

Emerging Organisations: Metateams in major IT Projects

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Abstract

During the last decade, teams working on information technology (IT) development and implementation projects have experienced significant transformations. Nowadays, many members of project teams are working in new and complex organisational arrangements seeded with conflicts. Their firms, pushed by the competitive race and/or regulators, want to implement new IT solutions at frantic speeds while often maintaining old management practices without recognising the new paradigm's unique needs and nature. This paper focuses in one of these new organisations, the metateam. Metateams are emergent temporal virtual organizations engaged in complex multimillion dollar IT projects. These confederations of networked teams can build IT solutions of high complexity by integrating and capitalizing on expertise from different fields across firms and national borders. However, achieving effective interteam collaboration presents significant challenges. The failure to make sense of the new paradigm results in cost and schedule overruns and has high destructive potential for interfirm relationships. Our theory-building study detected a costly pattern of constant conflict discovery, resolution and realignment. From the analysis of this pattern, this paper presents a theoretical model, grounded on rich empirical data, interrelating key concepts of cost, contract discrepancies, conflict, communication and trust.

Keywords

IT projects, metateams, multi-firm projects, grounded theory, trust, conflict, project costs.

1. Introduction

Modern organisations exist in a paradigm of relentless change, using knowledge workers as an asset, operating and competing globally, capitalizing on networked cross-specialization to create value and shared learning, and depending on their teams to get to the market first (McDermott; Brawley and Waite 1998). To meet pressing demands for innovation and speed, project managers of major IT initiatives often deal with boundary-spanning projects enacted by several interdependent teams working from different locations and for different firms. We call these temporal organizations *metateams*.

In metateams, each team performs well-defined functions in accordance with its contractual role. By integrating and capitalizing on expertise from different fields across organizational and national borders, metateams can build IT solutions of high complexity. However, achieving effective metateam cooperation can be difficult. These teams, enabled and

restricted by technology (Jarvenpaa and Leidner 1999; Cascio 2000), face several challenges including a lack of a common understanding of prime objectives and deficient pre-project arrangements (Jiang; Klein and Means 2000); cultural differences (Trompenaars and Hampden-Turner 1998); and, organizational fragmentation as a consequence of deregulation, privatisation, or outsourcing (Berggren; Soderlund and Anderson 2001).

To help close the gap in the IS literature on metateams, we embarked on an exploratory study of a real-life metateam project. From this study emerged the substantive theory presented in this paper (substantive theories are middle-range theories developed for an empirical area of enquiry; a substantive theory “fits the real world, works in predictions and explanations, is relevant to the people concerned and is readily modifiable” (Glaser 1978 p.142)).

2. Research Brief

The purpose of this research was to help understand and explain issues confronted by professionals managing teams interacting with other teams, internal and external to their organisation, in the mix of traditional, virtual, and commercial environments that constitute today's reality of major IT projects.

2.1 Methodology

The research methodology adopted is that of grounded theory (Glaser and Strauss 1967; Glaser 1978; 2001). Martin and Turner (1986 p.141) defined grounded theory as a "theory discovery methodology that allows the researcher to develop a theoretical account of the general features of the topic while simultaneously grounding the account in empirical observations of data." This approach is particularly appropriate to studies of emerging phenomena like virtual teams (Sarker; Lau and Sahay 2000), it offers a rigorous approach to help understand complex IS project implementations (Nasirin and Birks 2002) and enables the achievement of dual objectives of rigor and relevance by providing testable theories, tightly connected with empirical reality, that work in the context from which they emerged (Glaser et al. 1967; Eisenhardt 1989; Fernandez; Lehmann and Underwood 2002).

The study centred on *properties of a process* not on properties of a unit (as a person, group, or organisation). Properties of a unit are more relevant to descriptive qualitative studies while properties of a process are more relevant to studies aiming at theoretical conceptualisation (for further discussion, see Glaser 2001).

Grounded theory can be applied to two ends: (a) conceptualisation, as proposed by Glaser (2001; Glaser 2002); and, (b) full description, as proposed by Strauss and Corbin (1990; 1998). This study focused on conceptualisation, not on description. Thus, this paper discusses emerging concepts that are integrated with relevant extant literature. The integration of literature with substantive data is one of the final stages in a grounded theory study, as described by Eisenhardt (1989), where the literature becomes relevant because it fits with, and complements findings from, the substantive field.

2.2 Research Location

The study was based on a major IT project (SUN), which involved three key organisations: RedCorp, the client, a major telecommunications company; ITSP, the vendor, a global IT services firm and a partner of RedCorp in a long-term IT outsourcing agreement; and OSC, an overseas-based IT firm specializing in information systems for telecommunication

network management and a key service provider on ITSP's winning tender for the SUN project.¹

SUN was a major project having a multi-million dollar budget and a very aggressive delivery schedule. It required the coordinated effort of teams working from sixteen locations; in Eastern Europe, the Middle East, and Australia.

The system had to integrate seamlessly with existing IS/IT architecture and its very high performance and reliability was critical to RedCorp's core business of telecommunication network management. This was an innovative project of high complexity demanding high degrees of technical and managerial skills.

The senior project manager from RedCorp, supported by a team of experts, had the prime responsibility and accountability for the end-to-end project. This included: contracting and coordination of telecommunication network infrastructure work; modification of systems to allow inserting SUN into RedCorp's systems architecture; acceptance of specific deliveries from ITSP and OSC; managing interdependences and resources from different sections of RedCorp; business processes testing and user acceptance test; business continuity plans and disaster recovery plan; and, contractual management of multiple vendors, and system implementation including users training.

2.3 Primary Data Sources

The open access nature of the study and the high level of cooperation from the participants provided a rich set of data collected over two years. Unstructured and semi-structured interviews formed the basis for the analysis focusing on issues important to the participants. We interviewed all members of RedCorp's core project team. Including Project Director, Senior Project Manager, Principal Communications Engineer (Technical Leader), Senior Project Officer, Work Orders Manager (interfaces), Communication Infrastructure Project Leader, IT Infrastructure Project Leader and Testing and Acceptance Leader. Additionally, we conducted multiple interviews with the Project Director, the Senior Project Manager and the Principal Communications Engineer. All interviews were recorded, transcribed and analysed in detail.

Evidence extracted from more than 4,000 *e-mails* and 500 *project documents* allowed further testing and densification of emerging concepts. Additional information was gathered by attending at project team meetings, conflict resolution events (face-to-face workshops and phone conferences), presentations by RedCorp's top executives, and informal site gatherings (i.e., tearoom discussions).

3. The Theoretical Model

The core pattern emerging from our study is one of *constant conflict discovery and resolution*, a process that progressively, *and at a cost*, allows the project to evolve from its initial incongruence into a working solution or into project abandonment. Based on the analysis of key elements on this pattern, we constructed the theoretical model of Figure 1.

¹ The names of organisations depicted in this study were substituted with pseudonyms.

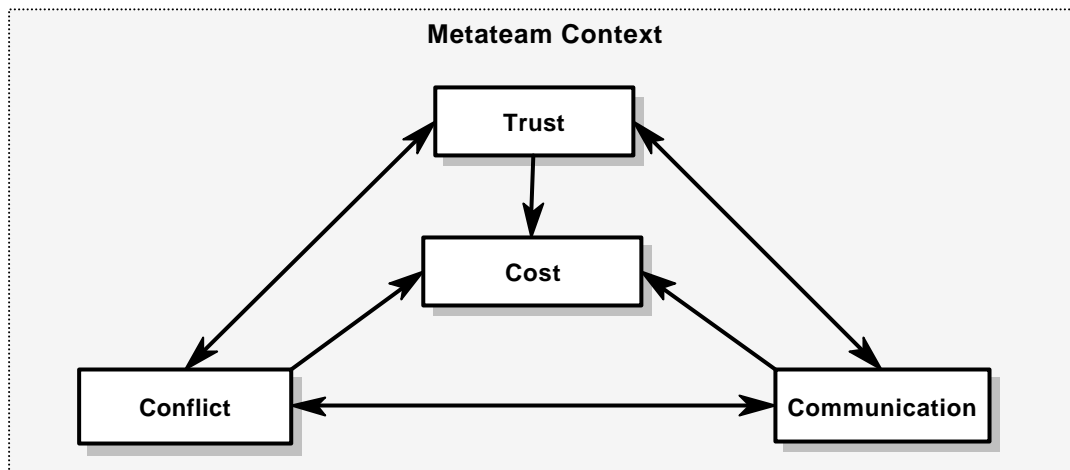


Figure 1: The Emerging Theoretical Model (Source: SUN study).

The following sub-sections discuss the key variables in the model of Figure 1 and their interrelation. Also, when appropriate, the emerging concepts will be related to the relevant extant literature.³

3.1 Contextual Aspects

What constitutes novelty in modern teamwork resides in the complex organizational context in which teams are embedded (West 2001) and how team members (a) are affected by their environment and (b) produce actions on which organizational evolution can be based (Bandura 2001). Furthermore, contextual understanding is critical to studies of projects (Berggren et al. 2001) and to studies of trust (Mayer; Davis and Schoorman 1995). The environment of the SUN Project exhibited the following salient aspects:

- **Organizational Fragmentation.** The SUN manager was a RedCorp employee with full responsibility for the end-to-end project but limited control over ITSP and OSC teams. The role of ITSP and OSC was to perform critical services in accordance with requirements defined in commercial agreements linking the companies. Due to this organizational fragmentation, the coordination of interteam efforts and the close control of activities became difficult and increased the level of conflict and uncertainty.
- **High expectations.** Facing urgent business needs, RedCorp wanted the complex systems delivered in six months. The client's timetable was 'met' by the promises of vendors responding to the request for tender. Pre-project commercial agreements reflected these promises, committing the organizations to a very aggressive timetable under multifaceted conditions of uncertainty.
- **Frequency and nature of interteam communication.** Each team was a self-contained unit working on a distinct area of the total system; thus, contact between members of different teams was restricted to interdependencies, acceptance of deliverables or clarification of technical issues. Information and communication technologies mediated most communication events. However, several face-to-face interactions occurred. These were critical meetings of experts, working under extreme pressure for time and

² Limits of extension preclude us from presenting a set of theoretical propositions emerging from the model.

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performance, representing the diverse interests of their constituency. Under these conditions, interteam relationships took longer to develop, were more equivocal and communication incidents were fewer, important, and task-based.

- **Goal Congruence.** While sharing the distant common objective of deploying the system, we observed low levels of harmonizing interest and the predominance of often-antagonistic sub-goal pursuits. Thus, misalignment of immediate objectives, at intra and interteam levels, caused frequent conflict and exacerbated communication barriers.
- **Interdependences.** The teams involved exhibited task interdependence, stemming from the manner in which tasks are related, and output interdependence, stemming from the manner in which firms, teams, and individuals believe their goals and rewards are related (Johnson and Johnson 1989; Saavedra; Earley and Van Dyne 1993; Wageman 1995; van der Vegt; Emans and van de Vliert 1999). We observed (a) weaker task interdependence and stronger outcome intrateam interdependence and (b) stronger task interdependence and weaker outcome interdependence at interteam level.
- **Type of personnel involved.** The SUN project exhibited high complexity at managerial and technical levels and had a very high corporate profile; consequently, it involved the most experienced professionals. This characteristic may help to explain the absence among the actors of *swift trust* (Meyerson; Weick and Kramer 1996) observed in studies of virtual teams (Jarvenpaa; Knoll and Leidner 1998; Jarvenpaa et al. 1999).

The listed contextual aspects were particular to the SUN project; yet, we can expect to find these variables in other metateam environments. In the SUN context, actors were resolving a number of emerging conflicts. The resolution of these conflicts carried a cost, which was influenced by the effectiveness of the metateam's conflict discovery and resolution process, communication processes, and trust-based processes. These concepts are discussed next.

3.2 Cost

We approached cost from two interrelated perspectives. First, we looked at the total cost of the project; that is, the cost of conducting development and implementation activities in accordance with requirements; these are production costs. Second, we paid particular attention to governance costs related to structuring transactions between the parties and the effort these transactions require (e.g., contracts, joint reviews, workshops, negotiations). These costs are known as transaction costs (Williamson 1985; Coase 1995; Furubotn and Richter 2000) and are the core focus of our study.

The cost of each transaction influences the total project cost. However, due to goal incongruence, incurring a lower individual transaction cost will not always reduce the end-to-end project cost. In some cases, incurring in a lower transaction cost could in fact raise the total project cost. As we observed in the SUN project, one party may perceive the need to restrict communication between teams from different firms to reduce cost and distractions. Such tactic may align with a particular team's sub-goals of low cost and timely delivery. However, this tactic also runs the risk of introducing greater costs later in the project due to the late discovery of issues or problems. Furthermore, when the avoidance is effected by one party and the cost of the risk is carried by a second party, the conflict avoiding team can be seen *ad post* as having engaged in *opportunistic behaviour*. Williamson (1985 p.47) defined opportunist as "self-interest seeking with guile," a behaviour that when attributed (real or perceived) can affect the long term relationship between firms. We observed that the uncertainty and complexity found on the studied metateam environment, juxtaposed with

goal incongruence, contributed to teams having different perspective of how to best structure inter-team transactions; thus, creating pre-conditions for attributions of opportunism.

The project cost was affected by variables such as trust, conflict and communication, which are discussed next.

3.3 Trust

The literature on virtual teams presents trust as an important theme (e.g., Iacono and Weisband 1997; Jarvenpaa et al. 1998; Beranek 2000; Gallivan 2001; Piccoli and Ives Forthcoming). Given that virtual teams need to cooperate in conditions of uncertainty, this is not surprising; trust has been viewed as a lubricant to cooperation (Arrow 1974; Misztal 1996), as a product of cooperation (Axelrod 1984) as a way of dealing with imperfect knowledge and uncertainty (Gambetta 2000) and as a necessary element for any modern business transaction (Ring and Van de Ven 1992).

In our study, expectations of trustworthiness resulted from evaluating contractual trust, competence trust and goodwill trust (as also observed in Sako 1998). In other words, are *they* (the other party) going to respect the contract, do *they* have the competence to deliver as promised, and are *they* prepared to go beyond the letter of the contract to deliver on their promises. We perceive trust and distrust as *opposite* ends in the trust continuum; and, based on emergent data and Rousseau et al.(1998) and Lorenz (2000), we define trust (or, symmetrically, distrust) in the metateam context as *a psychological state reached by a team member upon an evaluation of vulnerability risks based on expectations of the intentions, competence, or behaviour of another.*

3.4 Conflict

Early detection and resolution of conflicts allows the parties to avoid rework, escalation, and even litigation. Thus, a key concern in metateams' management is the need to discover and resolve conflicts as early as possible in order to facilitate the successful deployment of the system. Conflict is ever-present in any social system involving organizational complexity and interdependencies (Jehn 1995), this is particularly the case in major projects involving technology (Kezsbom; Schilling and Edward 1989; Al-Tabtabai; Alex and Abou-alfotouh 2001).

The literature on group conflict often mentions two types of conflicts: (a) task or cognitive conflicts and (b) emotional or relational conflicts (e.g., Priem and Price 1991; Jehn 1995; Amason 1996; DeChurch and Marks 2001; Jehn and Mannix 2001). Our study suggests that metateam systems are likely to exhibit high levels of task-related conflicts and low levels of emotional conflict. This because interactions between the teams are mainly task-related and opportunities to develop affective relations are limited by the context in which the metateam is embedded. Thus, our research focuses on *cognitive conflicts* ('conflicts' from hereon). That is, when two or more parties in the metateams disagree on what needs to be done, how it is to be done, who is responsible for carrying out the task(s), or who is commercially accountable for the costs associated with the task(s).

3.5 Communication

Communication, in our context, represents the engagement of agents in communicative events using their discourse instrumentally with the purpose of interchanging information and influencing outcomes (Giddens 1993; Heracleous and Barrett 2001). Communication in the

SUN project was at least difficult, the actors often talked about issues or barriers to effective communication related to goal incongruence, cognitive limitations, personal traits and skills, structures, and relationships.

The outcome of communicative events influenced their effect on trust and conflict. Additionally, communicative events enabled the detection of deviation from psychological, normative and implied contract expectations (discussed next). The discovery of conflicts or contractual discrepancies precipitated more communication events aiming at resolving those conflicts or discrepancies. Finally, communication is a cost-carrying transaction by action and by inaction; as our data shows, the potential cost of non-communication resides in the late discovery of incongruence and misunderstandings, which may result in expensive rework and delays.

3.6 Selected Observations

Trust among the teams facilitated open communication and collaboration. These are critical elements to detect and resolve conflicts arising from imperfect specifications, imperfect contracts, and imperfect knowledge. Trust can also reduce transaction costs—i.e., by avoiding implementing extra controls like independent reviews or inspections. Yet, in trusting others we run a risk because we expect certain outcomes with neither complete control of others' actions, nor complete knowledge of their intentions and because we are subject to the unforeseeable events of social reality (Misztal 1996; Lorenz 2000).

Grounded on the SUN project and sharpened by the extant literature, the following sections present aspects of the interrelation between trust, conflict, communication, and cost.

Trust and Conflict

We observed that perception of trustworthiness influenced the conception and adoption of conflict resolution strategies. All things being equal, teams are more likely to engage in non-zero sum conflict resolution strategies when they can trust all parties to refrain from opportunistic behaviour. Furthermore, trust enables open communication and thus facilitates the discovery of conflicts. We also observed that the behaviour of team representatives during conflict resolution events affects the level of trust. This is so because the resolution of conflicts allows the development of knowledge (building familiarity) about how others behave and the skills they possess.

Conflict and Cost

Conflicts allow firms to reach a new plateau of understanding regarding the project's cost and feasibility and thus decide to forge ahead or to cancel the project. Whatever the outcome, conflicts and their associated costs are unavoidable consequences of engaging in major collaborative IT projects. The efficiency and effectiveness of conflict resolution strategies will mediate the relation between conflict and cost. The most *efficient* resolution of a particular conflict is the one that takes less time and fewer resources to bring the parties to an agreement on the meaning and execution of future actions. In resolving conflicts, we need to keep in mind that a solution to a particular problem could cause further problems of greater cost (Gause and Weinberg 1990). Thus, the most *effective* conflict resolution is one that creates the lesser amount of future issues, problems and conflicts; and thus it minimizes the total impact of the particular conflict on the total cost of the project.

Trust and Communication

The work of metateams involves hectic schedules and infrequent interteam activities; the combination of these characteristics mediated the effect of trust on the frequency of communicative events. This is so because when we trust our partners and we are too busy to check their work, we engage in fewer interactions than we would under condition of lesser trust. Thus, trust could detract from critical mindfulness when working in complex and uncertain environments.⁴ADDIN.

However, our data also agree with previous studies of virtual teams (i.e., Jarvenpaa et al. 1998) where high levels of trust was found to improve communication openness between team membersADDIN.

Effect of Trust on Cost

Perceptions of others' trustworthiness influenced the way actors adapted their interteam work and risk strategies during the project. As trust shapes perception of risks, the *trust placement process* has an important role in implementing effective and appropriate risk management strategies. High levels of trust that are proven incorrect (the realization of risks associated with trust) will result in project delays and incur in (a) cost of rectification, (b) cost of delayed benefits, or (c) cost of cancellation (sunk costs).

Pre-project history (existing perceptions about our project partners) and *project history* (data generated through interactions during the life of the project) inform the trust placement process. Pre-project history, highly influential at the beginning of the project, progressively became less relevant to trust placement as *familiarity* among actors developed. Building familiarity allowed the development of a grounded appreciation of trustworthiness and reduced attribution errorsADDIN; facilitating the actors' perception of hazards and the adoption of hazard-mitigating actions. We argue that the correctness of trust placement behaviours (not trust per se), which can only be known *ex post*, is negatively related to the total cost of the project.

However, when trust is approaching high or low levels, participant may enact *self-fulfilling prophecies* (as described by Merton (1948)) as they create the conditions under which their beliefs are proven correct. We observed that distrust is likely to result in higher control mechanisms, which then provide evidence of opportunism, incompetence or inappropriate behaviour will prove distrust correct. When this happens, project managers face the need to increase controls and to re-evaluate project costs and project risksREF * MERGEFORMAT . We found that tighter controls perpetuated distrust (also observed in virtual teams by Piccoli et al. Forthcoming), causing a *deviation-amplifying loop* (Weick 1979). In these interlocked processes, once an interdependent variable moves in one direction (i.e., moving toward total trust or toward total distrust) it results in either a virtuous or a vicious circle, this is depicted in Figure 2.

⁴ For a discussion on the role mindfulness when managing uncertainty see Weick and Sutcliffe (2001)

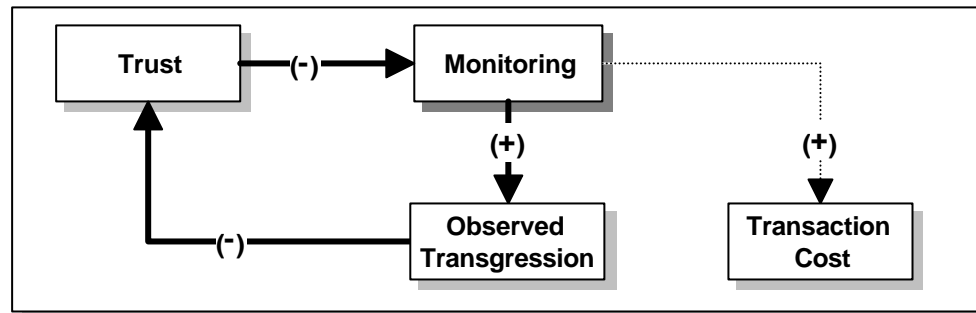


Figure 2: Deviation-amplifying Loop of Trust observed in the SUN Project.

Conversely, our study also shows that high levels of trust can cause a deviation-amplifying loop of negative consequences. As the level of trust increased, monitoring decreased and thus fewer transgressions were observed, reassuring feelings of trustworthiness and inducing further reduction of monitoring action and thus reducing transaction cost. Under these conditions, the project's fate becomes overly exposed to the correctness of the trustor's judgment in a situation of highly bounded rationality.

4. Conflicts and the discovery of contractual discrepancies

We encountered conflicts related to three types of contracts: *psychological contract* (entered by individuals), *normative contract* (shared by members of a group), *implied contract* (understood by third parties). This aligns with Rousseau (1995) typology of contracts. Contracts are incomplete constructions representing the meaning of the commitment between parties toward a future. Our data clearly shows that while contracts provide critical facts and predictability, they are also rich in assumptions and uncertainty (also observed by Rousseau 1995) and thus open to multiple interpretations. Therefore, the ideal of an all-encompassing contract is utopian because we cannot think of everything, we have differences in focus and our information is always incomplete. In complex collaborative projects, such as SUN, discovering contractual discrepancies is a natural and predictable outcome. In addition, one party may perceive a contract violation even when the 'violating' party is unaware of having breached their contract.

The early discovery and resolution of contractual discrepancies can reduce ambiguity and improve the outcome of the project. Thus, effective metateams should be proactive in their behaviour towards detection and resolution of their contractual discrepancies.

5. Conclusion

This study presented an excellent opportunity to access a complex metateam environment in an area of research lacking in empirical theoretical development work. The grounding of the theory on the rich data of the real-life project and the rigor of the method used, contributes to the internal validity of the study and to its relevance. However, as our focus was in understanding and explaining particular aspects of project management in metateams, we make no claim regarding its generalizability to other types of projects or other types of virtual teams. We also recognize that further theory-building work in other environments will allow the refinement and advancement of the theory presented in this paper.

We adopted a view that considers the relationship between partners as a dynamic collaboration process where agents build familiarity, resolving conflicts, while enacting economic transactions. To capitalize on the promises of metateams, organizations need to structure pre-project agreements effectively, allowing teams to adopt a collaborative approach where *all parties* perceive conflict resolution as a critical non-zero-sum game.

Furthermore, we suggest that effective metateam controls need to be entrenched in *appropriate* pre-project and project agreements and in trust, congruency and conflict related processes. By “appropriate”, we mean agreements and controls *contributing* to (a) the implementation of processes that are critical to issues of trust, congruency and conflict and (b) the necessary mindfulness to deal with the unexpected (Weick et al. 2001).

We found that trust, while risky, plays a key role in achieving effective metateam partnership. This is so because control mechanisms (i.e., those described by Ouchi 1978) are difficult to implement across teams due to issues of reciprocity, conflicting views about legitimate authority and heterogeneous values and beliefs. In addition, the conditions of task uncertainty and bounded rationality, juxtaposed with complex organizational and technical issues, make the design and implementation of effective controls too expensive as well as improvable without *at least* some reliance on trust. Ouchi (1978) maintains that when involved in cooperative efforts people have to be able to either closely monitor each other or to trust each other.

Finally, we suggest that, in accepting the need to trust and the risks of trust, researchers need to engage in further studies of interfirm controls and risk sharing strategies, designed to increase the effectiveness of the trust placement process, to discourage opportunistic behaviours, and to encourage the building of trusting and economically viable relationships.

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