was partly because we did not quite know what we wanted when the specifications were prepared. One can say that the product was developed along the way.”

According to Novice’s project owner, “We anticipated that there would be some errors, but we were not prepared to rewrite so much of the code.” Supplier’s project coach stated, “Our customer did not focus on testing, our programmers had misunderstood, and there was too little communication.” Novice took over the program code after 15 months of development, over which it also had property rights. Afterwards, Novice spent approximately a year rewriting and improving the software.

*Informal control* was exercised and expressed through the team members’ commitments to the project goals. The project goal “To build an administrative console for Novice’s web

accelerator software within 15 months” was well known and expressed among the software developers. According to Novice’s project owner, they trusted that the offshore team was capable of meeting this goal: “We took active part in the process of selecting the developers and the supplier’s office assured us that the team was capable to successfully finish the job.” Communication and knowledge sharing is a key success factor, as stated by Novice’s interface designer.

#### 4.2.2 Trust

Novice’s system architect indicated that swift trust was high when the project started: “When we started the project our trust in the supplier’s capability was high because we were convinced that they were competent.” A special onboarding program involved physical meetings, and it clearly expressed the project goal while emphasizing training sessions and scrum methodology. As Novice’s project owner noted, trust between the onshore and offshore teams was important:

“The project followed a scrum-based methodology. Daily scrum meetings build trust, but depend on a well-functioning electronic infrastructure. In theory, everything is fine, but there are problems, for example, internet breakdowns, background noise on Skype. A waterfall methodology would have been even worse because of less interaction.”

He further explained, “You have to develop trust over time and that is difficult when you can’t spend time together.” A project member from the supplier also expressed this: “The relationship between the two parties influence project success.”

During the project, members of the onshore team visited the offshore team several times. These physical interactions were important for communication, dialogue, and knowledge exchange in an effort to build knowledge-based trust. Novice posed high demands on source code quality, according to one of the supplier’s project members. As stated by Novice’s project owner, “High knowledge-based trust was never achieved because of the offshore team’s poor performance.” The scrum master confirmed this: “There was lack of quality in code for some sprints, and the client was not very happy.” As a result, swift trust diminished.

**Table 8** Control and trust in Case Two

Concepts	Activities	Sources*
Input control	<i>Present</i> —onboarding program with physical meetings in Bangladesh and Norway, selection of team members, and training in scrum methodology. (“We sensed a cultural and organizational mismatch between onshore and offshore team.”)	Project owner (N) Project coach (S) Project member (S)
Process control	<i>Present</i> —domestic supplier acted as an on-site coordinator, use of scrum methodology, daily video meetings, and more need for coordination and information exchange than planned. (“A Novice software specialist worked full time Bangladeshi hours to follow up the offshore team.”)	Project owner (N) System architect (N) Scrum master (S)
Output control	<i>Low</i> —Challenges clarifying deliverables. At the end of the project, there was a need for heavy quality assurance and reprogramming. (“We anticipated that there would be some errors, but we were not prepared to rewrite so much code.”)	Project owner (N) System architect (N) Project coach (S)

Informal control	<i>Low</i> —performance goals were clearly communicated among team members. (“Supplier assured us that the team was capable of successfully finish the job.”)	Project owner (N) Interface designer (N)
Swift trust	<i>High</i> —high from start but reduced. (“The relationship between the two parties influence project success.”)	Project owner (N) System architect (N) Project member (S)
Knowledge-based trust	<i>Absent</i> —tried to build but did not succeed. (“High knowledge-based trust was never achieved because of the offshore team’s poor performance.”)	Project owner (N) Scrum master (S)
Actual performance	<i>Low</i> —quality requirements were not met. Costs were higher than expected and delayed. (“There was a lack of quality in some sprints, and the client was not very happy.”)	Project owner (N) Project member (S) Scrum master (S)

\* N = Novice, S = Supplier

### 4.3 Cross-case analysis

#### 4.3.1 Control and trust

As an *input control* mechanism, both client firms interviewed potential team members as part of the process of selecting the offshore team. However, Mature arranged a more extensive control activity, to include testing of the candidates. Each candidate had to complete programming tasks alone and in cooperation with a programmer from Mature (pair programming). This extra control activity assured Mature that the individual employees had the necessary, relevant knowledge for the programming job.

In both cases, *process control* was used; however, it differed somewhat in how it was arranged. For example, the on-site coordination role was arranged differently in the two cases. In the Mature case, an on-site coordinator from the supplier firm in India was colocated with the client team. In contrast, the Novice’s project coach in Norway served as the on-site coordinator for Novice. Therefore, Mature’s on-site coordinator was much more familiar with the local culture and ways of doing things; he knew the offshore organization, team, and operations and could speak the language. This knowledge created more direct, informal, and efficient communication between Mature and the offshore team, compared with Novice and its offshore team, where communication was more formal and not efficient, due to the lack of work experience with each other. Furthermore, with regard to the procedures implemented, Mature developed a specific process handbook, describing all the roles, processes, techniques, methods, and interfaces between the parties. Novice had no such handbook. During the onboarding program arranged by the supplier, the two teams met for a week in Bangladesh. This involved presentations and discussions about systems, processes, team organization, roles, responsibilities, meeting routines, and methods. One day was dedicated to an introduction to the scrum methodology and project theory, including routines and procedures. In terms of *output control* and quality assurance, Mature performed its quality assurance as planned, but the control activity varied for Novice. Because of the poor quality of the software delivered by the offshore team, Novice had to increase its quality control, and ultimately, Novice decided to do most of the programming itself.

The interview results show that in both cases, a high level of *swift trust* between the onshore and offshore teams existed from the start. In the case of Mature, trust had built up in competence and intentions through previous cooperative projects, but for Novice, trust was gained through activities, such as an onboarding program, physical meetings with the offshore



team, interviews of potential systems developers, and a good impression of the supplier and what it could offer. Mature expressed high trust (swift and knowledge-based trust) in the offshore team from the beginning that remained high for the whole project. Novice tried to build knowledge-based trust in the offshore team, but its trust diminished continuously until the end of the project due to gaps in competence and skills, slow progress toward milestones, and a problematic process.

#### *4.3.2 Actual performance*

Mature's project was successful because the project achieved its goals. Software development by the offshore team finished in time and on budget, having met the technical and quality requirements. Thus, the sourcing manager at Mature said, "We are very satisfied with the relationship and work done by the service provider and we will continue doing business with them in the future." Novice's project did not achieve the project goals and was not a success. The poor quality of the software developed by the offshore team, the demand for extra quality assurance, and the need for extensive reprogramming of the software by Novice's onshore team meant that the project was not finished on budget or on schedule. In May 2012, Novice took over the software programming and spent approximately one year rewriting and improving the code. Tables 7 and 8 contain a summary of the analysis showing observations from the two cases studied.

## **5 Results from the case analysis**

The case analysis shows that Mature and Novice took similar approaches to implementing project control. Both companies used all three formal control types (input, process, and output). The onshore and offshore teams in both companies expressed commitment to the project goals and stated that trust was high at the start of the project (Tables 7 and 8). For Mature, the project was indeed under control and, thus, was executed satisfactorily, within time, budget, and scope constraints. For Novice, the results differed because the project was so out of control that eventually Novice brought many of the offshored project activities in-house.

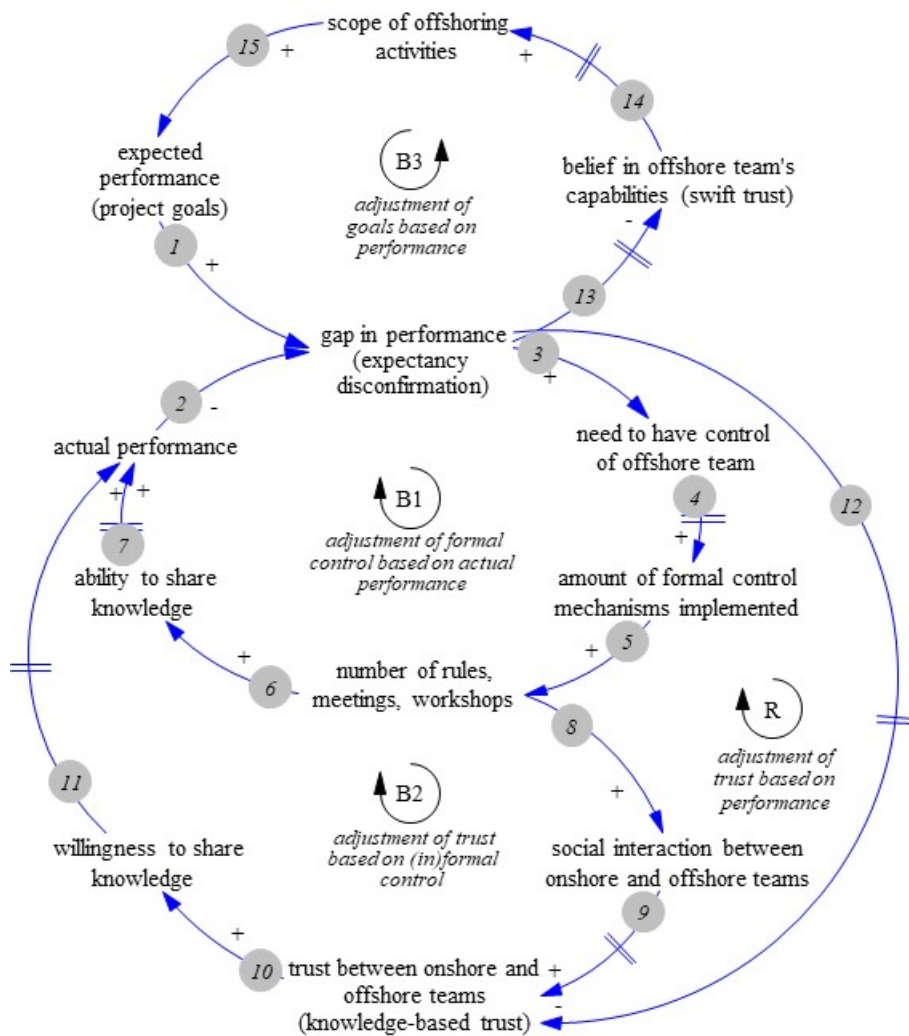
What caused this remarkable difference in actual project performance? We seek to answer this question by unraveling the causes and consequences of the trust that Mature and Novice characterized as high initially, by building on our conceptual model (presented in Figure 1) and by developing a new model (depicted in Figure 2).

Case One featured high trust between the onshore and offshore teams based on past performance (i.e., knowledge-based trust, Robert et al., 2009). The client and supplier had worked together before, which enabled trust between the partners to develop (link 12 in Figure 2). Over time and based on demonstrated, actual performance, the onshore team learned about the supplier's capabilities (link 13 in Figure 2), which caused Mature to allocate appropriate activities (number of activities and their complexity) to the offshore team (link 14 in Figure 2) with realistic project goals (link 15 in Figure 2). In turn, the supplier could demonstrate strong performance from the start, with little or no gap between expected and actual performance, which kept trust at a consistently high level (link 12 in Figure 2). This trust then strengthened their willingness to share knowledge. In addition, the control mechanisms in place (video meetings, agile project working, and on-site coordinator) enabled representatives to meet with each other and, thus, facilitated knowledge sharing. That is, the formal controls were not eliminated by the high level of trust. Rather, formal control and trust were complementary for Mature, such that trust enabled the teams to share knowledge, and the formal control mechanisms supported their ability to do so. Willingness (link 11 in Figure 2) and ability (link

7 in Figure 2) contributed to actual project performance, thereby sustaining the high trust between the teams.

Respondents at Novice also claimed high trust at the start of the project, but this trust was based primarily on a belief in the supplier's capabilities not actual proof of these capabilities (i.e., swift trust, Robert et al., 2009). Therefore, Novice set project goals that were too high, in terms of the size of the work package (link 14 in Figure 2), and constraints, in terms of time, budget, and scope (link 15 in Figure 2). The expectations were high, despite the lack of knowledge-based trust between the onshore and offshore teams, which had never met or worked together before. Formal control mechanisms were in place, which increased the teams' ability to share knowledge (link 6 in Figure 2). However, the low level of trust limited the teams' willingness to share knowledge (link 10 in Figure 2). Being able but not willing to share knowledge was insufficient to improve actual performance at the expected level (link 2), so trust remained low between the teams (link 12 in Figure 2). Novice tried to strengthen its formal control (e.g., direct supervision and communication, daily scrum meetings, and more quality assurance), but without trust, these formal mechanisms did not help. Ultimately, the only solution for Novice was to adjust its belief in the supplier's capabilities (link 13 in Figure 2) and to lower its project goals by reducing the offshored work package and back sourcing much of the project (link 14 and 15 in Figure 2).

**Figure 2** Dynamic model of control, trust, actual performance, and project goals



In Figure 2, we present a new dynamic model that captures the behavior described in these two cases. The model includes the conceptual model that was discussed earlier (Figure 1), and adds a new balancing loop that describes the process of adjusting project goals based on actual performance of the supplier (loop B3). This new loop describes how offshoring projects start with the selection of activities to offshore and setting project goals for these activities in terms of time, scope, and costs. The selection of these activities stems from the client’s belief in the capabilities of the supplier. If the client and supplier have not worked with each other before, this belief is primarily derived from reputations and first impressions (swift trust). During the project, the client regularly evaluates the difference between the project goals (i.e., the supplier’s expected performance) and actual performance. If a gap exists (i.e., expectancy disconfirmation), the client is likely to update its belief in the supplier’s capabilities, which eventually could lead to a reduction of the scope of outsourced activities in current or future projects (fewer or less complex activities, which accordingly reduces project goals). This step, which closes this balancing loop, we label the “adjustment of project goals based on actual performance.” If the actual performance of the supplier does not meet expectations, the client may change the goals of the offshoring project accordingly; there is a process of goal erosion caused by persistent poor performance (Abdel-Hamid, 2011; Barlas and Yasarcan, 2006; Gino and Bazerman, 2009; Oliva and Sterman, 2001). The opposite also might occur: if actual

performance exceeds expectations, the client can increase the scope of the offshoring activities, which leads to an increase of project goals of the current project (or future projects with the same supplier). Barlas and Yasarcan (2006) referred to this process as positive goal evolution dynamics that are a result of consistent success. Goal adjustments to improve performance have also been called recalibration practices (Stevens et al., 2015). This process of fine-tuning project goals to the supplier's capabilities is similar to finding the right project suitability (Westner and Strahringer, 2010). These authors defined project suitability as the degree to which a project's attributes and task characteristics make it more amenable for delivery in a dispersed, intercultural environment (p. 293). Although they found that suitability has a small but significant effect on project success, they did not discuss changing the suitability over time during project execution based on actual performance, as our findings indicate.

Only the combined effect of these four feedback loops can describe what happened to Mature and Novice. The two balancing loops B1 and B2, "adjustment of formal control based on actual performance" and "adjustment of trust based on (in)formal control," support each other. In the case of low actual performance, formal control increases, which improves the potential for social interactions and the development of trust. Here, formal control and trust are complements. Control cultivates the ability to share knowledge, and trust encourages a willingness to share it. If there are no other variables or relationships to consider, these two loops will eventually find a perfect balance with no gap between expected and actual performance. The reinforcing loop R (adjustment of trust based on actual performance) speeds up this process because any reduction of the performance gap boosts trust. Therefore, clients might think they can reduce formal control somewhat, noting the excellent performance and high trust (formal control and trust as substitutes). However, this outcome did not happen in Case One because of the influence of balancing loop B3 (adjustment of project goals based on actual performance). Instead of being satisfied with current performance and, therefore, reducing formal controls, Mature decided to increase offshoring activities and heighten the performance expectations, while stabilizing the formal control mechanisms. That is, it increased the project goals via balancing loop B3 rather than reducing formal control. In Novice, all formal control mechanisms eventually should have led to more social interactions and trust, but, because the initial project goals were too high, the supplier could never keep up, so reinforcing loop R (adjustment of trust based on actual performance) became a vicious loop of low actual performance and low trust. More formal control could not substitute for a lack of trust. In this case, the only solution was to change the offshoring activities via balancing loop B3, but here, the activities and performance expectations needed to be reduced. Project goals were decreased because increasing formal control did not help anymore.

## **6 Discussion**

Previous research has identified many dual relationships between actual performance in projects, the need for control, knowledge sharing, and trust. For example, low actual performance increases the need for formal control (Choudhury and Sabherwal, 2003; Lioliou et al., 2014; Mähring et al., 2018; Vlaar et al., 2007). Formal control mechanisms empower teams to spend time together and engage frequently in two-way communication (Jaworski, 1988), which enables knowledge sharing (Hansen, 1999; Liang et al., 2016; Zimmermann and Ravishankar, 2014). Time spent together facilitates social interactions (Chiu et al., 2006; Hsu and Chang, 2014). Social interactions (Balaji and Brown, 2014; Hsu and Chang, 2014) and good performance (Lin 2011; Robert et al., 2009) have positive effects on trust development. Trust between teams enhances their willingness to share knowledge (Hsu and Chang, 2014; Jain et al., 2011; Westner and Strahringer, 2010; Zimmermann et al., 2013; Zimmermann and Ravishankar, 2014). Knowledge sharing has a positive effect on actual performance (Cha et

al., 2008; Liang et al., 2016; Rustagi et al., 2008; Willcocks and Kern, 1998). Furthermore, there are studies that focus on separate reinforcing feedback loops to explain relationships between more than two variables (Zimmermann et al., 2013; Zimmermann and Ravishankar, 2014). In addition, some researchers point to balancing relationships between trust and formal control (Gregory et al., 2013; Huber et al., 2013; Smets et al., 2013; Vlaar et al., 2007).

These previous studies have in common that they assume a goal-seeking policy, in the sense that project goals are fixed, and these studies analyze how trust and control can be adjusted to reach these goals. A goal-adjustment policy, in which the project goals may be adjusted up or down based on actual performance, has received very limited attention in the literature, although this policy may lead to higher performance (Barlas and Yasarcan, 2006; Stevens et al., 2015). Westner and Strahringer (2010) found that expertise is less important for offshoring success and that it would be better to focus on establishing mutual trust. Yet, it is unclear how goal-adjustment can be used to establish and manage trust and control in offshore projects. Our findings suggest that expertise may support this goal-adjustment process. Our research focused on this topic, and our findings are summarized in a causal loop diagram consisting of complex dynamic feedback loops. As Liang et al. (2016) noted, the most unique characteristic of offshoring is the distance between the client environment and the vendor environment, including cultures, norms, regulations, and standards. These distances dynamically interact with firms' actions to influence offshoring decisions and outcomes, and more research is needed to unravel the complex underlying mechanisms (Liang et al., 2016). As such, our causal loop diagram answers this call for research. The diagram depicted in Figure 2 is grounded on previous work (Figure 1) but adds new relationships that were found in our two cases. These new relationships explain the adjustment of project goals based on the interplay of trust, control, and actual performance. Supported by two case studies, Figure 2 reveals three important findings. First, to increase actual performance, trust and control should be treated not as substitutes but as complements. Both are required to advance actual performance. Formal control allows teams to interact (ability to share knowledge), and trust encourages them to share important information when they meet (willingness to share knowledge). This result corroborates findings from Dyer and Chu (2003), Goo et al. (2009), Ning (2017), and Persson et al. (2012). Second, when trust and actual performance are high (as in Case One), it may be tempting to reduce formal controls and treat trust and control as substitutes (Das and Teng, 2001; Rustagi et al., 2008). Lioliou et al. (2014) even recommended that when the relationship is strong and the workforce is stable, trust and control can change from being complements to substitutes. However, our findings suggest it may be more beneficial to increase project goals (goal adjustment), for example, by increasing the number or scope of offshoring activities, instead of decreasing formal control. That is because the mechanisms of formal controls, such as meetings, reports, and roles such as the on-site coordinator, also enable knowledge sharing. They enable interaction. For example, research shows that an on-site coordinator played a key role in knowledge sharing between the client and the vendor when offshoring (Haas, 2015; Strasser et al., 2019). Reducing the use of these mechanisms, can reduce interaction and, thus, knowledge sharing, which can have a negative impact on long-term performance (Cha et al., 2008; Smets et al., 2013). Trust is good and certainly supports actual performance, but (formal) mechanisms and documentation aimed at verifying delivery of high-quality output are equally important. To rephrase Ramesh et al. (2012, p. 330), trust but verify. Third, when trust and actual performance are low, it may be tempting to invest more in formal control (as in Case Two) and to substitute trust with formal controls (Choudhury and Sabherwal, 2003). In this scenario, Lioliou et al. (2014) recommended that formal control should account for the lack of trust. However, excessive formal controls do not encourage trust (Vlaar et al., 2007) because, as long as trust and actual performance are low, the reinforcing loop "adjustment of trust based

on actual performance” will be vicious. Low trust will continue to hinder performance, regardless of the implemented formal controls. Our findings indicate that it is more beneficial to the project and the relationship to decrease project goals (goal adjustment), for example, by decreasing the number and scope of offshoring activities, instead of increasing formal controls.

Our research has several important managerial implications. Case One shows that even when trust is high between the client and supplier, the client does not let trust substitute formal control. Mature still used a number of formal control mechanisms to govern the relationship with the supplier at the start-up of a new project. Although these two firms had worked together previously, the members of the actual supplier team and client team did not know one another from previous projects. Therefore, Mature decided to start the first agile scrums with relatively easy assignments (a stable product with a predictable workload with limited technological and process interdependencies) to give the teams time to become familiar with one another and their ways of working. Only when trust was verified (at the team level) did the performance expectations increase for subsequent scrums. That is, managers must take care, even when they think they can trust their supplier. High trust will encourage challenging project goals and expectations. The success of Mature and the failure of Novice teaches us that, no matter the level of trust, it might be better to start an offshoring project with small steps and relatively easy tasks, verifying that the teams can trust each other and allowing them to start building that trust.

Our study also has some weaknesses that have implications for further research. First, the empirical study was limited to two ISD offshore projects. It is widely accepted that trust and control are important governance mechanisms in interorganizational collaborations, but whether the dynamics we have identified also occur outside the context of ISD-offshore projects or not remains to be seen in future studies. Second, we did not consider contextual factors, such as cross-cultural issues, geographical distance, time zones, and language differences (see Dibbern et al., 2008), in our theory development and case analysis. We carefully selected cases to be similar in terms of these contextual factors, as large differences in, for example, cultural dimensions (Hofstede, 1991) could have a profound impact on the client–supplier governance. Therefore, we have focused less of our analysis and writing on the elements in the background, such as cross-cultural effects that typically appear in offshoring settings. Hence, future research could study cross-cultural effects on the trust and control relationship. For example, how the cultural differences between the client and offshore team determine the effectiveness of controls. Third, even if a complementary approach to the trust–control nexus is accepted as given, it seems that the back sourcing phenomenon might be the consequence of not achieving project goals. In our study, we observed back sourcing at the end of Novice’s project. Hence, we suggest future research to study back sourcing as a phenomenon and especially the arguments behind back sourcing. While trust is important to govern supplier–client relationships in this setting, trust as a substitute for formal control can have severe consequences for some organizations.

## **7 Conclusion**

To succeed with ISD offshore projects, clients must ensure progress of processes and deliveries by their vendors. Trust and control are important mechanisms for doing so. Previous findings point to how these mechanisms are dynamically related, as well as to how trust and control are recursively related to actual performance. However, there is a lack of understanding about how trust and control should be managed to support actual performance and how project goal adjustment can be used to influence actual performance. This study shows that successful ISD projects should not rely on either trust or control, as both are needed at all times. It might be

tempting to reduce control when trust is high, as control is demanding. This paper advises that organizations trust, but always verify. To take full advantage of a relationship where trust is high, the client should increase project goals instead of loosening control.

The paper offers several contributions. First, we theorize on the dynamic relationship between the trust–control nexus and actual performance and build a conceptual model for exploring this relationship. Second, based on the empirical case, we develop key insights about this relationship, indicating how trust, control, actual performance, and project goals are related. Third, we contribute to theory development on trust–control dynamics by creating a model that integrates how the trust–control dynamic affects the adjustment of project goals and vice versa.

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